دانشگاه علوم پزشکی
و خدمات بهداشتی درمانی تهران

Royan Institute

Nasim Institute
Biological & Vaccination
Reaserch Institute

2nd International Congress on Biomedicine

ICB 2018

دومین کنگره بین المللی زیست پزشکی

پرمخاطب ترین کنگره بین المللی پزشکی در ایران

۳ لغایت ۶ دی ماه ۱۳۹۷ - سالن همایش میلاد، نمایشگاه بین المللی تهران

با امکان شرکت در کنگره به صورت حضوری و غیرحضوری

- پزشکی شخصی
- زنان و بهداشت باروری
- ژنتیک پزشکی
- زیبایی
- تغذیه و سلامت
- نانو زیست فناوری پزشکی
- میکروب شناسی و بیماری های عفونی
- مهندسی بافت و سلول های بنیادی
- سرطان؛ پیشگیری، تشخیص و درمان
- متابولیسم و بیماری های متابولیکی

دریافت گواهینامه با اعتبار بین المللی از مرکز استاندارد علمی سوئیس
با تایید دانشگاه علوم پزشکی تهران، دانشگاه آزاد، پژوهشگاه رویان و انستیتو نسیم
از طرف دبیرخانه دومین کنگره بین المللی زیست پزشکی

با حداکثر ۲۰ امتیاز بازآموزی | گواهینامه عالی بین المللی

ثبت نام
www.icb2018.com

۰۲۱۲۶۲۰۸۹۰۹-۲۶۳۰۹۷۴۱


بسم الله

دانشگاه علوم پزشکی
و خدمات بهداشتی درمانی تهران

Nasim Institute
Biological & Vaccination
Research Institute

پژوهشگاه رویان

دومین کنگره بین المللی زیست پزشکی

پرمخاطب ترین کنگره پزشکی در ایران

۳ لغایت ۶ دی ماه

سالن همایش های میلاد نمایشگاه بین المللی تهران

محور	رئیس پانل	مقام اجرایی
پزشکی شخصی Personalized Medicine	پروفسور داریوش فرهود Prof. Dariush Farhud	پدر علم ژنتیک ایران Fother of Iran s Genetic Science
زنان و بهداشت باروری Women and Reproductive Health	پژوهشگاه رویان Royan Institute	پژوهشگاه رویان Royan Institute
ژنتیک پزشکی Medical Genetic	دکتر محمدحسین مدرسی Dr. Mohammad Hosein Modaresi	معاون پژوهش و فناوری واحد علوم و تحقیقات Head of Genetic Department of Tehran Medical University
زیبایی (چالش ها و چشم اندازها) Cosmetics (Challenges and Outlooks)	دکتر محمدعلی نیل فروش زاده Dr. Mohammad Ali Nilforoush Zadeh	رئیس مرکز تحقیقات پوست و سلولهای بنیادی Head of Skin and Stem Cell Research Center
تغذیه و سلامت Health and Nutrition	دکتر مجید حاجی فرجی Dr. Majid Hajifaraji	رئیس سابق انستیتو تحقیقات تغذیه‌ای و صنایع غذایی کشور Head of National Nutrition and Food Technology Research Institute
نانو زیست فناوری پزشکی Medical Nano-Bio Technology	دکتر سید مهدی رضایت Dr. Seyyed Mahdi Rezayat	رئیس انجمن نانو فناوری پزشکی ایران Head of Nano Technology Research Center of Iran Food and Drug
میکروب شناسی و بیماری های عفونی Microbiology and Infectious Diseases	دکتر سید داور سیادت Dr. Seyyed Davar Siadat	رئیس مرکز تحقیقات میکروبیولوژی انستیتو پاستور Head of Microbiology Research Department of Iran s Pastuer Institute
مهندسی بافت و سلول های بنیادی Tissue Engineening and Stem Cell	دکتر جعفر آی Dr. Jafar Ay	مدیر گروه مهندسی بافت دانشگاه علوم پزشکی تهران Head of Tissue Engeneering Department of Tehran Medical University
سرطان؛ پیشگیری، تشخیص و درمان Cancer(Prevention-Diagnosis and Treatment)	دکتر حبیب اله محمودزاده Dr. Habibolah Mahmoudzadeh	رئیس انستیتو کانسر ایران Head of Cancer Research Institute
متابولیسم و بیماری های متابولیکی Metabolism and Metabolic Diseases	دکتر احمد خلیلی Dr. Ahmad Khalili	متخصص ایمونولوژی Immunologist

اعضای شورای سیاست گذاری

محمدباقر لاریجانی

مصطفی قانعی

حمیدرضا بیگلری

محمدرضا زرین دست

سیدمحمود طباطبایی

حمیدرضا خالدی

سیدداور سیادت

مجید مسگرطهرانی

نام و نام خانوادگی	مرتبه علمی	نام و نام خانوادگی	مرتبه علمی
دکتر سید محمود طباطبایی	استاد	دکتر عیسی طهماسبی پور	دانشیار
دکتر علی اصغر مجروحی	استاد	دکتر عقیل ملاحسن	دانشیار
دکتر فریدون لایقی	استاد	دکتر طاهر نژادستاری	دانشیار
دکتر عبدالحسین دلیمی اصل	استاد	دکتر شبنم موشقی	دانشیار
دکتر مریم دقیقی اصل	استاد	دکتر سعید اکبرزاده کلاهی	دانشیار
دکتر فاطمه رهبری زاده	استاد	دکتر حمید زند	استادیار
دکتر گیتا اسلامی	استاد	دکتر لیلا پیشکار	استادیار
دکتر محمد صالحی	استاد	دکتر فاطمه اشرفی	استادیار
دکتر علی باقری	استاد	دکتر شهریار حدادی ابیانه	استادیار
دکتر فتاح ستوده نژاد نعمت الهی	استاد	دکتر غزل لبیکی	استادیار
دکتر سحر هنرمند جهرمی	استاد	دکتر غلامحسین حسنی	استادیار
دکتر مهدی ابراهیمی	استاد	دکتر علی احمدی	استادیار
دکتر فرانک کازرونی	استاد	دکتر علی نظری	استادیار
دکتر عباس سعیدی	استاد	دکتر شهلا محمدگنجی	استادیار
دکتر فاطمه روح الله	استاد	دکتر سروناز فلسفی	استادیار
دکتر علی صمدی کوچک سرایی	استاد	دکتر ستاره حقیقت	استادیار
دکتر مسعود پارسانیا	استاد	دکتر عیسی طهماسبی پور	دانشیار
دکتر علی اصغر صفائی	استاد	دکتر عقیل ملاحسن	دانشیار
دکتر شهلا رودبار محمدی	استاد	دکتر طاهر نژادستاری	دانشیار
دکتر شهین نجارپیرایه	استاد	دکتر شبنم موشقی	دانشیار
دکتر منصوره اشقلی فراهانی	استاد	دکتر سعید اکبرزاده کلاهی	دانشیار
دکتر توراندخت بلوچ نژاد مجرد	استاد	دکتر حمید زند	استادیار
دکتر آزاده زنوزی	استاد	دکتر لیلا پیشکار	استادیار
دکتر مصطفی قانعی	استاد	دکتر فاطمه اشرفی	استادیار
دکتر رضا رنجبر	استاد	دکتر شهریار حدادی ابیانه	استادیار
دکتر سید مهدی رضایت	استاد	دکتر غزل لبیکی	استادیار
دکتر سید داور سیادت	استاد	دکتر غلامحسین حسنی	استادیار
دکتر علیرضا رفیعی	استاد	دکتر علی احمدی	استادیار
دکتر شهره خاتمی	استاد	دکتر علی نظری	استادیار
دکتر سعید بوذری	استاد	دکتر شهلا محمدگنجی	استادیار
دکتر فرزانه تفویضی	دانشیار	دکتر سروناز فلسفی	استادیار
دکتر ملیحه انتظاری	دانشیار	دکتر ستاره حقیقت	استادیار
دکتر طاهره توحیدی مقدم	دانشیار		
دکتر عباس اخوان سپهی	دانشیار		

نام و نام خانوادگی	نام و نام خانوادگی
دکتر فرهاد اکبرپور تجریشی	صبا سیف پور
محسن قیومی	شیوا دهرویه
شیدا عاروان	نازنین آقا محمدی
ساجده اکبرمولایی	علی زارع زاده
تکیه حسنیه سادات احمدی	عارف سپاسی
آتینا وکیلی	پویا فرهنگ نیا
تهمینه جلالی فراهانی	معصومه حیدرزاده
صبا هدایتی	حسن جعفری
سلیمه ظفری	فیروزه کشاورزیان
ساینا ادیبان	خاطره بیتی یام
زهرا عباسی	ستاره نوروزی
زهرا خدادادی	مهرداد ایزدی راد
الهه سادات ظهیرالدینی	آرمین ناظمی زاده
ثنا روشنی	فرهاد عمو زاده
وحید سپهر	پویا میرزایی
زهرا پلمه	پیمان فرج زاده
پیروز شادباش	اریک ایزدیان
سیده مریم محمودی	ستاره مینایی
سیده نادیا محمودی	هانیه استجایی
سارا عبدی زاده	غزاله حارثی
مرضیه محمدی	محدثه موهبتی
فاطمه پاشایی	میثاق مرادی
صدف رضایی	سپیده باقری
سحر شفیعی	تارا ابراهیمی
نیلوفر صحرا گردان	زینب نانکلی
زهرا صارمی	مهشاد ترابی
مانا دخت تقی زاده رزازی پور	آقای موسوی
فرزانه داداشی	آقای حسینی
خانم تینا حسن پناه	مهدی رزاقی
عطیه مطهری	رضوانه جلیلی
سارا عبدالهیان	
حانیه قاسمیان	
سیده نازیک مومنی شیده	

زمان بندی و لیست سخنرانی پانل پزشکی شخصی

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/03	10:30-11:00	Personalized Medicine, Genetics and Epigenetics Factors	دکتر داریوش فرهود Dr. Dariush Farhud
1397/10/03	11:00-11:20	Personalized and Precision Medicine an Update	دکتر کریم نیرنیا Prof. Karim Nayernia
1397/10/03	11:20-11:40	Gene Therapy and Personalized Medicine	دکتر علیرضا بیگلری Dr. Alireza Biglari
1397/10/03	11:40-12:00	miRNA signature as Bio-Markers, towards Personalised Treatment in Liver Failure	دکتر سیامک صالحی Dr. Siamk Salehi
1397/10/03	12:00-12:20	پزشکی دقیق و اختلالات تیروئید Precision Medicine and Thyroid Disorders	دکتر مهدی هدایتی Dr. Mahdi Hedayati
1397/10/03	12:20-12:40	Laboratory Diagnostic Methods in Personalized Medicine	دکتر سید مسعود هوشمند Dr. Syed Massoud Hoshmand
1397/10/03	12:40-12:55	شواهد قوی مبنی بر ریسک ابتلا به سرطان IVF تخمدان در زنان پس از درمان Strong Evidences of the Ovarian Carcinoma Risk in Women after IVF Treatment	شقایق ذکایی Shaghayegh Zokaei
1397/10/03	12:55-13:10	Beyond Satiation: the Spectrum of Food-drug in Traditional Persian Medicine and Its Clinical importance in Personalized Nutrition	مجید انوشیروانی Majid Anushiravani

زمان بندی و لیست سخنرانی پانل متابولیسم و بیماری های متابولیکی

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/03	15:00-15:30	متابولیسم و ویروس ها Viruses and Metabolism	دکتر شقایق یزدانی نیشابوری Dr. Shaghayegh Yazdani Neyshabouri
1397/10/03	17:10-17:20	Is Peroxisome the Missing ring of Metabolic Abnormalities in Neurodegenerative Diseases?	مهدی مسلمی Mehdi Moslemi
1397/10/03	17:20-17:45	Immunometabolism and Cancer Immunometabolism and Nutrition	دکتر احمد خلیلی Dr Ahmad Khalili

زمان بندی و لیست سخنرانی پانل میکروب شناسی و بیماری های عفونی

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/04	10:00-10:10	Human Adenovirus_36 Improves Insulin Sensitivity, Lipid Profiles and Increases Inflammatory Markers in Wistar Rats	فاطمه شیرانی دستجردی Fatemeh Shirani dastjerdi
1397/10/04	8:00-8:20	The New Insight of Gut Microbiota	دکتر محمدرضا زالی Dr. Mohammad Reza Zali
1397/10/04	8:20-8:40	IBS, IBD and Gut Microbiota	دکتر پژمان روحانی Dr. Pejman Rouhani
1397/10/04	8:40-9:00	From Bowel to Infant Behavior	دکتر هاله مسعودی Dr. Hale Masoudi
1397/10/04	9:00-9:20	The Future perspective of Society	دکتر مریم ابراهیمی تاج آبادی Dr. Maryam Ebrahimi Tajabadi
1397/10/04	9:20-9:30	Systems Biology Approaches in Infectious Disease	دکتر گلناز بهرام علی Dr. Golnaz Bahramali
1397/10/04	9:30-9:40	Virobiome	دکتر پونه رحیمی Dr. Pooneh Rahimi
1397/10/04	9:40-9:50	Occult Hepatitis C Virus Infection in Hemophilia patients and its correlation with Interferon Lambda 3/4 Polymorphisms	امیرحسین نفری Amir hossein Nafari
1397/10/04	9:50-10:00	Occult Hepatitis C Virus Infection in beta Thalassemia major: Is it a mysterious infection?	احمد ایادی Ahmad Ayadi

زمان بندی و لیست سخنرانی پانل نانو زیست فناوری پزشکی

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/04	10:45-11:00	Degradation of Pectin using Immobilized Pectinase in Polyacrylamide gel for Continuous use	دکتر حنیف الرحمان Dr. Haneef Ur Rehman
1397/10/04	11:00-11:20	Application of Nanotechnology in Biosensor	دکتر مهدی آدابی Dr. Mahdi Adabi
1397/10/04	11:20-11:40	Lipid Nanocarriers	دکتر معصومه زحمتکشان Dr. Masoumeh Zahmatkeshan
1397/10/04	11:40-12:00	Application of Nanotechnology in Medical Sciences	دکتر علیرضا پرتوآذر Dr. Alireza Partoazar
1397/10/04	12:00-12:30	Application of Nanotechnology in Vaccine	دکتر تارا امامی Dr. Tara Emami
1397/10/04	12:30-12:45	Porous 3-D Graphene Electrodes for Electrochemical Detection of H2O2	مریم رضایی Maryam Rezaei
1397/10/04	12:45-13:00	Nano Vaccine for Brucellosis: Multi Epitope subunit Vaccine- loaded Mannosylated Chitosan Nanoparticles Induce High Protection Against Brucella Infection	زهره صادقی Zohre Sadeghi

زمان بندی و لیست سخنرانی پانل مهندسی بافت و سلول های بنیادی

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/04	14:15-14:45	Study of Tnp1 and Tekt1 Genes Expression in Vitro Spermatogenesis Enhancement in Neonatal Mouse Frozen - Thawed Testis After Three-dimensional Culture.	دکتر احمد الرحل Dr. Ahmad alrahel
1397/10/04	14:45-15:15	Induction of Spermatogenesis Under 3-Dimentional Tissue Culture Conditions by in Vitro Transplantation of Spermatogonial Stem Cells Isolated From Human Frozen-thawed Testis Tissue	دکتر مهدی محقق Dr. Mahdi Mohaqiq
1397/10/04	16:30-16:50	The Role of cells and Stem Cells in the Treatment of Diseases	دکتر رعنا ایمانی Dr. Rana Imani
1397/10/04	16:50-17:10	Directing pluripotent Stem Cell Fate for Differentiation or self-renewal Using Small Molecules and Mimicking Cell Niche	دکتر حسین شاهسوارانی Dr. Hosain Shahsavarani

زمان بندی و لیست سخنرانی پانل زیبایی (چالش ها و چشم اندازها)

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/05	8:00-8:30	IPS Technology and Future of Regenerative Medicine in Cosmetic Dermatology	دکتر حسین شاهسوارانی **Dr. Hosain Shahsavarani**
1397/10/05	9:00-9:30	PRP: a key in Dermatologic Treatment	دکتر پروین منصوری **Dr. Parvin Mansouri**
1397/10/05	9:30-10:00	Natural Plant Derived Small Molecules Applications in Cosmetic Dermatology	دکتر عاطفه علیپور **Dr. Atefe Alipour**

زمان بندی و لیست سخنرانی پانل تغذیه و سلامت

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/05	10:45-11:30	Biocontrol of Food Pathogens. use of Bacteriophages and Microbiota for the Control of Food Fathogen	دکتر پرویز صبور **Dr. Parviz Sabour**
1397/10/05	11:30-12:00	آیا مکمل پروبیوتیک در پیشگیری از هیپرگلیسمی فشار خون حاملگی موثر است؟ Whether Probiotic Supplementation is Effective in Prevention of the Hyperglycemia Induced Maternal Hypertention?	دکتر مجید حاجی فرجی **Dr. Majid Haji Faraji**
1397/10/05	12:00-12:30	Impact of Next Generation Sequencing Techniques in Food Safety and Nutrition: A Revolutionary Road	دکتر رامین خاکسار **Dr. Ramin Khaksar**

زمان بندی و لیست سخنرانی پانل زنان و بهداشت باروری

سخنران	عنوان سخنرانی	ساعت سخنرانی	روز سخنرانی
دکتر مریم شاه حسینی Dr. Maryam Shahhosseini	Epigenetics & Infertility	15:30-15:50	1397/10/05
دکتر روح الله فتحی Dr. Rouhollah Fathi	Artificial Ovarion	16:45-17:05	1397/10/05
مجید بنی محمد Majid Banimohammad	Fulvestant as an anti-steroid Agent, Modifies Cell Ovarion Growth-related Gene Expression via Selective Estrogen Receptor DownRegulator (SERD) Effects	17:45-17:55	1397/10/05
معصومه آباد Masoumeh Abad	Association between Electromagnetic field exposure and Abortion in pregnant women living in Tehran	17:55-18:05	1397/10/05
سمیرا فریدونی Samira Fereidouny	Frequency Evaluation of Anxiety and Depression Symptoms in mother of children who suffer from Autistic Spectrum Disorder	18:05-18:15	1397/10/05

زمان بندی و لیست سخنرانی پانل سرطان; پیشگیری، تشخیص و درمان

سخنران	عنوان سخنرانی	ساعت سخنرانی	روز سخنرانی
فاطمه خاتمی Fatemeh Khatami	Promoter Methylation Quantification of Four Tumor Suppressor Gene in Papillary Thyroid Cancer Tissues	11:30-11:45	1397/10/06
انعام الحق چرخت گرگیج Enam Alhagh Charkhat Gorgich	Immunohistochemical Expression of Ki67 and HER2 in Patients with Colorectal Cancer Compared to Adenomatous and Non-Neoplastic Tissue Samples	11:45-12:00	1397/10/06
دکتر رضا شیرکوهی Dr. Reza Shirkoohi	ژنتیک سرطان پستان وکلورکتان Brest and Colorectal Cancer (Epidemiology, Preventation, Diagnosis, Treatment)	8:00-11:30	1397/10/06
دکتر کاظم زنده دل Dr. Kazem Zende Del	Brest and Colorectal Cancer (Epidemiology, Preventation, Diagnosis, Treatment)	8:00-11:30	1397/10/06
دکتر آروین آریان Dr. Arvin Arian	Brest and Colorectal Cancer (Epidemiology, Preventation, Diagnosis, Treatment)	8:00-11:30	1397/10/06
دکتر فرهاد شاهی Dr. Farhad Shahi	Brest and Colorectal Cancer (Epidemiology, Preventation, Diagnosis, Treatment)	8:00-11:30	1397/10/06
دکتر رامش عمرانی پور Dr. Ramesh Omranipour	Brest and Colorectal Cancer (Epidemiology, Preventation, Diagnosis, Treatment)	8:00-11:30	1397/10/06
دکتر حبیب الله محمودزاده Dr. Habibollah Mahmoodzadeh	Brest and Colorectal Cancer (Epidemiology, Preventation, Diagnosis, Treatment)	8:00-11:30	1397/10/06

زمان بندی و لیست سخنرانی پانل ژنتیک پزشکی

روز سخنرانی	ساعت سخنرانی	عنوان سخنرانی	سخنران
1397/10/06	13:00-13:20	Prenatal Exam sequencing in Anomalous Fetuses	دکتر محمدحسین قادریان Dr.Mohammad Hossein Ghaderian
1397/10/06	13:20-13:40	ویرایش ژنی در دیستروفی عضلانی دوشن Gene Editing in DMD	دکتر مهدی دیانت پور Dr. Mahdi Dianat Pour
1397/10/06	13:40-14:00	اپی ژنتیک و پزشکی دقیق Precision Medicine: Epigenetic Personalized Treatment	دکتر مهرداد نوروزی نیا Dr. Mehrdad Noruzinia
1397/10/06	14:00-14:20	Genetical Approach in Cancer	دکتر رضا شیرکوهی Dr. Reza Shirkoohi
1397/10/06	14:20-14:40	NGS در درمان شخص محور در سرطان کاربرد Personalized Medicine / Cell Free DNA / NGS ox approach in Cancer	دکتر عباس شکوری Dr. Abbas Shakoori
1397/10/06	14:40-15:00	Familiarity with Gene Therapy in Cancer Patients	محمدکاظم بخشنده Mohammad Kazem Bakhshande

فهرست مقالات ارائه شده

a bioinformatics approach to identify overlapping mirnas in autoimmune diseases

Mahsa Tahmasebi vand,[1] Zahra bahmanpour,[2] Majid gholizadeh,[3] Reza mousavi,[4] Yousef daneshmandpour,[5] Babak emamalizadeh,[6,*]

1. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
2. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
3. Department of hematology and blood banking,faculty of allied medicine,Shahid beheshti university of medical science ,Tehran,Iran
4. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
5. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
6. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

mirnas regulate gene expression and are important in pathological processes. disruption in mirnas expression may lead to dysregulation of immune conditions such as autoimmune responses. sjogrens syndrome (ss) as a common chronic autoimmune disease, is characterized by features such as dysfunction of exocrine organs, predominantly the salivary and lachrymal glands. sjogren syndrome is also associated with rheumatic disorders such as rheumatoid arthritis or systemic lupus erythematosus. the exact cause of the exocrine dysfunction in ss and these two similar diseases is not well understood. study of micrornas in a systemic autoimmune disease can make new advances in finding novel molecular diagnostic and prognostic biomarkers. recently, progresses in bioinformatics have been assisted to better understanding of the role of these regulatory factors.

Methods

To explore a novel mirna, the involving genes were obtained from disgenet database and common genes among ss and selected two related diseases identified by venn diagram. then mirnas that target these genes extracted from mirwalk database. in the next step, using the galaxy database, mirnas with highest number of targets among the common genes were recognized.

Results

Results indicate that hsa â€“mir-4433a, hsa-mir-6726, hsa-mir-423 regulate a significant number of genes, which can play a substantial and overlapping role in these three diseases.

Conclusion

Therefore, in this study, some novel and potential mirnas are introduced bioinformatically, which can be used for further experimental studies.

Keywords

Bioinformatics approach, microrna (mirna), autoimmune disease, sjogrens syndrome

a brief description of the relationship between mitochondria and cancer

Maryam Etemadi,[1,*] Samareh gooshki,[2]

Abstract

Introduction

Defects in apoptotic pathways can lead to cancer. apoptosis is one of the major responses to cancer treatments. changes in the ability of apoptosis not only contribute to neoplasm enhancement but also lead to resistance to common cancer treatments such as radiation therapy or cytotoxic agents. the mitochondria are the main site for oxidative and synthesis (atp) phosphorylation, and provides approximately 95% of cellular energy and is called the cell s energy home. early studies have shown differences between mitochondria of normal cells and cancer cells. differences between these mitochondria can be considered as cancer markers. the main pathway for cellular death is called the mitochondrial pathway, which is activated by a wide range of signals including radiation, cytotoxic drugs, cellular stress, and growth factor receptors and involves the release of proteins such as cytochrome c from mitochondrial membrane space.

Methods

Review

Results

Since mitochondria are associated with the process of apoptosis, it is one of the purposes for the diagnosis and treatment of cancer. mitochondrial dysfunction causes a variety of diseases, such as cancer and multiple neurodegenerative disorders. the mitochondrial anticancer targets are called mitokan, which by selective accumulation in the mitochondria and damage to the mitochondrial membrane, leads to increased ros and apoptosis. there are two known methods for delivering medication to mitochondria: 1- direct binding of the target ligand to the drug, 2- attach the target ligand to the nanoparticle. there are a number of mitochondrial target conjugates, most of which are triphenylphosphonium (tpp), which have strong connections with mitochondriananoparticles used in the treatment of mitochondrial cancer can be characterized by the use of a dequalinium (dqa) micelles (dqasomes) capable of self-accumulation in soluble aqueous humorous media.. other nanoparticles also include polymer, metal, and liposomal that play a role in delivering medication to mitochondria. photodynamic therapy (pdt) is an attractive alternative to common cancer treatments the pdt method consists of two non-toxic important choices. 1- photonsensor 2. light source ps can produce cytotoxic oxygen. . ps is a key factor in the efficiency of the pdt method.. most commonly used ps are porphyrins and their compounds. but drawbacks include low wavelength absorption, complex structure, and water insolubility can be noted. a new type of ps called bodipys which is used as fluorophore with a wide application in chemical sensors and fluorescence probes. among bodipys, one can mention the type of bodipy3-peg3, which is located in mitochondria, causing more ros production and mitochondrial. ps are involved in mitochondrial apoptosis. since mitochondria are associated with the process of apoptosis, it is one of the purposes for the diagnosis and treatment of cancer. tumor progression is observed by the dynamic levels of atp and ros, and mitophagy in

mitochondria. some drugs are designed to disturb the respiratory tract and permeability of the mitochondrial membrane, which increases the levels of ros and regulates the expression of the gene in mitochondria. drugs that interfere with the respiratory tract reduce atp production and increase the levels of ros production. the mitochondrial penetrating peptides (mpp) are unique tools for accessing the cell and delivering bioactive cargo to the mitochondria. mpps combine and deliver a variety of anti-tumor agents that clearly inhibit tumor growth in vivo and in vitro.

Conclusion

The ability to provide mitochondria energy connects it to the development of a tumor or metastasis and its progression. current methods for treating cancer based on mitochondrial targeting are targeting mitochondrial atp mitochondrial membrane permeability, mitochondrial ros, and mitochondrial dna mtdnathe structure and function of mitochondria promote apoptosis through cytochrome c mechanisms. cytochrome c induces caspase activity and ultimately apoptosis through binding to apf1. the mitochondria are also calcium and intracellular ros regulators which are useful for cellular physiological activity. one of the proposed mechanisms for resistance to cytotoxic and anti-neoplastic drugs is a change in the expression of the b-cell lymphoma-2 family, or bcl2. when the anta-apoptotic members of the bl2 family increase, it can inhibit apoptosis and cell death. the targeting of the members of this anti-apoptotic family can contribute to the development of apoptosis and effective treatment of cancer and prevent drug resistance in cancer.

Keywords

Cancer, mitochondria, apoptosis

antibacterial evaluation of vancomycin/trimethoprim combination on beta lactamase-resistant of escherichia coli isolated from patients with urinary tract infection referring to the shahid rajai

Fatemeh Hosseini,[1] Alireza khodavandi,[2,*]

1. Department of Biology, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran
2. Department of Biology, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran

Abstract

Introduction

Extended-spectrum beta-lactamase (esbl)-producing enterobacteriaceae are an increasing concern regarding antibiotic resistance and their potential to cause serious infections which are difficult to treat. the purpose of this study was to assess an optimal strategy for the effective antibiotic treatment of urinary tract infections.

Methods

In this study, 90 isolates of esbl-e. coli isolated from patients with urinary tract infections were identified via biochemical and bacteriological methods. then, the antibacterial activities of vancomycin and trimethoprim were evaluated in vitro alone and in combination using disk diffusion agar and broth microdilution tests according to clsi document m100-s23 for bacteria. escherichia coli atcc 25922 as a reference quality-control strains was employed.

Results

The mics range of vancomycin and trimethoprim against esbl-e. coli were 8-256 and 1-64 Î¼g/ml, respectively, while for vancomycin in combination with trimethoprim was ranged from 0.128 to 8 Î¼g/ml. indeed, the combination therapy of vancomycin/trimethoprim was exerted the synergistic effects in esbls producing isolates with fractional inhibitory concentration index ranged from 0.281 to 1.5.

Conclusion

Our present study demonstrates that vancomycin/trimethoprim combinations were effective in the treatment of utis with a higher efficiency. due to high risk factor of the Î²-lactamase producing isolates in uti infections, further studies are suggested to prevent their spread in community.

Keywords

Esbl, vancomycin, trimethoprim

effective conditions and factors in different occupations that are more susceptible to infection or tuberculosis

Roghieh Moghaddam,[1,*]

1. Razi institute

Abstract

Introduction

Tuberculosis is a dreaded disease that causes death from infectious diseases in adults , 1.5 million people die each year due to this disease. 75% of them belong to the most active economic age group (15- 54 years old). that an ill person will not be able to work for an average of 3-4 months, in addition to economic injuries, other indirect negative effects on the quality of life of the patients and the family.in addition to identifying the general factors, acute exposure to certain factors, especially in high-risk occupations, will be a major contributor to prevention or treatment

Methods

Study of factors infecting tuberclusis and it s transmission. study of factors in occupational risks for tuberculosis. study more than thirty articles from 2002-2018 and direct or indirect effects at transmission and ,tuberculosis disease

Results

Tuberculosis is a dreaded disease with very different pollution sources such as different animals that can animal itself ,products livestock, components o f some animals such as wool or hair ,corpse of infected animals. also man infected with infected human or may infected with infected soil ,water ,food ,air,â€¦therefore duty of government try to planning of corrective action and preventive action is very important .for example : the ministry of health, the veterinary organization, in addition to training programs and raising the awareness of individuals. it is necessary new vaccine that be more effective

Conclusion

Different factors as malnutrition, addiction to alcohol ,injection opiate, some drugs, cigarettes and people that lives or works at places where are crowd such as prisons ,refugees, homeless or different disease specially immunodeficiency disease such as hiv are susceptible to contamination and tuberculosis disease. therefor e every one that has connection with them is susceptible to tuberculosis contamination .for example medicine group andâ€¦ this is a zoonotic disease .therefore some business such as animal breeding ,farmers ,spinning knitting workers ,slaughters ,aquatics and fish farmers, vaccinator of livestock and birds , birders, may be succeptionto tuberculosis. it has been understood that the first of source of contamination can be domestic, birds, rodents, reptiles, or other animals and at last with transmission can infect the human, therefore we should we more attention to people who are in this situation and we should

treat hygiene or health instructions . high level of awareness the necessary training and co-operation of the ministry veterinary organizations have been evaluated in this regard, it is important to try to make better new vaccines

Keywords

Tuberculosis,factors ,zoonotic ,awareness,vaccine

efficacy of the bunium persicum (boiss) essential oil against acute toxoplasmosis in mice mode

Sahar Hoseini,[1] Hossein mahmoudvand,[2] Amir tavakoli kareshk,[3,*]

1. Student Reseach Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Infectious Diseases Research Center, Birjand University of Medical Sciences, Birjand, Iran
(Atk9388@gmail.com)

Abstract

Introduction

Toxoplasmosis, caused by the obligate intracellular, parasitic protozoan toxoplasma gondii, is one of the most common parasitic infections of human and a wide spectrum of warm-blooded animals. we evaluated the in vivo activity of bunium persicum (boiss) essential oil on infected mice with acute toxoplasmosis.

Methods

To evaluate prophylactic effects, male nmri mice received b. persicum essential oil at the concentrations of 0.05 and 0.1 ml/kg for 14 days. after 24 h mice were infected intraperitonealy with1Ã—104 tachyzoites of t. gondii, rh strain. in order to investigate therapeutic effects, mice were infected and then received b. persicum oil at the concentrations of 0.05 and 0.1 ml/kg two times a day for 5 days. the time/mean time of death in all infected mice and the number of tachyzoites from infected mice were recorded.

Results

The time/mean time of death of infected mice was 8 and 9 days after oral administration of b. persicum oil at the concentration of 0.05 and 0.1 ml/kg, respectively ($p<0.05$). in contrast, the time/mean time of death control group was 5 days. in addition, b. persicum significantly reduced the mean number of tachyzoites compared with control group. the time/mean time of death of infected mice was 6 and 7 days after oral administration of b. persicum essential oil at the concentration of 0.05 and 0.1 ml/kg, respectively. in contrast, the time/mean time of death control group was 5 days. b. persicum especially at the concentration of 0.1 ml/kg significantly reduced the mean number of tachyzoites compared with control group.

Conclusion

The results showed the potential of b. persicum essential oil as a natural source for the production of new prophylactic agent for use in toxoplasmosis keywords: toxoplasma gondii, bunium persicum boiss, prophylactic, therapeutic

Keywords

Bunium persicum boiss, prophylactic, therapeutic,toxoplasma gondii,

evaluation of efficacy of influenza vaccination in pregnant women:a review study

Zahra Latif,[1,*] Alireza jalalvand,[2]

1. Malek-Ashtar University of Technology, Tehran, Iran
2. Pasteur Institute-Tehran-Iran

Abstract

Introduction

Planning for a future influenza pandemic should include considerations specific to pregnant women. pregnant women are at increased risk for influenza-associated morbidity and mortality. present study aimed to search the evaluation of efficacy of influenza vaccination in pregnant women.

Methods

Performed a systematic review of the literature. at first searched for the effect of vaccination against the influenza virus in pregnant women in pubmed database (from 2014 up to 2018). in this study reviewed some of published articles.

Results

Influenza vaccine is recommended for pregnant women and for most children; however, no vaccine is approved for infants aged !6 months. a low-grade fever rarely occurs in vaccinated pregnant women in some days that itâ€™s not serious. to our search, some studies were agree with use of influenza vaccine for pregnant women and report that influenza vaccine is safe for pregnant women. m. mcmillan and et al 2015, report that results do not indicate that maternal influenza vaccination is associated with an increased risk in pregnancy women. sonja j. olsenfound and et al 2016 , evidence of influenza vaccine safety during pregnancy and women who received vaccine had a reduced risk of delivering a preterm infant during times of high influenza virus circulation.

Conclusion

According to this review , no study has investigated the association between influenza vaccination during pregnancy and risks of it. it is important to provide accurate information and for health care providers to recommend the influenza vaccine to pregnant women. it is also necessary for the government to encourage women to receive the influenza vaccination as a healthcare policy so suggest the need for additional studies on the potential risks from influenza vaccination in pregnant women.

Keywords

influenza, vaccination, pregnant women

lipotoxicity and its complications

Yasin Esmaeilou,[1,*] Elham zadehashem,[2] Ata kabudari,[3]

1. Faculty of Veterinary Medicine,Urmia University
2. Faculty of Veterinary Medicine,Urmia University
3. Faculty of Veterinary Medicine,Urmia University

Abstract

Introduction

In the last few decades a change in lifestyle has led to an alarming increase in the prevalence of obesity and obesity-associated complications at epidemic rate in the developed and developing world. the reasons for the increasing prevalence of obesity are multifaceted, but social and environmental factors in combination with genetic predisposition are leading to overall positive energy balance. the excess calories of these patients are stored as triglycerides in adipose tissue, but also may accumulate ectopically in other organs, such as liver , kidneys ,heart ,bone marrow and pancreatic Î² cells which contributes to the progression of metabolic diseases via cellular injury, inflammation and impairs normal cell signaling leading to cell dysfunction, a process termed lipotoxicity.obese patients are at increased risk of developing hypertension, heart disease, renal disease, insulin resistance, dyslipidemia, type 2 diabetes, fatty liver and a range of other disorders, generally known as the metabolic syndrome, as well as several types of cancer. lipotoxicity is a pathogenic mechanism and is relevant for the metabolic syndrome

Methods

In obesity, chronically high levels of serum tg and ffas contribute to intracellular accumulation of fatty acids and their derivatives, such as ceramides and diacylglycerol (dag) in many non-adipose tissues. excess carbohydrate, which cannot be converted to glycogen, is converted to triglyceride (tg) and stored in adipose tissue. serum free fatty acids (ffas) are liberated by lipolysis of tg. lipotoxicity in glomeruli is also involved in the initiation of glomerular damage related to obesity and type 2 diabetes mellitus. recently, the evidence suggests that renal lipid accumulation leads to glomerular damage and, more specifically, produces dysfunction in podocytes, key cells that compose and maintain the glomerular filtration barrier. there is also growing evidence that ectopic lipid accumulation is associated with structural and functional changes of mesangial cells, podocytes, and proximal tubular cells. the mitochondrial b-oxidation of free fatty acids (ffa) is a major source of renal atp production, particularly in proximal tubular cells (ptc), which have a high energy demand. proximal tubular cells take up circulating ffas dissociated from albumin through specific membrane proteins, such as fatty acid translocase (cd36) and fatty acid-binding protein.

Results

In addition, proximal tubular cells retrieve albumin- bound ffas from the glomerular filtrate by receptor-mediated albumin endocytosis. there is a close association between autophagy and lipotoxicity in the

kidney proximal tubule, as lipidoverload stimulates autophagy and elevated autophagy plays a crucial role in counteracting lipotoxicity through mitochondrial quality control. cryptoxanthin, an antioxidant carotenoid, prevented and reversed insulin resistance and steatohepatitis in a lipotoxic model of nafld by suppressing excessive lipid accumulation and peroxidation.cd36 allows for the buildup of intracellular fatty acids which can cause lipotoxicity, and targeting cd36 may be useful in the treatment of renal disease.these data suggest that renal lipid metabolism and cytoskeleton rearrangements may serve as a target for specific therapies aimed at slowing the progression of podocyte failure during metabolic syndrome . loss of hepatic biliverdin reductase a (bvra) causes fat accumulation in livers of mice on a high-fat diet. bvra protects mouse proximal tubule cells from palmitic acid-induced lipotoxicity and increases the energy state of the cell.further studies to determine the importance of bvra in protecting proximal tubule cells in vivo from lipotoxic injury are needed.

Conclusion

Activating bvra in the proximal tubule may be a novel therapeutic target to protect the kidney against obesity- induced renal damage. 1- methylnicotinamide (1-mna) is a precursor of nicotinic acid, a vitamin that exist in certain foods, such as green tea leaves and celery.treatment with 1-mnasignificantly inhibited palmitate-albumin-induced production of mitochondrial superoxide ,ffa-related oxidative stress and ameliorated lipotoxicity mediated renal tubular cell damage. these results suggest that treatment with 1-mna ameliorates palmitate-albumin-induced apoptosis and necrosis by suppressing mitochondrial oxidative stress in proximal tubular cells, without affecting the mrna levels of antioxidant enzymes and the intracellular concentration of nad and nadh.

Keywords

Lipotoxicity, obesity, metabolic syndrome, oxidative stress

pcr detection and antibiotic resistance of staphylococcus saprophyticus isolated from patients with urinary tract infections

Khorshid Ebrahimi,[1,*] Majid alipour,[2]

1. Azad University, Babol Branch, Department of Cellular and Molecular Biology, Iran
2. Azad University, Babol Branch, Department of Cellular and Molecular Biology, Iran

Abstract

Introduction

Bacterial urinary tract infections are found in all age groups associated with the development of strains resistant to antibiotic treatment. the aim of this study is to identify staphylococcus saprophyticus as a common cause of urinary tract infections through rrs gene by pcr and determining the antibiotic susceptibility of isolates of staphylococcus saprophyticus isolated from patients with urinary infections.

Methods

In this study, 51235 clinical samples were collected from patients with urinary tract infection from hospitals in mazandaran province for 8 months. identification of bacterial isolates were performed by biochemical tests and microbial susceptibility test to disk diffusion method according to the standard of clinical and laboratory standards institute (clsi). pcr test was used to determine the presence of rrs gene and confirmation of staphylococcus saprophyticus isolates identified by biochemical tests. 52 isolates (9.5%) of the 833 isolates of staphylococcus genus were identified as staphylococcus saprophyticus bacteria.

Results

The results of the antibiogram test showed that the highest frequency of isolates resistance to antibiotics was related to erythromycin with 80% and the vancomycin, amycyline and cefotaxime antibiotics, respectively, with the frequency of %5/62, %5/5 and %5/16 were placed in the next ranks.

Conclusion

The present study shows that the bacterial resistance is a potential problem in iran and mazandaran province. therefore, monitoring of antimicrobial treatments and cheking the susceptibility tests in laboratory conditions can facilitate the control of the spread of drug-resistant microbes.

Keywords

Urinary tract infection, staphylococcus saprophyticus, antibiotic resistance, rrs gene, pcr

preparation and characterization of antifungal nanofibers using an electrospinning technique as topical drug delivery

Mohadese Gheitasy,[1,*] Shahla mirzaeei,[2] Shiva taghe,[3]

3. Kermanshah Province, Kermanshah, Beheshti Blvd, Kermanshah University of Medical Sciences, School of Pharmacy

Abstract

Introduction

Natamycin is used to treat fungal infections, including candida, aspergillus, cephalosporium, fusarium, and penicillium. it is applied topically as a cream. natamycin is able to inhibit growth of fungi by inhibiting transport of amino acids and glucose across the plasma membrane. natamycin performs this function by specifically binding to ergosterol and inhibiting membrane transport proteins. various topical drug delivery as hydrogels, nps, nanofibers, in situ gelling system have been proposed for prolonging the release of drugs. electrospun fiber mats can provide sustained release, which reduces the frequency of topical application to increase patient compliance. electrospun fiber mats have high porosity with interconnectivity, which can play a critical role in mass transport. nanofiber meshes are malleable, making them suitable for topical drug delivery applications. fiber mats can be incorporated into wound dressings, as part of a drug-releasing wound treatment technology. in the present study, a sandwich-structured nanofibrous matrix was produced via electrospinning to develop biodegradable and biomimetic drug-eluting dressings. the materials used to prepare the membranes included polycaprolactone (pcl), chitosan (cs), polyvinyl alcohol (pva) and natamycin.

Methods

The pva solution containing 6% (w/v) was prepared in distilled water at 50Âºc under magnetic stirring for 4 h. chitosan was dissolved in acetic acid (1% v/v) at room temperature. chitosan/pva nanofiber solutions were obtained upon the addition of 20ml of solution containing 4% (w/v) chitosan to 20ml of solution containing pva with solution containing 6% (w/v) and natamycin solved in mixture under magnetic stirring (1000 rpm) at room temperatures for 12 h. the mixture of solvent (et/ethanol) had previously been used in the electrospinning of (8 %w/v) pcl. preparation of the nanofibers (nat1 formulation) was carried out using a customized electrospraying system. the high voltage supply of 28 kv was applied to the metallic needle, and a cellulose ester membrane was used to collect the electrosprayed samples. nozzle to collector distance was adjusted to 100 mm. all electrospraying procedure was performed at 32Âºc. four formulation have been developed in sandwich and mix structure manner. after electrospinning, an elution method and uv spectrophotometrically at Î»max of 263nm. assay were employed to characterize the in vitro release rates of the pharmaceutics over a 30-day period.

Results

This study investigated the in vitro release of natamycin from novel electrospun sandwich-structured cs-pva/pcl nanofibrous membranes by using electrospinning technique. the diameters of the nat1 nanofibers ranged from 30 nm to 150 nm and for nat2 from 100 to 300 nm, respectively. the developed formulation possesses very high mucoadhesive strength, thus can be retained for a longer period in the skin. the fabrication of drug-eluting nanofibrous matrices via electrospinning is highly desirable because the core cs/drugs/pva/pcl nanofibrous membrane can provide sustainable release of drug about 30h.

Conclusion

In the present study, we report the first evidence of nat loaded-nanofibers consisting of pva and cs with pcl layer with sandwich and mix structure to enhance its dermal retention, sustain release, high skin availability at reduce dose and dosing frequency.

Keywords

nanofibers, ocular drug delivery, sandwich structure, natamycin.

preparation and characterization of electrospun scaffold based on chitosan and gelatin for tissue engineering applications.

Amir Salati,[1,*] Hamid keshvari,[2]

1. Tissue Engineering and Applied Cell Sciences Group, School of medicine, Semnan University of Medical Sciences, Semnan, Iran.
2. Biomedical Engineering Department, Amirkabir University of Technology, Tehran, Iran

Abstract

Introduction

Electrospinning has been one of the simple, effective and versatile processes to fabricate continuous nanofibers from kinds of polymers for tissue engineering applications.

Methods

In this study, nanofibers were electrospun from chitosan and gelatin at several blends (chitosan/gelatin: 80/20, 60/40, 50/50, 40/60, 20/80) with different processing parameters (voltage, flow rate and distance between the tip of the needle and collector). fourier transform infrared (ftir), scanning electron microscopy (sem), in vitro degradation and tensile test were utilized to evaluate scaffolds.

Results

The samples with 20% chitosan and 80% gelatin under special processing conditions (flow rate: 0.1 ml/h, voltage: 12 kv and distance: 16 cm) had the least amount of droplets and beads. tensile mechanical test showed that the crosslinked nanofiber scaffold with 20% chitosan and 80% gelatin is the best choice when mechanical properties are required. in addition, the crosslinked scaffolds with 20% chitosan and 80% gelatin and 50% chitosan and 50% gelatin had the least and most amount of degradation respectively.

Conclusion

The nanofibers has appropriate biocompatibility as a scaffold for tissue engineering applications and it can be used in various studies as an good substrate for cell seeding.

Keywords

Nanomaterials, electrospinning, tissue engineering, chitosan, gelatin.

the effect of coping methods on reduction of depression in girls with premenstrual syndrome

Roya Motavalli,[1,*] Tavakkol mousazadeh,[2] Naimeh paknahad ,[3] Amir mousazadeh,[4]

1. Department of midwifery, Ardabil branch , Islamic Azad University, Ardabil, Iran
2. Department of psychology , Ardabil branch, Islamic Azad University, Ardabil, Iran
3. M.A Clinical Psychology, Ardabil branch ,Islamic Azad University, Ardabil, Iran
4. Dentistry Student , Ardabil School of Dentistry,Iran

Abstract

Introduction

Premenstural syndrome is one of the most common problems in women in fertility age that is observed in 80-90% womenâ€™s fertility age in different level of severity.also 20-40% of these cases included physical and psychological syndroms like depression.women with premenstrual syndrome that experience psychological syndroms need treatment and guidance.these treatments, prevention and guidance will decrease the severity of depression and the chance of physical and psychological syndroms.these also help with adapting to different tensions.

Methods

The statistical population of this study included all female students of islamic azad university of ardabil in academic year 2017. from this population, 32 students were selected through available sampling from all the faculties of the azad university of ardabil and were randomly assigned into two experimental and control groups. then complete the questionnaire of symptoms of premenstrual syndrome, and beck's depression scales in two stages pre and post-test and in the meanwhile was formed for the experimental group coping strategies training program in 10 sessions of two hours in group. data analysis was performed using ancova in spss.

Results

The results of data analysis showed that coping strategies training program changes and decreases in depression (f=70/21, p=0/0001, partial ï• ¨2= 0/70) scores of students with premenstrual syndrome.

Conclusion

So, can be raised, most people's emotional problems and behaviors related emotions derive from their irrational statements when faced with situations or events that they do not like. therefore, individuals' awareness of how cognitive, emotional and behavioral elements are associated in events and evaluate them in practice can be followed to control emotions such as depression.

Keywords

Coping methods, depression, premenstrual syndrome

the effects of native lactobacilli isolates on clinical clostridium difficile in a laboratory scale

Shahrbanoo Asgarian,[1,*]

1. Tarbiat Modares University, Faculty of Medical Sciences, Department of Bacteriology

Abstract

Introduction

The fermented products can be a good source of potential probiotic organisms. isolation of lactobacillus from traditional products aimed with increasing quality of fermentative products, recognize starters and use in functional food products. promoting a culture of health food has been associated with decreased production of traditional dairy that destroys native strains of lactobacilli. the lack of serious study on the genetic characteristics of a microorganism as imported food starters with capacity in the transfer of unwanted features indigenous strains gives necessity. this study aimed to isolation and identification of native species lactobacillus in kohgiluyeh and boyer ahmad province was carried out the zagros east region. several probiotic species such as lactobacillus strains have direct antimicrobial effects that include inhibiting the growth of pathogenic bacteria through the production of antimicrobial factors. recently clinical studies on the use of lactobacilli and bacteriocin to deal with intestinal infection caused by prolonged treatment with antibiotics or resistant nosocomial isolates been accomplished. the spread of multiple antibiotic resistance is a significant major challenge for healthcare. lactobacilli, as the largest group of lactic acid bacteria, produce amounts of antimicrobial metabolites such as fatty acids, ammonia, hydrogen peroxide, organic acids, diacetyl, and bacteriocins. these bacteriocins are biologically active peptides against both gram-positive and negative pathogenic bacteria, protozoa, yeast, fungi, and viruses. thus, there is an urgent need to develop natural alternatives to antibiotics. lactobacilli have been shown to have a beneficial effect in the prevention of antibiotic-associated diarrhea patients with clostridium difficile infection.

Methods

Kohgiluyeh and boyer-ahmad province in the south west of iran. the province is neighboring west of khuzestan, isfahan and fars provinces of the east, from the north and south respectively of chahar mahal and bakhtiari province and bushehr. kohgiluyeh and boyer from three main areas boyer ahmad, gachsaran, kohgiluyeh is formed tribal areas as pristine areas and enable farms were selected for sampling and isolated lactobacilli from yogurt samples. isolated lactobacilli from yogurt samples on mrs agar was done in anaerobic condition. features such as the appearance of colonies, bacterial morphology, catalase and biochemical tests, growth temperatures in 37 o c and 45 o c were studied. dna extraction was performed by sina clon kit for the isolation of dna from gram-positive bacteria. designed for the qualitative detection of lactobacilli spp. was done by lactobacillus spp. pcr detection kit from iranian gene fanavar institute. the plate spot test was used for screening antibacterial effects of lactobacillus against clinical isolates of toxigenic & nontoxigenic clostridium difficile isolate.

Results

158 yogurt samples were examined in different areas of the temperate and tropical province. lactobacilli isolates were sorted out which were divided into three groups: obligate homo-fermentative, facultative homo-fermentative, and obligate hetero-fermentative. fifty-one lactobacillus isolates from traditional yogurt showed a strong anti-clostridia activity against the clinical isolates of toxigenic & nontoxigenic clostridium difficile.

Conclusion

Clinical isolates have been shown that lactobacilli killed pathogens by pore formation or inhibition of cell wall synthesis. given the diversity of the lactobacilli and maintenance of native strains in areas of animal husbandry could lead to the enrichment native reserves. results are promising for the development of a multi-strain synergistic supplement for protection against clostridium difficile infection. according to the inhibitory effect of lactobacilli seems in the treatment of intestinal infections or resistant to antibiotics commonly used. different lactobacillus isolates exhibited potential anti-clostridial properties. dysbiosis results in antibiotics usage or the presence of pathogenic organisms. changes in diversity have been associated with a range of diseases including functional and infectious diseases. this problem can be prevented or reduced by lactobacilli bacteriocins. therefore, further studies need to be conducted to include in vitro and in vivo analyses, human trials or animal model studies. the proposed mechanisms of action on prevention and treatment, the ineffectiveness of probiotics are addressed with a focus on three microorganisms, saccharomyces boulardii, lactobacillus rhamnosus gg and the combination of lactobacillus casei lbc80r, lactobacillus rhamnosus clr2, and lactobacillus acidophilus cl1285. these results and recent successes are supportive for the rational design of multi-strain lactobacilli and their bacteriocins dose for clinical applications and drug formulation.

Keywords

Lactobacillus, clostridium, yogurt

21a gene c.2860c>t mutation in cfeom1a: first case report from iran

Massoumeh Ramahi,[1] Aliakbar janatabadi,[2] Abolfazl rad2,[3,*]

Abstract

Introduction

Congenital fibrosis of the extraocular muscles1a (cfeom1a) is an autosomal dominant condition characterized by ophthalmoplegia and ptosis from birth. here, we described a family with cfeom1a, in which sanger sequencing detected a pathogenic variant c.2860c>t in kif21a gene with specific primer pcr sequence

Methods

Using conventional pcr with specific primers, we amplified two candidate genes including tubb3 and kif21a, and, then monitored for common mutations by sanger method of dna sequencing in a 31-year-old male, who diagnosed with cfeom1a.

Results

Sanger sequencing analysis illustrated kif21a c.2860c>t mutation in the proband. the segregation analysis confirmed this mutation in the family.

Conclusion

To the best our knowledge, this is the first report regarding the involvement of kif21a c.2860c>t pathogenic variant in an iranian family with cfeom1a

Keywords

Kif21a gene, c.2860c>t mutation, cfeom1a, iran

9-tbap from spiroaminopyrimidones family decreases cell proliferation and down-regulation of survivin concomitant with induction of apoptosis in nb4 leukemia cells.

Mohammad javad Dehghan nayeri,[1,*]

1. Biochemistry

Abstract

Introduction

It has been recently reported the activity of aminopyrimidone family to induce apoptosis in human cancer cells. in this study, we reported an active compound from spiroaminopyrimidone family with apoptotic activity against nb4 acute promyelocytic leukemia cells.

Methods

The cells were seeded in 96-well plates at 1Ã—105 cells/well and treated with 10-150 Î¼m of the 2, 4-diamino-1, 3-diazaspiro [5.5]-9-tert-butyl-2, 4-diene- 5- carbonitril (9-tbap). this compound was found to be highly active cell growth inhibitor with ic50 of 30Â±3.5 Î¼m as determined by mtt assay. evaluation of survivin expression in nb4 cells treated with 9-tbap was performed by real time pcr.

Results

9-tbap decreases cell proliferation of the nb4 cells in a dose- and time-dependent manner. the ic50 value following 72 h exposure was found to be 30 Î¼m for the cells. furthermore, real time pcr analysis revealed that the treatment with the compound down-regulated the expression of survivin in a time dependent manner.

Conclusion

: these data further suggest that 9-tbap may provide a novel therapeutic approach for the treatment of leukemia.

Keywords

Survivin, 9-tbap, nb4 cells, apoptosis

A brief study on hepatitis e

Fatemeh Farahmand,[1] Samin bagher,[2] Shaghayegh yazdani,[3] Mohammad shayestehpour,[4,*]

1. Department of Microbiology, Faculty of Advanced Science & Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
2. Department of Microbiology, Faculty of Advanced Science & Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
3. Department of Microbiology, Faculty of Advanced Science & Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
4. Autoimmune Disease Research Center, Kashan University of Medical Sciences, Kashan, Iran

Abstract

Introduction

Hepatitis e virus (hev) is a non-enveloped, single-strand rna virus which belongs to hepvridae family. hev has 7 genotypes: that genotype 1 and 2 affect humen.they have been reported mostly in asian,central african and american countries . genotypes 3 and 4 are common between human and animals (zoonotic)and they have been mostly seen in developed countries. genotypes 5, 6 and 7 affect animals and cannot be transmitted to human. in underdeveloped countries, the transmission way of genotypes 1 and 2 is generally oral-fecal and is passed on by drinking contaminated water. in developed countries genotypes 3 and 4 are generally transmitted by consuming contaminated meat. clinical symptoms of this disease are similar to hepatitis a virus (like increasinglevel of igm and igg suffering from diarrhea). according to who reports, it is estimated that 2.3 million people have been to hev which leads to 1000 deats each year. depending on countryâ€™s health level, hev can be either endemic or non_endemic (prevalance of anti_body about %27)

Methods

According to who reports, it is estimated that 2.3 million people have been to hev which leads to 1000 deats each year. depending on countryâ€™s health level, hev can be either endemic or non_endemic (prevalance of anti_body about %27). according to studies done in iran during 2005-2016, hev prevalence has mostly been in sari, mazandaran through which in 2009, 1080 people gut infected. hev prevalence statistics is not exclusive to any particular age. the highest and lowest percentages of hev infection in order are transplanted patients (30.8) and the for pregnant women (3.6). hepatitis e may cause hepatic failure and abortion in pregnant women and/or premature baby born with jaundice and eventually death.the infectionâ€™s progress in each person depends on their immune system .

Results

The need for hev vaccenation is directly related to its global distribution so, by focusing on recombinant vaccines in 2011, hev239 vaccine has been registered in china to diagnose the effect of anti-bodies counteracting against hev. according to experiments and vaccination programs which icluded in 3 phase ,

the effect of vaccine has been more than 90% and is safe for pregnant women. from treatments available for this infection, we can refer to immune system suppressing drugs and the prescription of ribavirin in people who have had organ transplant and interferon (antiï¿¾virus drugs).

Conclusion

Controlling public supervising health in endemic and non-endemic countries is very different. in developing countries, there is an urgent need to increase public health and improve the living environment. also, in developed countries the risk of geting infected by hev with entering raw and half-cooked meat (often pork) into the food chain exsites. in order to reduce hev infection prevalence, supervising and prevetional actions should be made from production to consumption (farm to fork).

Keywords

Hev prevalence_transplant_hev infecyion_anti_virus drugs

A comparison study to investigate the effect of condition medium derived from human adipose and cord blood mesenchymal stem cells on versican gene expression in normoxic and hypoxic peripheral bold mo

Maryam Hadavandkani,[1,*] Sotoodeh fattah,[2] Ebrahimi marzieh,[3] Irani shiva,[4]

1. Tehran University of Science Sciences
2. Tehran University of Science Sciences

Abstract

Introduction

Mesenchymal stem cells (mscs), as one of the most important candidates in cell therapy, are suggested for treating a variety of diseases. recent studies have shown that these cells, after transplantation, can help repair damaged tissue through paracrine effects. one of the important factors in repairing damaged tissues is versican protein. the use of supernatant of cell culture derived from the cultivation of mscs with peripheral blood mononuclear cells in hypoxia conditions, assuming an increase in the versican factor, could be a good alternative instead of transplantation of mesenchymal stem cells

Methods

Mesenchymal stem cells derived from fat tissue and wharton jelly were evaluated using a flow cytometry and cd105, cd73 and cd90 surface markers. then, peripheral blood mononuclear cells were isolated and these cells were cultured with a soup derived from mesenchymal stem cells. to create hypoxia conditions, both deferroxamine and cobalt chloride were added to peripheral blood mononuclear cells media. then expression of versican gene in mononuclear cells was evaluated using the real time-pcr method.

Results

To confirm the hypoxia condition in peripheral blood mononuclear cells, western blotting was used to evaluate the hif-1Î± protein. flow cytometric results confirmed mesenchymal stem cells. on the other hand, the results of rt-pcr show that the expression of versican and vegf genes in hypoxia condition was significantly higher than that in normoxia condition in monouclear cells. western blotting also confirms hypoxia conditions in peripheral blood mononuclear cells. overall, the results show that factors secreted from mesenchymal stem cell increase the expression of the versican gene in mononuclear cells in hypoxia conditions as compared to normoxia.

Conclusion

Given the importance and applicability of mscs in cell therapy, it is suggested that the secreted factors of these cells can be replaced by direct injection of mscs in order to improve the tissue damage.

Keywords

Mesenchymal stem cells of adipose tissue and wharton jelly, mononuclear cells, hypoxia, versican gen

A green approach for synthesis of selenium-based nanoparticles with antimicrobial activity

Farnoush Asghari,[1,*] Mohammad imani,[2] Mehdi razzaghi-abyaneh,[3] Hashem rafii-tabar,[4]

1. Shahid Beheshti University of Medical Science
2. Iran Polymer and Petrochemical Institute
3. Pasteur Institute of Iran
4. Shahid Beheshti University of Medical Science

Abstract

Introduction

The association of selenium and sulfur makes a magic combination with antifungal features of both selenium and sulfur. typically selenium sulfide is prepared through hazardous chemical ways. we synthesized selenium sulfide nps in a green approach for the first time and examined their properties in vitro.

Methods

Fusarium oxysporum was used as a bio-factory which was confronted with selenous acid (3 mm). the changes observed 48 h after adding 5-day fungal elements into the selenous acid solution and incubation at 30ï‚°c with shaking at 180 rpm the emergence of nps was proved and determined by uv-vis spectrophotometry, dynamic light scattering (dls), scanning electron microscopy, energy-dispersive x-ray spectroscopy (edx), x-ray diffraction (xrd) and fourier-transform infrared spectroscopy (ftir) techniques.

Results

Uv-vis spectrophotometry showed the color change obtained from nps synthesis quantitatively. it demonstrated a maximum absorbance at 217 nm for the test. an absorption in the range of 200 to 220 nm is attributed to sulfide and thiols which was the first step in approving the existence of selenium sulfide nps. in sem micrographs nps were seen encompassed in bio-mass of the medium and cells debris with a diameter of 34.32 to 231.98 nm. dls analysis showed the average hydrodynamic diameter of the obtained nps 81.9 nm. in edx analysis the existence of selenium and sulfur spectral peaks of the nps structure was proved. in ftir spectra, the peaks at 1090-1020 and 1650-1580 cm-1 and also at 1580-1490 cm-1 verified the presence of primary and secondary amine band. also sulfide compounds attributed peaks were obtained around 600 to 650 and also 1550 cm-1. the xrd pattern which was taken of the nps after 48 h reactions had the strongest braggâ€™s reflection with the closest match with ses, ses2 and se according to standard jcpds cards 00-002-0320, 00-047-1481 and 00-042-1425 respectively.

Conclusion

Selenium and selenium sulfide nps, with an improved antifungal activity, are achievable through a green safe biosynthesis approach by f. oxysporum.

Keywords

Fusarium oxysporum, selenium, nanoparticles, green synthesis

A meta-analysis of vdr polymorphisms (bsmi and taqi) and susceptibility to behcet's disease

Hassan Mehrad-majd,[1,*] Samira tabaei,[2] Zahra mirfeizi,[3]

1. Clinical Research Unit, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Introduction

Behcetâ€™s disease (bd) is a systemic vasculitis characterized by recurrent oral aphthous and genital ulcers, uveitis, and skin lesions. although the exact pathogenesis is unknown, several genetic epidemiological studies have been demonstrated a signiï¬• cant genetic basis to bd development. the vitamin d receptor (vdr) gene polymorphisms have been reported to be connected to the development of bd. however, the results remained controversial among different populations. therefore, a meta-analysis of observational studies has been conducted to determine whether vdr gene variants confer susceptibility to bd.

Methods

A comprehensive search of medline, embase, cochrane, and scopus was conducted to identify eligible studies evaluating the association between the vdr polymorphisms (bsmi and taqi) and bd. pooled odds ratios (or) with 95% confidence intervals (ci) were calculated to assess the strength of association in different genetic models.

Results

Five eligible studies involving a total of 414 cases and 456 controls were finally enrolled in this meta-analysis. the combined results revealed no significant associations between taqi, and bsmi polymorphisms and the risk of bd in any of the genetic models (all p Ë*f* 0.05). moreover, subgroup analysis by ethnicity were also exhibited no significant relationship between any of the examined polymorphisms and bd risk for all genetic models (all p Ë*f* 0.05).

Conclusion

This meta-analysis suggests that taqi, and bsmi polymorphisms in vdr gene may not confer susceptibility to bd development. further well-designed studies with large sample sizes are needed to confirm our results.

Keywords

Behcetâ€™s disease, vitamin d receptor, polymorphism, meta-analysis

A new electrochemical in vitro drug release test for nano-sized dosage forms

Esmaeil Heydari-bafrooei,[1,*]

1. Department of Chemistry, Faculty of Science, Vali-e-Asr University of Rafsanjan, Rafsanjan, Iran

Abstract

Introduction

For the construction of an effective drug delivery system using nanoparticles as drug carriers, understanding the kinetics of drug carriers as well as encapsulated drugs is essential. ideally, a successful nanoparticulate system as a drug carrier should have a high drug loading capacity thereby reducing the quantity of matrix material for administration and a controlled release drug delivery to achieve the correct dose of drug at only the disease site with the most effective release profile. therefore, controlling the rate of drug release from carriers is essential for optimum drug delivery. the most commonly used methods for measuring in-vitro drug releasing from drug carriers can be grouped into three broad categories: sample and separate methods (ss), continuous flow (cf) and dialysis. while these techniques are capable of measuring release profile, they usually involve complicated procedures and require labor-intensive sample preparation. the sample preparation time for these techniques prohibits repetitive measurements at short time intervals. therefore, these methods cannot monitor directly the real-time drug releasing, as desired for obtaining the most accurate drug release kinetics profile. the paper reports a simple electrochemical method to directly monitor the drug-release profile of dosage forms, thereby eliminating the intermediate process step. the method is based on the multiple pulse amperometric (mpa) measurement of the oxidation and reduction of doxorubicin released from liposome at a glassy carbon electrode (gce). releasing of doxorubicin from liposome results in systematic increasing in free doxorubicin. once the concentration of doxorubicin increases in the cell, a rise in the current signal of amperometry is observed. drug release was conducted using the mpa system in serum sample and under different phs.

Methods

The release medium in amperometric cell consisted of 1x pbs buffer and the ph of the release media was adjusted with 0.1 mol lâ€“1 hcl and/or naoh solution. 100 Âµl of caelyxÂ® (2.0 mg mlâ€“1 vial) was added to 5.0 ml of the release media. then the cell was warmed at 37 Â°c by putting it into a water bath at 37 Â°c. the in-vitro drug release behavior from the doxorubicin-loaded liposomes was determined using mpa. the optimized sequential potential pulses were continuously applied to the working electrode and the doxorubicin amperometric signal was monitored at the ï¬• rst two potential pulses.

Results

Chronomperometric (iâ€“t) curve (for potential pulse of â€“0.60 v) of the released doxorubicin from liposomes at phs 7.4 and 5.0 at the gce was obtained. releasing of doxorubicin from nanoparticles results in systematic increase in free doxorubicin. once concentration of doxorubicin increases in the cell, arise in

the current signal of amperometry is observed. indeed, amperometric iâ€“t curve of liposomal doxorubicin demonstrates doxorubicin-release profile from the liposome. the fraction of doxorubicin released at ph of 7.4 was âˆ¼ 0.1 as compared to âˆ¼0. 2 at ph of 5.0 after the 60 min over which the release kinetics was examined. in another study, the release profile of doxorubicin due to a step change in ph was illustrated. the ph of the medium was changed from 7.4 to 5.0. at ph 7.4, the liposome is in a more compact state, hence the rate and amount of released doxorubicin is low at this ph regime. when the ph was decreased to 5.0, we observed a rapid increasing in the amperometric current signal due to increasing in porosity of the matrix and releasing rate of doxorubicin. we then measured the continuous releasing of doxorubicin from liposomes in 33% serum solution (ph 7.4). the results showed the releasing of doxorubicin is much slower in 33% serum than in the pbs buffer. these results are consistent with those reported in the literature.

Conclusion

The obtained results confirmed that the mpa is a good alternative method to the other existing techniques for monitoring the drug release profile. the proposed method presents a wide working linear range and a low limit of detection, allowing for studies of highly diluted samples and therefore, a decreasing in occasional interferences in the matrix.

Keywords

Drug release profile, electrochemistry, nanoparticles

A new world with stem cells

Niloofar Afrazeh,[1,*]

1. Islamic Azad University of Dezful

Abstract

Introduction

The advent of tissue rebuilding and tissue repair is the new branch of tissue engineering, which is the science of medicine, which is the epitome of hope for the treatment of many diseases. in the meantime, the use of stem cells due to its unique features has unlimited proliferation and capability. this paper examines the use of stem cells in medical science.

Methods

In the development of this article, a review of many sources and books has been used, including books by guyton - hall physics books, as well as sciencedirect and scopus and wikipedia, and many articles.

Results

In the near future, the use of stem cells can be useful in the treatment of many illnesses and is considered as a very important cellular storage. however, this requires further investigation.

Conclusion

There are various barriers to the use of stem cells, including the reduction of immunity and, consequently, the probability of infection and the risk of cancer, so that stem cells should be carefully used and used in such a way that the only way to treat it.

Keywords

Stem cell, cancer, medical,parkinson

A novel balanced reciprocal translocation in a woman with recurrent pregnancy loss: a case report

Mahan Narjabadifam,[1] Shahin behrouz sharif,[2] Saba dayem omid,[3] Aziz khorrami,[4] Seyyed vahid mohaddes ardebili,[5] Seyyed mojtaba mohaddes ardebili,[6,*]

1. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
2. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
3. Drug Applied Research Center, Tabriz University of Medical Sciences
4. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
5. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
6. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Recurrent pregnancy loss (rpl) is one of the most common complications of pregnancy and defined as three or more consecutive pregnancy losses. 2% to 4% of rpl is associated with a parental balanced structural chromosome rearrangement, generally balanced reciprocal translocations. reciprocal translocations are usually an exchange of material between nonhomologous chromosomes with an estimation of incidence range from about 1 in 500 to 1 in 625 human newborns.

Methods

The study including an iranian azeri couple referred to the dr. mohaddes medical genetics laboratory (tabriz, iran), having a history of rpl in the first trimester. after genetic counseling, conventional chromosomal analysis of parents was done to ascertain the role of chromosomal abnormalities through the g-banded karyotyping technique.

Results

Clinical indices of the couple disclosed normal phenotypes. chromosomal analysis of the couple revealed a normal 46, xy karyotype for the male spouse, and a unique balanced reciprocal translocation 46, xx, t(2;8) (p25;q21) in the female partner.

Conclusion

In the present case; a unique balanced reciprocal translocation in a female with the history of recurrent pregnancy loss was reported as an original investigation. due to this investigation and similar studies, it seems reasonable that conventional cytogenetic analysis should be suggested for couples with the history of recurrent miscarriage in order to estimate whether they have chromosomal rearrangements.

Keywords

Balanced reciprocal translocation, recurrent pregnancy loss, g-banded karyotype

A novel homozygous deletion in cyp17a1 gene causes congenital adrenal hyperplasia in an iranian consanguineous families

Mohammad yahay Vahidi mehrjardi,[1,*] Majid nazari,[2] Nosrat neghab,[3] Mahdi aghabagheri,[4] Somaue darzi,[5] Nasrin ghasemi,[6]

1. Medical genetics research center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
2. Department of Medical Genetics, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
3. Research and Clinical Center for Infertility, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
4. Meybod Nursing School, Yazd, Iran
5. Department of Medical Genetics, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
6. Research and Clinical Center for Infertility, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Abstract

Introduction

Congenital adrenal hyperplasia is a rare autosomal recessive disorder that mutation in p450 family 17 subfamily a member 1 gene (cyp17a1) involved in its etiology. the disorder represents itself by low blood levels of estrogens, androgens, and cortisol that generally pair with hypertension, hypokalemia, sexual infantilism and primary amenorrhea in affected individuals.

Methods

Sonographic survey uterus was infantile and karyotyping method was performed. genomic dna was isolated from peripheral blood leukocytes. all eight exons of cyp17a1 gene were multiplied by pcr. products were sequenced.

Results

The karyotype was normal (46, xx) and she had no clinical symptoms of turner syndrome. sanger sequence chromatogram of the cyp17a1 gene show a new in-frame homozygous deletion c.1052-1054cct in exon 6 (deletion of 351leu in protein and cct deletion on cdna sequence).

Conclusion

In this study, the cyp17a1 gene in a 14 years old female was examined. the karyotype of the patient was 46, xx and analysis of the cyp17a1 gene by sanger sequencing revealed a novel homozygous deletion led to leads to isolated 17,20-lyase deficiency and this mutation may be used for diagnosis in other patients with typical clinical symptoms.

Keywords

Congenital adrenal hyperplasia (cah), cyp17a1 gene, ambiguous genitalia.

A novel missense mutation (g106r) in thyroid stimulating hormone Î²-subunit gene in patients with central congenital hypothyroidism

Seyedeh fatemeh Talebi,[1,*] Mohammad mehdi heidari,[2] Mehri khatami,[3]

1. Department of Biology, Faculty of science, Yazd University, Yazd, Iran
2. Department of Biology, Faculty of science, Yazd University, Yazd, Iran
3. Department of Biology, Faculty of science, Yazd University, Yazd, Iran

Abstract

Introduction

Background: central congenital hypothyroidism (cch) is a rare and evades diagnosis on thyroid stimulating hormone (tsh)-based congenital hypothyroidism (ch) screening programs in iran. cch resulting from deficient tsh secretion is much less common, being present in only 1 in 20,000â€“50,000 newborns. since cch is the most common preventable cause of mental retardation, an early diagnosis prompting immediate initiation of thyroid hormone replacement therapy is desirable. the aim of present study was to assess the association between tshÎ² mutations and patients with cch in iran population.

Methods

Methods: the study was conducted in 35 unrelated patients, diagnosed with central congenital hypothyroidism and all of them were diagnosed according to the clinical presentations of thyroid disorder. mutational screening of the exon 3 tshÎ² coding sequence was performed in a cohort of pediatric patients by polymerase chain reaction-single strand conformation polymorphism (pcr-sscp) and dna sequencing. in brief, the samples showing altered electrophoretic patterns of dna in the sscp gel were sent for dna sequencing to identify the exact nucleotide variation. furthermore, we analyzed effect of mutations on the structure of the protein by using pymol software and expasy database.

Results

Results: in the present study, we report a new mutation (g106r) in exon 3 of the tshÎ² gene in three cases with cch. results from pymol software demonstrate that the this mutation caused to increasing the number of polar bonds in the protein structure. in addition, expasy predicts that hydrophobicity in mutant protein has reduced.

Conclusion

Conclusion: this mutation is probably related to cch. infants who are clinically suspected of having cch should be evaluated thoroughly, even if their tsh-based screening result is normal. computational biology tools have advantages and disadvantages, and their results are predictions that require confirmation. the effect of this nucleotide substitution in exon 3 of the tshÎ² gene and their role on remains to be determined.

Keywords

Key words: central congenital hypothyroidism, mental retardation, tshÎ², mutation

A novel poly-epitope subunit vaccine against acinetobacter baumannii

Zahra Davoudi,[1] Amirhossein taromchi ,[2] Nariman mosaffa,[3] Mojgan bandehpour,[4,*]

1. Department of medical Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences
2. Department of Medical Biotechnology and Nanotechnology, School of Medicine, Zanjan University of Medical Sciences
3. Department of Immunology, School of Medicine, Shahid Beheshti University of Medical Sciences
4. Cellular and Molecular Biology Research Center, Shahide Beheshti of Medical Sciences,Tehran, Iran
5. Department of Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences

Abstract

Introduction

Acinetobacter baumannii is a gram-negative nosocomial pathogen. multiple drug resistance (mdr) strain of a. baumannii makes treatment of infections very complicated. the development of vaccine is one of the most promising and cost-effective strategies to prevent infections. according to the studies, the ompa and bam antigens of a. baumannii, plays a major role in bacterial infectious processes. this study aimedto determine the potential immunogenic effect of poly-epitope constructs of ompa and bam antigens.

Methods

In the present study we designed and evaluated a 384 amino acid subunit of ompa and bam antigens by using bioinformatics site and tools. then cloned and expressed the synthetic constructs by using pet26b expression vector in e. coli bl21(de3). the protein was purified with ni-nta column. sds-page and western blot was used for confirmation of purified proteins. after purification of poly-epitopes, we evaluated humoral and cellular immune responses.

Results

Immunogenic and antigenic regions of ompa and bam proteins was found with proper score. sds-page and western blotting results indicated the similarity of in-silico designing and in vitro expression. humoral and cellular immune responses to poly-epitopes was determined by elisa.

Conclusion

We designed the novel poly-epitope constructs of ompa and bam antigens. the present study suggests that the poly-peptide based vaccine as potential candidates for protection against acinetobacter baumannii.

Keywords

: acinetobacter baumannii, outer membrane protein a(ompa), Î²-barrel assembly machine (bam) , vaccine

A randomized, double-blind, placebo-controlled trial of pentoxifylline augmentation of sertraline in treatment of drug-naive depressed women: a pilot study.

Negar Mirzai,[1] Farshad hashemian,[2,*] Maryam vahdat shariatpanahi,[3] Mohammad reza seddigh,[4]

1. Department of Clinical Pharmacy, Faculty of Pharmacy, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
2. Department of Clinical Pharmacy, Faculty of Pharmacy, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
3. Department of Psychiatry, Faculty of Pharmacy, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
4. Department of Clinical Pharmacy, Faculty of Pharmacy, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Depression is among the most common, non-fatal diseases nowadays. growing evidences suggests that immune system and its functionâ€™s alteration could play a key role in pathophysiology of affective disorders especially depression. many investigations have shown that probably serum level of tnf-Î± and il-6 have risen in major depressive disorder. on the other hand, pentoxifylline in animal models has shown anti-depressant like effects through decreasing cytokines level in serum.

Methods

This pilot study is a randomized, double-blind, placebo-controlled trial. 11 mdd patients with hamilton depression rating scale (ham-d) â‰¥ 18 were randomly designated as treatment and control group (the former treated with ptx 400 mg twice daily and the latter one treated with placebo bd in addition to sertraline 50 mg/day during 8 weeks). patients were evaluated by ham-d scores at baseline and week 8, also serum level of il-6 and tnf-Î± were measured at baseline and 8 weeks after treatment.

Results

No significant correlation was observed in alteration of tnf-Î±, il-6 serum level and ham-d scores between both groups, during 8 weeks of treatment. tnf-Î± level increased in both groups, however not significantly (baseline to week 8) (p=.24, .68). serum level of il-6 rose after 8 weeks in ptx-treated patients, and this reversed in placebo-treated group, the overall change was not significant (p= .34, .13).

Conclusion

Our study does not show any significant anti-depressant effects of pentoxifylline, however to elucidate probable anti-depressant effect of ptx we need more studies with larger sample size.

Keywords

Interleukin-6, tnf-Î±, pentoxifylline, major depressive disorder

A report on the treatment of skin wounds in diabetic patients with laser

Mohammad Asadi,[1,*] Elnaz abedini,[2]

1. E MS

Abstract

Introduction

Diabetes mellitus is a metabolic disorder in which a person has high blood glucose levels due to inadequate insulin production by the pancreas. wounds in these individuals cannot heal properly over time due to circulatory changes that hinder and stagnate the healing process.

Methods

We report the case of an 67-year-old female type 2 diabetes mellitus carrier, presenting to clinical-dermatological examination pressure ulcer (pu) in the right calcaneus region.

Results

The patient was treated with photodynamic therapy using curcumin and blue light-emitting diodes (leds), laser therapy, and the application of a cellulose membrane in order to promote ulcer decontamination by local action, accelerate wound healing, and maintain favorable conditions of asepsis and moisture, respectively. the ulcer healing occurred after 30 days of treatment and total epithelialization was observed.

Conclusion

From the results obtained in this case report, we conclude that the combination of photodynamic therapy, laser therapy, and coating with a cellulose membrane is a promising treatment for the healing of pu in diabetic patients.

Keywords

Laser therapy treatment dermatological

A review article on immunotherapy in the treatment of multiple sclerosis and the effects of human embryonic stem cells on its treatment

Abbas Mousavand,[1,*] Hossein koupahi,[2]

1. Islamic Azad university , Varamin-Pishva branch
2. Islamic Azad university , Varamin-Pishva branch

Abstract

Introduction

Multiple sclerosis is a chronic neurological condition usually starting in early adulthood and regularly leading to severe disability. immunotherapy options are growing in number and complexity, while costs of treatments are high. the disease can cause postponed neurological signs of serious illness, like those seen in ms such as visual disturbances, peripheral neuropathy, cognitive defects, and fatigue. due to the long course of this disease and resulting severe disabilities, ms is of major health economic relevance. conventional therapies that are used for the treatment of ms include beta interferons , immunosuppressants , monoclonal antibodies (natalizumab) and corticosteroids . however, utilizing these treatments long-term may be associated with an increased risk of depression, anxiety, heart damage, pneumonia, and serious and life-threatening diseases such as progressive multifocal leukoencephalopathy (pml) . past research has shown that cell-based therapies hold a potential for cns repair and may be protective from inflammatory damage after injury . cell transplantation therapies play an important role in promoting remyelination and preventing demyelination of the axons . earlier studies have shown improvement in blurred vision, stamina, appetite, tremors, balance, and speech after receiving human embryonic stem cell (hesc) therapy . an improvement in patients affected with either ms or ld has also been previously reported . in these studies, we have reviewed genetic descriptions of ms in our autoimmune disease, based on recent findings, and have also reviewed recent findings on immunotherapy and cellular substitution using stem cells.

Methods

Surveying different articles related to the subject in recent years with using several internet search engines like google chrome, pubmed, and scopus

Results

For the treatment of multiple sclerosis (ms), cell-based treatment with cns repair potential is superior to previous conventional therapies, as well as immunotherapy-related therapies such as monoclonal antibodies or long-term antidepressants, cause injury. heart disease and pneumonia, as well as life-threatening and serious life-threatening diseases such as advanced pml (multivariate lymphoma). recent studies from recent studies have shown that improvement in visibility in vision blurred, endurance, appetite, tremor, balance and speech has improved after receiving human embryonic stem cells (hesc).

Conclusion

In summary, by studying recent papers, it can be concluded that human embryonic stem cell transplantation is more effective than drug-dependent treatments and immunotherapy for the treatment of multiple sclerosis; in addition, improvement in vision, vibration , balance maintenance is also a medical benefit of using embryonic stem cells for ms. immunotherapy is also considered as an overhaul, and it does not work well for all patients. economically, treatment with human embryonic stem cells is safer and imposes a lower financial burden on the health sector of the community.

Keywords

Immunotherapy, multiple sclerosis, mesenchymal stem cells, autoimmunity, immunopathogenesis

A review of cancer treatment methods

Niloofar Afrazeh,[1,*]

1. Islamic Azad University of Dezful

Abstract

Introduction

cancer is one of the most common diseases in recent years and has infected many people. cancer in most cases results from a mutation or an abnormal activation of cellular genes that control cell growth and mitosis. this process causes uninterrupted growth and the cell goes out of the apoptotic state. the increasing growth of the disease is a huge challenge for researchers, which will make them discover different methods.

Methods

To compile this article, we use different databases for gathering information, including the science direct and scopus and wikipedia databases.

Results

According to the results of the review of articles among cancer treatment methods, combined chemotherapy, the use of chemotherapy plus hyperthermia, can be an effective treatment for cancer. the use of nanoparticles in hyperthermia has a significant role in enhancing drug function and eliminating cells. cancer research. studies in various studies show that there is a significant difference between therapeutic approaches with and without hyperthermia, and this method has no side effects on the body.

Conclusion

The use of hyperthermia induces more tumor sensitivity than other methods. nowadays this method is used, for example, to treat breast cancer tumors. this method is still not fully understood and can not be used to treat all tumors, however, it can be very effective and efficient in combination.

Keywords

Cancer, hyperthermia,chemotherapy

A review of clinical impact of endoscopic ultrasound staging in rectal cancer

Amir Hasanvand,[1,*] Zeynab yaberi mohammad,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Endoscopic ultrasound (eus) is a highly useful technique for local staging of rectal cancer, as preoperative staging determines the type of surgery performed and whether preoperative neoadjuvant chemoradiation is needed. eus may alter patient management in relation to surgical candidacy, extent of resection, and/or radiation therapy field.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

Savides et al, summarized the indications for eus in rectal cancer after a review of the literature and of potential impact, based on t stage. indications for eus in rectal cancer include: (i) determination suitability for endoscopic mucosal resection or trans anal excision (if the lesion is t1 by eus) in a large polyp or small rectal cancer; (ii) determination of whether preoperative chemotherapy and radiation is required in a large rectal cancer (t2: radical resection; t3â€“4 or n1: preoperative chemoradiation followed by radical resection); (iii) surveillance after surgery for rectal cancer. harewood et al. have published multiple studies on the clinical impact of eus in rectal cancer. they concluded that preoperative staging with eus results in more frequent use of preoperative neoadjuvant therapy than if staging was performed with ct alone. an evidence-based consensus statement on the role and application of endosongraphy for rectal cancer staging in clinical practice was published in 2008, as previously discussed. most rectal cancers present at an advanced-stage t3 and/or n1 stage (75%). accurate assessment of these groups is important for those patients eligible for preoperative chemotherapy and radiation protocols. eus can assess the crm for anteriorly located tumors by assessing the extent of tumor involvement of the mesorectal fascia. the distance from the tumor to the crm is an important predictor for recurrence of rectal cancer after surgery. the relation of tumor edge to the circumferential margin is an important factor in deciding the need for neodjuvant treatment and prognosis. sphincter-saving trans anal excision of an early (t1n0) lesion can be performed instead of an abdominoperineal resection, which can be reserved for more advanced lesions that have penetrated into the muscularis propria or beyond. however, determination of malignancy within

a large adenoma at the level of the anal sphincters may be technically very difficult, due to artifacts. in another study, on clinical impact in rectal cancer, eus staging information changed the surgeonâ€™s original treatment plan based on ct alone in 31% of patients.

Conclusion

The role of eus staging in colon cancers throughout the rest of the colon is less clear, as these patients would undergo laparotomy and resection anyway, if there were no distant metastases. however, eus may be a helpful staging modality for proximal colon cancers, with the advent of minimally invasive laparoscopic and endoscopic mucosal resection for early lesions, and also if neoadjuvant chemotherapy of locally advanced proximal colon cancers becomes more common.

Keywords

Endoscopic ultrasound, staging, rectal cancer.

A review of cultured epidermal melanocyte transplantation in vitiligo

Shaghayegh Zokaei,[1] Dariush d. farhud,[2,*] Mohammad keykhaei,[3] Marjan zarif yeganeh,[4] Hoda rahimi,[5] Hamideh moravvej,[6]

1. School of Advanced Medical Sciences, Islamic Azad University, Tehran Medical Branch, Tehran, Iran
2. School of Public Health, Tehran University of Medical sciences, Tehran, Iran/Genetic Clinic, Vallie Asr Sq, Tehran, I
3. Tehran University of Medical Sciences Exceptional Talents Development Center Students Scientific Research Center, Teh
4. Cellular and Molecular Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medica
6. 8. Skin Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

The color of the skin is highly heritable but can be influenced by the environments and endocrine factors. many other factors, sometimes destructive, are also involved in the formation of skin color, which sometimes affects pigmentation patterns. vitiligo is an autoimmune hypopigmentation painless disorder with appearance of white patches and psychological effects on patients. it is a disease in which melanocytes of the skin are destroyed in certain areas; therefore depigmentation appears. several therapeutic methods have been used to return the color of skin in vitiligo. these methods include non-invasive treatment and surgical techniques. among all these therapies, cellular cell transplantation is an advanced procedure in regenerative medicine, which, by extraction of melanocytes from normal skin and then their cultivation in the laboratory, provides us with a large number of these cells, the transplanting of which to depigmentation areas stimulates the site to irreversibly produce melanin. also, the transplantation methods of these cells have been evolved over many years and the methods of producing blister have been changed to the injection of these cells to the target sites. in this review, autologous cultured melanocyte transplantation has been considered to be the most viable, safe, and effective method in the history of vitiligo treatments.

Methods

This is a review article and although the method of autologous cultured melanocytes transplantion is fully described for the treatment of vitiligo, it does not include materials and methods.

Results

This is a review article, and we studied 61 articles on vitiligo and its therapeutic approaches, and we found that cultured melanocyte transplantation could be an effective way of treating this disease in the future.

Conclusion

In summary, cellular transplantation has been a unique surgical technique in the last few decades to treat stable vitiligo in patients who did not respond to different therapies such as pharmacologic therapy, immunotherapy, phototherapy, photochemotherapy, and mini grafting. in many studies, more than 50% success has been observed, except for poor results in fingers, knees, and elbow areas. sustainability of this disease is an important factor in using this method because the presence of stimulant factors leads to a lack of proper response to this therapeutic approach. in this method, melanocytes are isolated from normal human skin and cultured in the medium then transplanted to recipient vitiliginous area, so we can cover large vitiliginous areas by using only a smaller donor skin, unlike the non-culture method that covers more limited parts. also, today due to the newer methods of sampling and transplantation, the complications of this therapeutic approach are less, for example, using lasers or syringe injection. there is no significant and statistical difference in this method of treatment between children and adults, so we can use this method for both groups. however, it is still possible to consider cultured melanocyte transplantation as the most viable method for the treatment of vitiligo. â€*f*

Keywords

Vitiligo, melanocyte, melanocyte transplantation, autologous cultured melanocytes

A review of drug delivery systems based on hydroxyapatite

Fatemeh Asjadi,[1,*]

Abstract

Introduction

A wide variety of nanostructures are used for drug delivery purpose including liposome, polymeric nanostructures, carbon nanostructures, drug based nanostructures and ceramic nanostructures. in recent years, hydroxyapatite (hap) has attracted considerable attraction to be used in bone scaffold as well as drug delivery systems. the present review is a survey of recent works concerning hydroxyapatite as a superior candidate for drug delivery systems.

Methods

The present review article focuses on different hap based systems used for drug delivery and is organized in sections that firstly deal with properties of hap makes it appropriate as drug carrier with special emphasize for cancerous parts and bone implanted zones. secondly, different techniques in which hap used as drug carrier are considered. this part contains the various recent studies to expose the benefits for using hap in drug delivery systems and finally the conclusions are mentioned.

Results

Applications of hydroxyapatite in drug delivery hydroxyapatite is the main organic constituent of bone tissue. among various ceramics hydroxyapatite (hap) has received a great deal of interest for drug delivery applications because of several desirable factors such as excellent biocompatibility, biodegradability, bioresorability, osteogenisis, osteoconductivity and osteoinductivity and low solubility. the solubility of ha can be controlled through the substitution of different types of ions. moreover, dissolution of ha is a ph-sensitive. it starts to dissolve in low ph medium, which is typically found in cancerous cells. this enables drugs to be delivered to specific targeted cancerous zones. in addition, recent studies revealed the anticancer properties of hydroxyapatite particles. hap has antiproapoptotic and antiproliferative effects on cancer cells and especially it has affects in metabolic stability of the cancerous cells. moreover, hap is an appropriate carrier for antibiotics necessary for bone replaced zones. drugs could be loaded to hap by either in situ or ex-situ methods. in former method specific process should be adopted so that the drug remains unchanged. coprecipitation and micro-emulsion are better suited to be used for in situ drug loading. ex-situ method is loading the drugs on the surface of hap by absorption and consequently the capacity of ex-situ method is much less than in- situ. the technics of using hap in drug delivery system include the following: 1) loading the drug on the synthesized scaffolds: approximately the 50% of infections acquired in hospitals are associated to implants. incorporation of antibiotics and subsequent local release of it is evidently highly efficient solution for this problem . hydroxyapatite is reputed as superior biodegradable matrix possess excellent biocompatibility and neglect post-surgery implant removal due to complete resorption and also has superior bioactivity in promoting bone regeneration and enhanced osteoconductivity. 2) using the porous powder of hydroxyapatite: porous hap has been

developed to mimic the porous architecture of bone and to provide appropriate space for bone ingrowths. the drug delivery systems based on porous hap have advantage of providing constant and continuous drug levels with limited side effects. it also facilitates the local drug delivery and enables the in vivo administration of short half-life drugs. 3) using coated hydroxyapatite: coating the apatite surface with layers able to conjugate to drugs cause the improvement in drug delivery process. some works have been done about liposome-coated hap and this structure introduced as beneficial structure for therapy of bone disease and anticancer applications. in other work hap surface is coated by layers of polyallyamineand sodium alginate and then this structure was used for alendronate(a drug for osteoporosis healing) loading. 4) using hydroxyapatite as coating materials: hap coatings have drawn much attention due to their excellent biocompatibility, non-toxicity, nonimmunogenicity and superior bioactivity. in addition, its positivity charged surface (ca+2) attracting anion pairing interactions and negatively charged groups, po43-, which promote interactions with protonated amines (-nh3+). due to this superior properties of hap coatings, implant integration without bacterial adhesion could be achieved by combination of antibiotics with hap coating.

Conclusion

The use of hap nanoparticles for the development of new drug delivery systems is a rich and active field of research. for that reason, a common platform of knowledge is necessary to be developed. this review contributes to such multidisciplinary approach to enlightening the hap performance in the field of drug delivery systems.

Keywords

Hydroxyapatite, drug delivery, cancerous cells, implant

A review of nanoparticle applications as carrier systems for sirna delivery into cancer cells. (review article)

Elahe Bandeh-ali,[1,*]

Abstract

Introduction

Small interfering rna (sirna) is an important rnai tool that can be used to treat cancer. the sirna could target several genes involved in the growth, proliferation and apoptosis of cancer cells. in this review, we discussed the safe and effective sirna delivery by nanoparticles in target cells. there are several biological barriers presented to sirna delivery into tumor tissue. sirnas have very short in vivo half-lives. also, its high concentration causes the activation of immune responses and cytokines production in vivo. the plasma membrane is an important barrier for sirna uptake. despite their small size, the negative charge of sirna molecules prevents them from crossing cell membranes. the electrostatic interactions between the negative charge of sirna and cell membrane, reduce its cellular uptake. nanoparticles are used for delivery of the sirna to the target cells. the important advantages of using nanoparticles as a carrier system, include: 1- they protect the sirna from plasmatic nucleases and immune responses (the increased sirna half-life in the blood 2-they are inert and hence non-immunogenic and 3- some can stimulate the production of interferon and natural killer (nk) cells, resulting in activation of antitumor immune enhancing the efficiency of the therapy altogether .

Methods

Recent studies showed that natural or synthetic lipids (e.g., liposomes), cationic polymers (e.g, chitosan) could be able to deliver sirna molecules for gene silencing. for example, yang et al. developed the liposomes protamine chondroitin sulfate (chs) nanoparticles (lpc-np) for anti- egfr sirna delivery in mcf7 breast cancer cells. the lpc-np was modified by peg and t7 peptide. t7, a transferrin-like peptide, is a targeting ligand for transferrin receptor-overexpressed mcf7 breast cancer cells. then the t7 peptide modified lpc-np (t7-lpc/siegfr) were used for anti- egfr sirna delivery in mcf7 breast cancer cells. the epidermal growth factor receptor (egfr) is overexpressed in many cancers and which plays an essential role in the survival of cancer cells. in another study, the pegylated chitosan nanoparticles (peg-cs) were used for sirna delivery into 4t1 cells (the breast cancer cell lines). the poly ethylene glycol (peg) improves solubility and stability of the chitosan nanoparticles in the physical environment, thus the cellular uptake of peg- chitosan /sirna in tumor cells was significantly increased compared to naked sirna (sun et al, 2016). aln-vsp02, the first dual-targeted sirna drug, was developed by the alnylam pharmaceuticals (cambridge, ma, usa). aln-vsp is a lipid nanoparticle formulation containing two sirnas for kinesin spindle protein (ksp) and vascular endothelial growth factor (vegf) (xu and wang, 2015).

Results

The liposomal nanoparticles have been used for sirna delivery into cells. yang et al found that t7-lpc/siegfr is an effective application in transferring the sirna into cells. peg could decrease aggregation of

lpc-np in serum, and t7 peptide could enhance the cellular uptake and the gene silencing effect of sirna. chitosan as sirna delivery carrier has many advantages such as it is nontoxic, nonimmunogenic and biodegradable. sun et al. reported that peg- chitosan nanoparticle is a safe and efficient vector for sirna delivery into 4t1 cells, and sirna loaded in the nanoparticles can inhibit cell proliferation and metastases by gene silencing. aln-vsp02 phase 1 trial for the treatment of advanced solid tumors with liver involvement was initiated in april 2009. the research results showed that the ksp/vegf sirnas bind to both ksp and vegf messenger rnas (mrnas), preventing translation of ksp and vegf proteins. silencing of vegf and ksp plays an important role in inhibiting cell growth and inducing apoptosis of cancer cells.

Conclusion

Delivery of sirna to the cancer cell is the most challenging step. the results of this review suggested that nanoparticles could be an effective and safe delivery system for sirna-based cancer therapy. more nanoparticle-based sirna therapeutics is expected to become available in the near future.

Keywords

Sirna delivery, nanoparticles, cancer therapy

A review of the effects of capsicum annuum l. and its constituent, capsaicin, in metabolic syndrome

Setareh Sanati,[1,*]

1. Department of Pharmacodynamics and Toxicology, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Introduction

Metabolic syndrome, a coexisting of high blood glucose, obesity, dyslipidemia and hypertension, is an important risk factor for cardiovascular disease occurrence and mortality. recently, there is a rising demand for herbal drugs which have less adverse effects and have shown more beneficial effects in comparison with synthetic options. red pepper, with the scientific name of capsicum annuum , belongs to the solanaceae family. the lipid-lowering, antihypertensive, antidiabetic and anti-obesity effects of c. annuum have been demonstrated in several studies.

Methods

in this review, we summarized different animal and human studies on the effect of red pepper and capsaicin on different components of metabolic syndrome which are risk factors for cardiovascular diseases (cvds).

Results

according to these studies, red pepper as well as capsaicin has ability to control of metabolic syndrome and its related disorders such as obesity, disrupted lipid profile, diabetes and its complications.

Conclusion

red pepper has beneficial effects on metabolic syndrome and can decrease the risk of mortality due to cardiovascular diseases, but still more research projects need to be done and confirm its advantageous especially in humans.

Keywords

Capsicum annuum cardiovascular disease diabetes dyslipidemia hypertension

A survey of the mutation of hnf1a gene among diabetic patients in lar

Zahra Zamani,[1,*] Majid yavarian,[2]

1. MSc Genetic , Azad University , Fars, Jahrom
2. Clinical & Molecular Geneticist, Shiraz University of Medical Sciences, Shiraz, Iran â€¡Hematology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Generally, the prevalance of diabetes has been increasing all over the world and asia is at the center of this increase. the percentage of maturity onset diabetes of the young (mody) patients who are under 45 years old (or single gene diabetes) is 2% of all types of diabetes. mody3 is one of the mody types, which is mainly caused by heterozygote mutations of hepatic nuclear factor 1 alpha (hnf1a) in hepatic cells. the aim of this study is to investigate the hnf1a probable mutations in the lar population, in order to identify the role of this gene in diabetes incidence among this population.

Methods

in this study, 30 diabetic patients, including 15 females and 15 males were enroled. whole gene analysis was accomplished by sequencing technique and mutation as well as haplotype anaysis was performed.

Results

In this population, 4 mutations (3 missense mutation) and 13 single nucleotide polymorphismic variation were detected. the frequency of reference allel a and polymorphic allel c in the c.79a>g position was 51.7% and 48.3% respectively, the frequency of reference allel c and allel t in c.293c>t position was 95% and 5% respectively, the frequency of reference allel g and polymorphic allel c in c.864g>c position was 88.3% and 11.7% respectively, the frequency of reference allel g and polymorphic allel a in c.1460g>a position was 46.7% and 53.3% respectively. no significant difference in fasten blood sugar (fbs) amounts was observed between males and females in this population, but the average of age and hba1c was significantly lower in females than males.

Conclusion

genetic pattern of diabetic in the area has a wide spectrum variation and mody3 covers about 10% of all cases.

Keywords

mody, hnf1a, mutation

A-366 induces cell cycle arrest and increases adipogenic differentiation potential of rat mesenchymal stem cells

Hedyeh Khanban,[1,*] Hedyeh khanban,[2]

1. Department of Animal Sciences and Biotechnology, Faculty of Life Sciences and Biotechnology, Shahid Beheshti University
2. Department of Biology, Ayatollah Amoli Branch, Islamic Azad University, Amol, Iran

Abstract

Introduction

Epigenetic mechanisms such as histone methylation are considered as one of the most important mediators that control msc behaviors such as proliferation, senescence and differentiation. g9a, a histone methyltransferase, have recently generated intense attention as potential target for controlling many diseases such as cancer. the aim of the present study was to evaluate the effect of in vivo administration of a-366, a g9a inhibitor, on proliferative and differentiation capacity of bone marrow-derived mesenchymal stem cells (bm-mscs).

Methods

Rat bm-msc was treated with a-366 in vitro and then their proliferation and differentiation potential were analyzed using flow cytometry, population doubling time, and colony forming assay, oil red and alizarin red staining and real-time pcr. next, g9a was inhibited in vivo using intraperitoneally administration of a-366, and then bm-msc proliferation and differentiation behaviors were evaluated.

Results

We found that in vitro treatment of bm-mscs with a-366 didnâ€™t affect their proliferation behavior as determined by calculating population doubling time and analysis of cell cycle. however, a high dose of a-366 increased pdt and induced cell cycle arrest. interestingly, in vitro treatment of bm-mscs with a-366 enhanced adipogenesis and reduced osteogenesis as determined by oil red and alizarin red staining, respectively. on the other hand, colony formation assay of bm-msc at primary culture showed that in vivo administration of a-366 reduced the colony formation capacity of bm-derived cells. moreover, pdt of bm-msc isolated from a-366 treated rats was higher than control, especially in earlier passages. more importantly, bm-msc isolated from a-366 treated rats showed higher adipogenic capacity than control at earlier passage as determined by expression of adipocyte specific genes and oil red staining. whereas, osteogenic propensity of bm-msc isolated from a-366 treated rats was lower than control, especially at lower passage.

Conclusion

Our results suggest that the epigenetic modifier such as a-366, which seems to be a therapeutic approach for controlling diseases such as cancer, might also influence the proliferation and differentiation capacity of mscs both in vitro and in vivo. moreover, epigenetic modifying chemicals seem to be a good strategy to manipulate msc expansion rate, differentiation propensity, as well as to efficiently use them in cell-based therapy and tissue engineering.

Keywords

Bm-mscs, g9a, adipogenesis, osteogenesis, a-366

Aberrant subcellular localization patterns of p16ink4a in colorectal epithelia in the adenocarcinoma, adenoma and non-neoplastic tissue samples

Enam alhagh Charkhat gorgich,[1] Zahra heidari,[2,*] Hamidreza mahmoudzadeh-sagheb,[3]

1. Department of Anatomical Sciences, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
2. Infectious Diseases and Tropical Medicine Research Center, Zahedan University of Medical Sciences, Zahedan, Iran
3. Infectious Diseases and Tropical Medicine Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

Abstract

Introduction

Colorectal cancer (crc) is one of the most common neoplasms with high mortality at advanced stages worldwide. thus diagnosis of crc at an early stage with sensitive molecular methods is a high priority. the aim of this study was to evaluate p16ink4a subcellular expression patterns in colorectal adenocarcinoma, adenoma and non-neoplastic tissue samples.

Methods

A total of 137 colorectal formalin fixed paraffin-embedded tissue blocks from the pathology archives of ali-ebne-abitaleb central hospital, zahedan, iran, were examined in three groups: adenocarcinoma (n= 63), adenoma (n= 38) and non-neoplastic (n= 36). the subcellular expression pattern was determined by immunocytochemistry. data analysis was performed using kruskal-wallis and fisher exact tests with the significance level set as pË,0.05

Results

p16ink4a subcellular localization was observed in three different patterns, nuclear+cytoplasmic (73.33%), cytoplasmic (13.33%) and nuclear (13.33%). in most samples, nuclear+cytoplasmic was the predominant subcellular pattern. however, a significant difference in p16ink4a subcellular expression patterns was observed along the non-neoplastic, adenoma, adenocarcinoma sequence (pË,0.001). an association with the histological tumor type was also noted (p=0.021).

Conclusion

Considering variation in localization of p16ink4a under different pathological conditions, p16ink4a night be sensitive prognostic biomarker for benign colon lesions. its use may improve strategies for screening, prognostic assessment and management of patients with crc.

Keywords

Colorectal cancer- p16ink4a- immunohistochemistry- localization- aberrant expression

Acanthamoeba and understating of risk factors between contact lens wearers

Mehdi Noorisadeghi,[1,*]

1. Shahid beheshti university of medical science

Abstract

Introduction

Acanthamoeba is free living protozoa that cause serious infection in the eye named acanthamoeba keratitis(ak). this infection could lead to ulceration and with late diagnosis maybe blindness. nowadays ak is more common rather than past. ak in more common in contact lens users due to poor hygiene and its growing among contact lens users. acanthamoeba is very challenging in control and disinfect. it has two walls cyst. five species of these free-living amoebae have been reported to cause keratitis. these are: a. polyphaga, a.castellani, a. hatchetti, a. culbertsoni and a. rhysodes. acanthamoebae are present in freshwater, brackish water and seawater bodies. nearly 85% of acanthamoeba cases occur in contact lens wearers, and a primary risk factor for developing ak is exposing contact lenses to water. unfortunately most of the laboratory tests informed that non of the contact lens disinfection solutions in iranian market have strong effect on acanthamoeba cysts, according to my research in fact not just in iran but all famous solutions such as renu, opti free and light, dont have sufficient effects on killing cysts of acanthamoeba except those with h2o2 and they are not common and famous between contact lens wearers due to harder handling and two step neutralizing. avoiding tap water exposure when wearing contact lenses is important. this brings me to exam contact lens wearers awareness about these serious issues. i exam it with questionnaire between 100 patents. with 5 questions:_ if they ever expose the contact lens to water by rinsing or storing in water, wearing contact lens while showering and swimming and how they behave with contact lens storage case. the purpose of this study is to determine how dangerous acanthamoeba is and prevalence of risky behaviors among contact lens wearers.

Methods

100 participants who were my patients were asked about exposing their lenses to water and their understanding of risks that associated with these behaviors. searching in articles about contact lens disinfection solutions. about acanthamoeba keratitis and water exposure behaviors among contact lens users.

Results

With questionnaires it appears 86 percent of 100 contact lens wearers do at least one of the 5 risky behavior and exposing their contact lens to water by showering, swimming or rinsing it. and 65 of 100 didnt know that tap water contaminated with such resilient microorganisms like acanthamoeba. 83 percent rinse and wash their lens storage case with water. 97 percent didnt know their solutions is not capable of killing some microorganisms like acanthamoeba and 96 of them said if they know more about the risk of acanthamoeba keratitis they do better hygiene.

Conclusion

We as optometrists or eye doctors should aware every patients about acanthamoeba and this concept that tap water has microorganisms could infect their eye. although we have a lot of microbial keratitis between contact lens wearers but we dont have good understanding between contact lens wearers about risk factors. i think we should also aware people about their contact lens solutions efficacy. most of the contact lens wearers know a little about such a resilient and dangerous microorganisms like acanthamoeba in their environment and they said if they do know about it they will do better contact lens care.

Keywords

Acanthamoeba keratitis, water exposure, contact lens solutions

Adiponectin and diseases

Adeleh Dastres,[1] Najmeh tehranian,[2,*]

Abstract

Introduction

Adipose tissue has been recognized not only as a reservoir of energy-rich molecules but also has an important endocrine organ producing cytokines called adipokines such as adiponectin which has several effects on the reproductive system that was discovered in 1995,adiponectin is 30-kda protein of 244 amino acids with at least to receptors,is almost exclusively produced by adipose tissue,it has several impacts such as insulin sensitizing, anti-inflammatory, anti-sclerotic, anti-apoptotic effect and it has an important role in normal function and health or disease of reproductive organ.

Methods

The design of the study is a literature review. we search google scholar, pubmed and science direct database from 2005 until 2018. identified studies that evaluated the adiponectin and disease

Results

Abnormal level of adiponectin level associated with obesity, type 2 diabetes mellitus, stroke, metabolic syndrome, hypertension, dyslipidemia, cardiovascular disease, myocardial infarction, non-alcoholic fatty liver disease, kidney and pulmonary disease, endometrial hyperplasia, pco, endometriosis, recurrent miscarriage. it has the protective effect against cancer by enhancing of caspase and apoptosis process of tumoral cells and antiproliferative effects, the decrease of adiponectin can be a risk factor for endometrial hyperplasia and endometrial cancer, ovarian cancer, pco, recurrent miscarriage and endometriosis.

Conclusion

Adipose tissue has been recognized not only as a reservoir of energy-rich molecules but also has an important endocrine organ producing cytokines called adipokines such as adiponectin,it has several impact such as insulin sensitizing,anti-inflammatory, anti-sclerotic, anti-apoptotic effect and it has important role in normal function and health or disease of reproductive organ, abnormal level of adiponectin level associated with several complication such as obesity , type 2 diabetes mellitus ,stroke ,metabolic syndrome,hypertension,dyslipidemia, cardiovascular disease, obesity-related cancers such as colorectal cancer, postmenopausal breast cancer ,ovary and endometrial cancer, therefore decrease of adiponectin can be a risk factor for endometrial hyperplasia and endometrial cancer, ovarian cancer, pco, recurrent miscarriage and endometriosis, it seam adiponectin upregulation may be a strategy for improving adiponectin related disease, adiponectin can be a promising therapeutic approach for this condition.

Keywords

adiponectin-ovarian-miscarriage-endometriosis-therapeutic

Adipose tissue derived mesanchymal stem cell conditioned media could attenuate brain inflammation in alzheimer model rats

Shima Mehrabadi,[1,*] Elahe motevaseli,[2]

1. Tehran university of medical science
2. Tehran university of medical science

Abstract

Introduction

In alzheimer's disease there is a extensive brain inflammation.studies showed that conditioned media derived from adipose tissue mesanchymal stem cell (ascm) has ant-inflammatory effects. for this reason we used it to attenuate inflammation in alzheimer model rats.

Methods

For induction alzheimer we used intrahyppocampal injection. then we injected i.p 0.2ml conditioned medium for 7 days in rats. in 7th day we extracted brain and made slice then measured tnf-a and il-1b as inflammatory factor via elisa

Results

We observed that in alzheimer model level of tnf-a and il-1b increased and in treatment group this factors decreased.

Conclusion

This study showed that ascm could reduce inflammation in alzheimer.

Keywords

Alzheimer

Advances in tissue engineering, using stem cell, and polimers synthetic accelerate the treatment of pathologies of peripheeral nervous.

Saeed Abbasi,[1,*] Seyed hesam seyed hosseini,[2] Roya nazemi,[3]

1. student if master of science of tissue engineering, department of medical engineering central tehran branch,islamic azad univercity,tehran,iran
2. student if master of science of tissue engineering, department of medical engineering central tehran branch,islamic azad univercity,tehran,iran
3. student if master of science of tissue engineering, department of medical engineering central tehran branch,islamic azad univercity,tehran,iran

Abstract

Introduction

Considering that the peripheral nervous system ability to reconstruct the spontaneous, but there are damage great need of new methods. injury to the nervous lives of millions around the world, under the radius of the cover. quality of life will decrease, and issues related to economic and social problems to follow.

Methods

Track and study different studies and summarize these studies for how to and how to efficiency of stem cells together with polymers, synthetic in order to improve the quality of treatment.

Results

From a variety of the benefits of stem cells can be used to differentiate them to the cells of schwann, making the molecules of extracellular matrix and the formation of the laver of myelin noted.for whatever the better features of the cells to treatment using polymers, synthetic in the construction of scaffolding, it is recommended that they combine the advantages of these polymers with cells in order to increase the efficiency of the scaffold in the direction of mend and rebuild damaged tissue.

Conclusion

For the treatment of pathologist of the nervous benefiting from the stem cells and the benefits of polymer synthetic that can combine the benefits of both the role of improving the nerve damage will increase and ultimately increase your quality of life will bring.

Keywords

Tissue engineering, synthetic polymers, stem cells, schwann cell.

Aerobic exercise is a strategy for preventing cardiovascular disease in obese children

Mehdi Kushkestani,[1,*] Bakhtiyar tartibian,[2]

1. 1Associate professor of Pathology and Corrective Movement Department
2. 2senior student of applied sport physiology

Abstract

Introduction

According to modern lifestyle and sedentary behaviors, the prevalence of obesity in children is being increased rapidly. on the other hand, many cardiovascular risk factors such as cholesterol and high blood pressure are rooted in childhood obesity. the aim of this study was to evaluate lipid profile after 12 weeks of moderate intensity aerobic exercise in obese girls.

Methods

The research method was semi-experimental with pre-test and post-test, in which 19 girls with aged between 6 to 12 years were participated voluntary. the endurance training program was performed for the period of 12 weeks. serum levels of cholesterol and triglyceride were collected and recorded in fasting and post- exercises intervention using calorimetric enzymatic methods.

Results

Statistical analysis showed that triglyceride serum levels and lipid percentage decreased significantly after 12 weeks of aerobic training ($p > 0.05$). but there was no significant change in cholesterol serum levels ($p = 0.487$).

Conclusion

Research findings indicate that moderate-intensity aerobic exercises improve lipid profile and body composition, which plays a vital role in prevention of cardiovascular disease in adulthood.

Keywords

Physical activity, endurance, lipid profiles, hypertension, obese girls

Albumin as a nanocarrier for cancer theranostics (review article)

Fatemeh Hashemi,[1] Nasrin mohajeri,[2] Mohammad pourhassan moghaddam,[3] Nosratollah zarghami,[4,*]

1. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran.
2. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran.
3. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran.
4. 1)Department of Clinical Biochemistry and Laboratory Medicine Tabriz university of Medical Sciences

Abstract

Introduction

In the last decade, although medical progress has been attained various approaches of the cancer therapy and diagnosis. however, cancer remains the main cause of death. nowadays, a method being developed to cancer treatment uses nanoparticulate delivery systems that need to some macromolecule such as albumin. albumin-based nanocarrier systems indicate an attractive strategy, that be used in therapeutic application and diagnosis of different disease and disorders. several binding sites of albumin are major option to bioconjugation of drug, ligand, peptide, antibody and oligomer. high-affinity binding, low toxicity, antiimmunogenicity, easy biodegradability and high stability are principal choice to use of albumin as a nanocarrier.

Methods

The size distribution and the morphology of the albumin bioconjugeted nanoparticles were analyzed by transmission electron microscopy (tem), dynamic light scattering analysis (dls) and zeta potential. uv-visible absorbance spectroscopy was used to study the conformational changes and stability of the albumin. the conjugated agents to albumin nanocarriers were measured by ftir and h-nmr spectroscopies. in vitro cytotoxicity assays were performed by mtt or xtt assay on different cancer cell lines. loading and encapsulation efficiency was evaluated by high performance liquid chromatography.

Results

It was found that albumin nanocarrier with a size of below 200 nm, the diameter of about <15 and zeta potential -30 -+10mv could be suitable for endocytosis. albumin is stable in the ph 4-9 at 600c about 10 hours. therefore amino acid residue with appropriate functional groups such as nh2, ch3 and cooh is unique for linked with targeting agents. the results of toxicity assay showed that cell viability decrease when the apoptotic distinct target species loaded in albumin nanoparticls. according to the findings of chromatography, loading andencapsulation efficiency are about 30-70% ,40-80% respectively, that due to cross-linking and presence of large amount of hydrophobic amino acid in the core of albumin protein.

Conclusion

Albumin is one of the major nanocarriers for cancer theranostics, inflammatory, metabolic and viral disease. the developed albumin conjugates can be used for many different technologies for improving the pharmaceutical and biotechnological sciences. it is excellent nanocarrier for ongoing clinical trials studies.

Keywords

Albumin nanoparticles, bioconjugation

Alcohol use in relation to religiosity and familial support among female students

Sima Afrashteh,[1,*] Haleh ghaem,[2] Abbas abbasi-ghahramanloo,[3] Sadegh kargarian-marvasti,[4]

1. Msc of Epidemiology, Bushehr University of Medical Sciences, Bushehr, Iran
2. Research Center for Health Sciences, Institute of Health, Department of Epidemiology, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran
3. Department of Epidemiology, Faculty of Health, Iran University of Medical Sciences, Tehran, Iran
4. Msc of Epidemiology, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Introduction

Alcohol is the number one toxic substance consumed by people of all age groups, which makes its use a public health problem. college female students are often face independent living and academic challenges that may increase the risk of alcohol abuse. this study, therefore aimed to determine the prevalence of alcohol use and related factors among the female students of bushehr

Methods

This cross-sectional study was conducted in 2016. the randomly selected sample consisted of 573 female university students. data were collected in a survey. a self-administered questionnaire was used to measure alcohol use, cigarette and hookah smoking, sexual behavior and illicit drug use, religious belief, and parental support.

Results

The lifetime, last-year and last-month prevalence of alcohol use was 6.1%, 2.3% and 1.7% respectively. the mean age of the first time of use of alcohol in students who had a history of alcohol consumption during their lifetime was 17.77 Â± 3.34 years. after adjusting for other factors cigarette smoking in the last month (or=6.38), hookah use in the last year (or=4.02), having unsafe sex lifetime (or=4.05), alcohol use among friends (or=4.82) and lifetime illicit drug use (or=4.23) were risk factors but score of religious beliefs (or = 0.96) was a protective factor of alcohol use in student.

Conclusion

Al alcohol consumption prevalence was relatively high among female university students in bushehr. the findings of this research can be used for planning and evaluating interventions by considering risk and protective factors. higher level of religiosity may serve as a preventivfactor in engaging in alcohol use

Keywords

Alcohol, parental support, religiosity, iran

Alice in wonderland syndrome

Reyhaneh Khosravi zadeh haghighi,[1,*] Elaheh malek makan,[2]

1. Zand Institute of Higher Education
2. Zand Institute of Higher Education

Abstract

Introduction

Alice in wonderland syndrome (aiws) is a rare perceptual disorder, chiefly affecting the integration mechanisms among sensory associative cortices that are involved in the development of internal-external relationship. cardinal alteration of aiws is the unbalance between the self-representation and the external world, so that patients with aiws may have an erroneous perception of their body size with respect to the external environment or a rework of the external space to their own body reference. aiws remains a poorly known and probably misdiagnosed syndrome. this variableness in the diagnostic process is due to the fact that no univocally accepted diagnostic criteria for this disease have been made. aiws can occur at any age but mostly in children and it is not solely related to one medical condition but rather can have several causes. however, a link with migraine seems to be suggested by the high frequency of cooccurrence of the two diseases. in this review, we will discuss the original description of perceptual alterations by lewis carroll and will frame them into the main clinical features of aiws as presented in several case reports. a main topic will be the critical review of available classifications. since no clear pathophysiological mechanism for aiws is known, an anatomical study of correlation will be presented considering all cases in which neuroimaging data were available.

Methods

A systematic literature search was carried out in pubmed (until june 2015) using the search terms â€œalice in wonderland syndrome,â€• â€œsyndrome of alice in wonderland,â€• and variants thereof. included were articles in the english, dutch, german, french, spanish, and italian languages. all cross-references were checked systematically. in this article, symptoms of aiws experienced by patients diagnosed with a neurologic, psychiatric, or other medical condition are referred to as â€œclinical,â€• and symptoms of aiws experienced by individuals in the general population who have not sought medical attention are referred to as â€œnonclinical.â€•

Results

Ymptoms of aiws usually resolve spontaneously or after treatment of an underlying cause. in our case, the successful treatment of severe malaria coincided with a complete regression of aiws whose aetiology was poorly-elucidated given the resource constraints. in any case, the good outcome of our patient aligns with previous reports on acute aiws that highlight a limited need for excessive investigation and treatment modalities which are, in passing, predominantly unaffordable in resource-limited primary care settings.

Conclusion

Clinical suspicion of an aiws warrants careful auxiliary investigations and â€“ whenever necessary â€“ treatment. the aiws should not be confused with schizophrenia spectrum disorders and other perceptual disorders, and it deserves to be included in the research agenda of international classifications such as the dsm and icd.

Keywords

Body schema illusion, derealisation, macropsia, metamorphopsia, micropsia

Allantoin improves lipid metabolism related genes expression in methionine-choline deficient (mcd) diet induced nonalcoholic steatohepatitis in mice

Azam Moslehi,[1,*] Mohammad golchoob,[2]

1. Qom University of Medical Sciences
2. Qom University of Medical Sciences

Abstract

Introduction

Background and objectives: nonalcoholic steatohepatitis (nash) is defined by steatosis and inflammation in the hepatocytes that can progress to cirrhosis and possibly hepatocellular carcinoma. however, current treatments are entirely not effective. allantoin is one of the principal compounds in the many plants and has positive effects on cognitive function, glucose metabolism and inflammation. in this study, we evaluated the effects of allantoin on the nash induced animals and involved pathways.

Methods

Materials and methods: c57/bl6 male mice received saline and allantoin as the control groups. in the next group, nash was induced by mcd diet for 8 weeks. in the nash+allantoin group, allantoin was injected 4 weeks in the mice feeding mcd diet. after 8 weeks, the abdomen was excised via midline incision; the liver was immediately removed, washed in ice-cold physiological saline and kept at â€“70 Â°c. histopathological evaluations (hematoxylin & eosine staining) and real-time rt-pcr were performed.

Results

Results: allantoin administration decreased hepatic lipid droplet accumulation. treatment with allantoin downregulated mrna expression of sterol regulator element binding proteins (srebp1c) and fatty acid synthase (fas). peroxisome proliferator-activated receptor (pparÎ±), apolipoprotein b (apo b) and acyl-coa cholesterol acyltransferase (acat1) genes expression increased after allantoin administration.

Conclusion

Conclusion: this study indicated that allantoin could improve animals induced nash by changes in the expression of lipid metabolism related genes.

Keywords

Allantoin, liver, nonalcoholic steatohepatitis, srebp1c, pparÎ±

Alleviating of necroptotic factors in amyloid beta-injected rats after intravenous administration of human adipose derived stem cells (hadscs)

Marjan Shariatpanahi,[1,*] Mina eftekharzadeh,[2]

1. Department of Toxicology & Pharmacology, School of Pharmacy, International Campus, Iran University of Medical Sciences, Tehran, Iran
2. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Alzheimers disease (ad) is a progressive neuropsychiatry disorder that gradually deteriorates memory and behavioral functions. it seems that there is a correlation between necroptosis and various neurodegenerative disorders. the present study was designed to assess rip-1, rip-3 expression as necroptotic factors after intravenous administration of human adipose derived stem cells (hadscs) in alzheimers disease (ad) rat model.

Methods

Thirty-two male rats were used in 4 groups; control, sham, ad rat model, and hadscs treatment group. the hadscs characterization was confirmed by flowcytometry technique. thioflavin s was utilized for detecting aÎ² plaques in ad rat model following injection of hadscs. we used immunofluorescent method for evaluating rip-1 and rip-3 expression.

Results

Statistical analysis revealed that thio-s positive plaques number had a significant increase in ad rats while administration of hadscs significantly decreased thio-s positive plaques number in ad group (###p-value<0.001). we found for the first time that the expression of rip-1and rip-3 increased significantly in ad rat model comparing to the control group and decreased significantly in hadscs treatment group comparing to ad rat model.

Conclusion

According to our results in this study, the mechanism of protective effects of hadscs in ad might be related to reduction of necroptotic markers.

Keywords

Hadscs, rip-1, rip-3, alzheimers disease

Alzheimer's treatment with stem cells

Hamidreza Raeespour,[1,*] Nafise taromi,[2] Sonia daraei,[3] Mahdokht forouzan moheb,[4] Mohamadhasan karimi,[5] Fatemeh mirzaei,[6]

1. Gene Pajoohane Ebne Sina genetic research Laboratory
2. Department of Medical Biotechnology, Faculty of Allied Medical Sciences, Iran University
3. Gene Pajoohane Ebne Sina genetic research Laboratory
4. Gene Pajoohane Ebne Sina genetic research Laboratory
5. Islamic Azad University Tonekabon Branch
6. Gene Pajoohane Ebne Sina genetic research Laboratory

Abstract

Introduction

Alzheimer's disease (ad) is a progressive and neurodegenerative disorder that induces dementia in older people. alzheimer's was first discovered in 1907 by alois alzheime. our focus is on the treatment of ad by stem cells. familial ad presents mainly as the mutation of three genes: the amyloid precursor protein (app), presenilin-1 (ps-1) and presenilin-2. pathologic characteristics of ad are Î²-amyloid (aÎ²) plaques, neurofibrillary tangles (nft) and neurodegeneration. aÎ² peptide is the main constituent of senile plaques, and aÎ² fibrils from pores in neurons have been shown to lead to calcium influx and neuronal death. decreasing amyloid deposits and the use of antioxidant therapies have been shown to have ability of ad progression alleviation. in recent years, cell therapy has provided new therapies for treating it. our focus is on the treatment of ad by stem cells.

Methods

1- we performed a search in pubmed with the following mesh terms: alzheimerâ€™s disease, stem cell therapy, oxidative stress, neurodegeneration 2- the search was narrowed to original articles published in english. 3- we restrict our research to major journal in the field of stem cell research

Results

Esc-derived npcs (neuron progenitor cells) were transplanted into an aÎ²-injured rat model and the escape latency was significantly increased compared to phosphate buffered saline (pbs)-treated controls 2 weeks after the aÎ² injection. the morris water maze test was performed 16 weeks after transplantation, at which time the escape latency was found to have significantly decreased when compared to controls. moreover, esc-derived npcs have been reported to be able to differentiate into astrocytic and neuron-like cells in vivo. these results suggested that esc-derived npcs ameliorated memory impairment. although escs result in teratoma formation, it has been shown that esc-derived npcs can treat neurodegenerative diseases.

Conclusion

Aging is the most important cause of ad. for the most part, pharmacological interventions are aimed at relieving the symptoms of ad, but stem cell therapy not only has the potential to generate new neurons and replace damaged neurons but also to modulate the immune system with further clarification of the mechanisms by which ad progresses, stem cell therapies may well prove to be both safe and effective treatments. in time, more advanced stem cell therapies hold the potential for the clinical treatment of this debilitating disease.

Keywords

Alzheimerâ€™s disease, stem cell therapy, oxidative stress, neurodegeneration

Amplification and bioinformatics studies on iml-leb: lebestatin like peptide from iranian macrovipera lebetina snake

Shabnam Malekiha,[1,*] Hoda ayat,[2] Ali mohammad ahadi,[3]

1. Shahrekord university
2. Shahrekord university
3. Shahrekord university

Abstract

Introduction

Angiogenesis, the development of new blood vessels, is a fundamental physiological process that promotes embryonic development, tissue repair and also promotes chronic inflammation, tumor growth and tumor metastasis. blood vessels facilitate tumor metastasis by serving as conduits for the transport of tumor cells to new sites. angiogenesis are regulated by integrins, which are members of a family of cell surface receptors and extracellular matrix proteins are their ligands. some integrins promote endothelial cell migration and survival during angiogenesis. several integrin-targeted therapeutic agents are currently in clinical trials for cancer therapy. snake venoms are natural sources of various biologically active compounds, with the major physiological role of killing and predigesting a prey. many viper venom proteins have been characterized as non-toxic, although displaying interesting biological properties. a number of snake venom proteins have the ability to interact with integrins. among these are the disintegrins, a family of small, non-enzymatic, and cysteine-rich proteins that found in the venom of numerous snake families. disintegrins can target specific integrins and therefore they could interfere in important processes involved in carcinogenesis, tumor growth, invasion and migration. lebestatin, a member of the lysine-threonine-serine (kts)-disintegrin family, was purified from macrovipera lebetina snake venom. it is a single-chain polypeptide composed of 41 amino acids. lebestatin interacts specifically with the Î±1Î²1integrin. it was thus able to inhibit both adhesion and migration of cancer cells. this disintegrin also affected adhesion and migration of endothelial cells and exhibited an anti-angiogenic effect. so far, a few studies has been performed on component of iranian snake venom. the purpose of this study was to find and reproduce the coding gene of the lebestatin of the iranian species macrovipera lebetina.

Methods

Snake was collected by expert, the toxic glands was isolated and kept in -70 centigrade, until to extract rna. to design the primer, the homologue cdna sequence with lebestatin was derived from the national center for biotechnology information, then nucleotide and peptide blast was performed, and similar sequences were identified. depending to the nucleotide similarity, the forward and reverse primers were designed using gene runner software to amplify the gene. subsequently, the extraction of rna from the snakes gland was done. cdna was constructed by reverse transcriptase-pcr on rna with reverse transcriptase and oligo-dt primers. the pcr reaction was performed with forward primer complementary to signal peptide and reverse primer for the replication of lebestatin like gene. nested pcr was done by

leading nesting primer based on mature peptide and reverse primer on reproductive sequence. after the reaction, 3 ml of the product to was investigated on 1% agarose gel and then was sequenced. bioinformatics studies were conducted to examine the second structure, using the pci-ss and i-tasser servers. the peptide was then modeled using modeller 9.19 software.

Results

In this study we report the sequence of the iranian macrovipera lebetina lebestatin gene for the first time from an iranian snake. the coding sequence of lebestatin gene include signal peptide, propeptide and mature peptide, involved 324 bp. the product of nested pcr contained mature peptide was 123 bp. the sequence analysis showed that iranian macrovipera lebetina lebestatin has a high sequence homology with known venom disintegrins such as lebestatin(macrovipera lebetina) obtustatin (vipera lebetina obtusa), viperistatin (vipera palestinae). the highest sequence identity was observed with kts motif-containing short disintegrins. indeed, iranian macrovipera lebetina lebestatin differs from lebestatin in only two amino acids flanking the kts loop and/or in the c-terminal part.

Conclusion

Disintegrins have numerous applications in studies on platelet thrombosis, endothelial cell apoptosis, migration and angiogenesis. here, we report the purification of a novel short disintegrin (41 amino acids), lebestatin, isolated from iranian macrovipera lebetina venom. the superimposition of the structural models of iranian macrovipera lebetina lebestatin with the 3d structure of lebestatin and obtustatin shows that they share similar conformational features. the main structural differences between the three peptides are located in the loop that contains the ktslts (iranian macrovipera lebetina lebestatin and obtustatin) or ktsrts (lebestatin) motif, and the c-terminal domain. (psfpa41-cooh, psypg41-cooh, and plypg41-cooh for iranian macrovipera lebetina lebestatin, lebestatin and obtustatin, respectively).

Keywords

Angiogenesis; integrins; disintegrins

An association study between tnf-a polymorphisms and increased risk of prostate cancer

Saeideh Alidoost,[1] Mohsen habibi,[2] Farkhondeh pouresmaeili,[3,*] Eznollah azargashb,[4]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.
2. Central Laboratory, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran-Iran
3. Infertility and Reproductive Health Research Center (IRHRC), Shahid Beheshti University of Medical Sciences, Tehran, Ira
4. Department of Social Medicine, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Prostate cancer, the second most common cancer in the overall men and the third in iranian men, and benign prostate hyperplasia (bph) are heterogeneous disorders with high prevalence among men. we are looking for new biomarkers enable us to detect the disease at early stages. tumor necrosis factor-alpha (tnf-Î±) polymorphisms may play any role in controlling the progression of prostate cancer, with change in expression level. the purpose of this study was to investigate the relationship between tnf-Î±-308g>a (rs1800629) polymorphism and prostate cancer.

Methods

In this case-control study, 320 peripheral blood samples including 100 pca patients samples, 110 samples from bph patients and 110 samples from healthy individuals were recruited from shohada-e-tajrish hospital, tehran- iran. all participants provided written consent and a personal questionnaire covered age, smoking consumption, body mass index (bmi), psa level, family history of cancer and detailed medical history. genomic dna was extracted by salting-out method, the tnf-Î± promoter rs1800629 snp was analyzed by means of specific primers and tetra-arms pcr, the products were analyzed on 2% agarose gel and the genotypes were determined based on the presence or absence of the desired bands. chi-square (Ï‡2) tests was applied to assess statistically significant differences between subjects. binary logistic regression analysis was used to compute the odd ratios (ors) with 95% confidence intervals (cis). deviation of the genotype frequency from the hardy-weinberg equilibrium was tested using chi- square analysis. p-values of less than 0.05 were considered as statistically significant. all statistical analysis were done using ibm spss statistics version 25.

Results

In the present study, demographic characteristics of all three groups were studied. the relationship between smoking and genotypes gg and ga in rs1800629 showed there was no significant difference between bph and normal groups, while in the cancer groups there was a significant difference between the

two genotypes (p=0.001). there was no significant difference between the two genotypes regarding other traits (p<0.05).

Conclusion

Our results suggest that tnf-Î±-308g/a (rs1800629) polymorphism could be used as a putative biomarker for early diagnosis of prostate cancer. however, this suggestion requires further studies of a larger population.

Keywords

Tumor necrosis factor-alpha, prostate cancer, benign prostate hyperplasia, rs1800629, polymorphism

An overview of methods for biosynthesis of gold nanoparticles

Mohammad Saki,[1,*]

1. Department of nursing, Islamic Azad university doroud branch

Abstract

Introduction

In this paper, the production of nanoparticles of gold as important particles in the field of treatment and drug delivery, its size and its properties by biosynthesis and its comparison with other methods have been investigated.

Methods

Plant parts used for biosynthesis of gold nanoparticles are first washed with distilled water and then chopped into small pieces. then, the extract is boiled in distilled water and purified by various methods such as filtration or centrifugation. then the extract is simply mixed with gold salt and nanoparticles in a single-step process. there is no need to add a stabilizing agent because the existing chemicals are environmentally friendly (the form in plants also acts as a reducing agent as a stabilizing agent. finally, for purification, the nanoparticles can be separated by centrifugation and distilled off with water and collected and stored for future use.

Results

In this paper, by presenting a new method for making nano nanoparticles by plant extracts and examining the effective parameters in determining their characteristics, an attempt has been made to study the biosynthetic method of gold nanoscale.

Conclusion

, the use of natural resources is essential, such as biological systems. biological synthesis of nanoparticles has several advantages over chemical and physical synthesis, such as a simple single-stage, environmentally friendly, suitable for medical applications. in addition, in nanoparticle biosynthesis, addition of any substance as a stabilizer is not necessary because the chemicals in plants act as reducing stabilizing agents themse

Keywords

Gold nanoparticles, plant extract, biosynthesis, green chemistry.

An overview of personalized medicine issues in ovarian cancer

Fatemeh Khodayari,[1,*]

1. Faculty of medicine, Zabol University of Medical Sciences, Zabol, Iran

Abstract

Introduction

Ovarian cancer is the seventh most frequent cancer among women worldwide and the second in developed countries. personalized medicine in ovarian cancer like other diseases refers to a new treatment based on understanding of individual gene and aims to minimize iatrogenic damage and medical expense and reach an optimal therapeutic effects

Methods

For this review, english articles from 2005 to 2018 have been collected using pubmed, google scholar ,scopus and science direct and the search keywords were ovarian cancer and personalized medicine

Results

In the present manuscript, we review the personalized options for optimal treatment choice and dosage and managing the related symptoms to enhance the quality of life of ovarian cancer patients and highlighting the latest clinical trials experience and the current challenges

Conclusion

As the results of this review shows, the usual treatment methods have high side effects and reduce the quality of life, so a new and more targeted solution to control the cancer will be personal medicine

Keywords

Personalized, medicine, ovarian, cancer

An update review about aids and herbal remedies

Fatemeh Khodayari,[1,*]

1. Faculty of medicine, Zabol University of Medical Sciences, Zabol, Iran

Abstract

Introduction

It is estimated that nearly 36.7 million people live with human immunodeficiency virus (hiv) in the world and despite the success of anti-retroviral therapy (art), a safe and effective therapy is still urgently needed and this review wants to introduce herbal remedies and natural products as good candidates for this major global challenge

Methods

This review was conducted using pubmed, google scholar and science direct for english articles from 1998 to 2018 and the search keywords were â€œherbal remediesâ€• , â€œnatural productsâ€• , â€œhiv infectionâ€• and â€œaidsâ€•

Results

This review provides a history of herbal remedies against acquired immune deficiency syndrome (aids) with a particular focus on novel anti hiv plants and the mechanism of their actions and also presents the advantages, disadvantages and sources of each of the introduced plants (more than 50 plants)

Conclusion

As the results of this review shows, herbal remedies represent a strategic force in healthcare action, capable of complementing modern healthcare systems and due to the high cost of the current therapies of aids, candidates of herbal medicine have the potential to come up as drugs and provide a safe, economical and effective therapy for aids

Keywords

Herbal, remedies, aids

Analysis of brca1/2 mutations and performance of manchester scoring system in high risk iranian breast cancer patients: a pilot study

Haniye Jafardokht bonjar,[1,*] Iraj shahreki,[2] Nazanin yousefian miandoab,[3] Yalda khani,[4] Safa shahmorad zade,[5] Mahla sedighi nia,[6]

1. Nurse Student, Young Researcher Club member, Islamic Azad University, Zahedan, Iran
2. Instructor, Department of Children, School of Nursing and Midwifery, Islamic Azad University, Zahedan, Iran
3. Instructor of Medical Surgical Nursing School of Nursing and Midwifery Community Nursing Research Center Zahedan University of Medical Sciences, zahedan , Iran
4. Instructor, Department of surgery, School of Nursing and Midwifery, Islamic Azad University, Zahedan, Iran
5. Nurse, Zahedan University of Medical Sciences, zahedan , Iran
6. Nurse Student, Islamic Azad University, Zahedan, Iran

Abstract

Introduction

Pathogenic mutations in brca1 and brca2 genes account for 20-25% of familial breast cancer. brca1 and brca2 mutation frequencies differ considerably among various geographic regions and ethnicities. most studies have primarily used caucasian populations to delineate the population and family risks associated with germline brca1 and brca2 mutations, leaving patients of other ancestries understudied. as genetic testing for brca1 and brca2 mutations is underused in iran, it is of great importance to be able to describe the mutation spectrum of these genes and subsequently the genetic risks and testing benefits particular to iranian population.

Methods

We designed a pilot study to identify the full spectrum of brca1 and brca2 sequence variations and large single or multi-exonic deletions in 20 iranian breast cancer patients with a high likelihood of hereditary predisposition to breast cancer. manchester score, as a validated scoring system for probability of carrying a brca1/2 mutation, was calculated for all patients to determine the cut-off value for genetic testing in iranian families

Results

two pathogenic [c.4566c>g (p.tyr1522ter), c.1961dela (p.lys654serfs*47)] and one likely pathogenic (c.5153-26a>g) variants in brca1 and two pathogenic variants [c.8165c>g (p.thr2722arg), c.92g>a (p.trp31ter)] in brca2 gene were identified. assuming a manchester score of 20 points as cut-off value to perform brca genetic testing, this scoring system has a sensitivity of 80%, specificity of 60%, positive predictive value (ppv) of 40%, and negative predictive value (npv) of 90%.

Conclusion

considering high cost of testing in iran, it seems that that the cutoff value of 20 points is more appropriate.

Keywords

Analysis. iran. breast cancer

Analysis of il-6 gene expression in nsclc patients

Maryam Ramezani,[1,*] Merat firouzinejhadshirazi,[2] Fatemeh akbarian,[3] Alireza razavi,[4] Besharat rahimi,[5] Ghasem ahangari,[6]

1. National Institute Of Genetic Engineering And Biotechnology
2. National Institute Of Genetic Engineering And Biotechnology
3. National Institute Of Genetic Engineering And Biotechnology
4. National Institute Of Genetic Engineering And Biotechnology
5. Advanced thoracic research center, imam khomeini hospital, tehran university of medical sciences
6. Neuroimmunopsychooncogenetic Group, Department of Medical Genetic, National Institute Of Genetic Engineering And Biotech

Abstract

Introduction

Lung cancer is the most common cause of cancer-related death. lung cancers are generally divided into two major types, small cell lung cancer and non-small cell lung cancer. non small cell cancer (nsclc) tends to grow less quickly than small cell cancer. the chances of curing non small lung cancer are greater if the cancer is diagnosed early. previous studies demonstrated a link between the changes of cytokines expression level and onset of several disorders. interlukin 6 (il-6), as a family of secretory proteins, take part in cell proliferation, differentiation, inflammatory reactions and angiogenesis. with regard to the mentioned effects of cytokines, this study examined changes in expression level of il-6 gene in the peripheral blood mononuclear cells of nsclc patients.

Methods

The peripheral blood mononuclear cells were isolated from the whole blood of 30 nsclc patients and 30 normal controls by ficoll-hypaque gradient method. after the extraction of rna from mononuclear cells, the cdna was synthesized from the concentration 500 ng/Âµl of rna. finally real- time pcr technique was performed by using primer pairs for il6 and Î²-actin as internal control genes.

Results

The outcome of this experiment shows that the relative expression of il-6 receptor gene increased significantly in peripheral blood mononuclear cells of nsclc patients ($p<0.412$).

Conclusion

As indicated by the result, il-6 gene is overexpressed in target group compared to normal controls. this gene is involved in physiological and pathological functions. accordingly, it can be concluded that the development of nsclc might be prevented by targeting and blocking this agent.

Keywords

Lung cancer, non small cell lung cancer, il-6, gene expression analysis

Analysis of p53 gene mutations in fecal dna of patients with sporadic colorectal cancer

Saba Dayemomid,[1] Ebrahim sakhinia ,[2,*] Shahin behrouz sharif ,[3] Mahan narjabadifam,[4]

1. Drug Applied Research Center, Tabriz University of Medical Sciences
2. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
3. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
4. Department of Genetics, Faculty of Natural Sciences, University of Tabriz

Abstract

Introduction

As the second most common cancer worldwide sporadic colorectal cancer (crc) management can be improved dramatically by its early diagnosis using powerful screening methods. molecular analysis of certain gene mutations involved in pathogenesis of crc using fecal dna can bring forth interesting tool on the grounds of its non-invasive sensitive nature and easy applicability p53 as one of the main mutant genes in crc progression plays important roles in molecular diagnosis and crc prognosis and hence its mutations in combination with other frequently mutated genes can be used as sensitive screening tools. the aim of this study was to evaluate the availability of mutation detection from fecal dna and its accordance with somatic mutations in tissue samples.

Methods

Stool and tissue samples were obtained from 50 previously approved crc patients who were going under surgery as routine treatment protocol. total genomic dna were extracted from each sample and p53 gene mutations were detected using sscp method followed by direct sanger sequencing.

Results

Of 50 analyzed patients 14 individuals (28%) demonstrated various p53 gene mutations in tissue samples. the same mutations were detected from fecal dna of patients in 12 individuals that means 85.7% concordance of fecal dna with tissue dna.

Conclusion

Our results indicated that dna from tissue samples can be replaced with fecal dna in mutation detection for crc patients. since it is non-invasive in nature, fecal sample collection would be very desirable and acceptable for patients in molecular screening tests which can in turn increase screening rates and improve timely crc diagnosis.

Keywords

Sporadic colorectal cancer, fecal dna, sscp, p53

Androgen-targeted therapy in men with prostate cancer

Mahdokht Forouzan moheb,[1,*] Mohammad hasan karimi,[2] Hamidreza raeesour,[3] Faranak jamshidian,[4] Nafise taromi,[5] Sonia daraei,[6]

1. department of biology, faculty of basic sciences, north tehran branch, islamic azad university, tehran, iran
2. department of biology, faculty of basic sciences, tonekabon branch, islamic azad university, mazandaran, iran
3. department of biology, varamin pishva branch islamic azad university, varamin pishva iran
4. department of biology, faculty of basic sciences, east tehran branch (ghiamdasht), islamic azad university, tehran, iran
5. iran university of medical sience
6. microbial biotechnology semnan university

Abstract

Introduction

Prostate cancer is the second most common cancer and is the leading cause of death in men. androgen deprivation therapy (adt), specifically surgical or medical castration, is the first line of treatment against advanced prostate cancer and is also used as an adjuvant to local treatment of high-risk disease. androgen deprivation therapy (adt) is foundational in the management of advanced prostate cancer (pca) and has benefitted from a recent explosion in scientific advances. these include approval of new therapies that suppress testosterone (t) levels or inactivate its function, improvements in diagnostic and assay technologies, identification of lower therapeutic targets for t, discovery of the relevance of germline genetic mutations and identification of the benefits of sequential and combination therapies.

Methods

This review discusses the clinical profiles of the most up-to-date options for adt, best practices for managing patients with advanced pca and future directions in therapy. 1.we performed a search in pubmed with the following mesh terms: androgen, prostate cancer, prostate specific antigen, personal medicine 2.the search was narrowed to original articles published in english.

Results

Modern test techniques indicate that bilateral evaluation at a serum t level of about 15 ng / dl compared to the costa riche definition of t <50 ng / dl. evidence suggests that reducing t levels to <20 ng / dl increases patient longevity and delayed disease progression. regular monitoring of t for certain prostatic antigens during treatment is important to ensure the continued effectiveness of t-uptake. new drugs that prevent the production of androgen signals in combination with traditional adts have weakened near-zero activity and improved patient survival and improve (quality of life) qol. when personalizing adt regimens physicians should consider a number of factors including initiation and duration of adt, monitoring of t levels and

psa, the possibility of switching monotherapies if a patient does not achieve adequate t suppression, and consideration of intermittent vs. continuous adt according to patientsâ€™ lifestyles, comorbidities, risk factors and tolerance to treatment.

Conclusion

The management of advanced pca has undergone a revolution science and data in androgen-targeted therapies drugs, in combination with adt, dramatically inhibit the availability of t to the tumor by near complete inhibition of the androgen signaling pathway. additional studies on the benefit of these and other androgen pathway inhibitors in all stages of advanced pca will likely produce similar results and confirm the importance of suppression of t to <20 ng/dl. monitoring of t is essential to ensure success in achievement of this target. as monotherapy, very low levels of t including nadirs less than 5 mg/dl are achieved by some drugs. new products in development are employing novelmechanisms with greater potency or selectivity, orenhanced delivery to further improve on current therapies.

Keywords

Androgen, prostate cancer, prostate specific antigen, personal medicine.

Anti-bacterial effect of redroot pigweed ethanolic and aqueous extract

Hamideh Bakhshayeshan-agdam,[1,*] Fatemeh khodaie,[2] Seyed yahya salehi-lisar ,[3] Gholamreza zarrini,[4]

1. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
2. Department of Animal Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
3. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
4. Department of Animal Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.

Abstract

Introduction

Plants producing various organic compounds via secondary metabolism and many of which compounds have several therapeutic effects and were used in traditional medicine from past to now. natural products are traditionally considered as the rich source of biochemicals and potent bioactivities against a number of diseases. more than 80% of the total worldâ€™s population relies on herbal medicine to meet their primary health care needs. redroot pigweed (amaranthus retroflexus l.) is a weed plant with well-known allelopathic effects. this plant has diverse therapeutic effects such as anti-bacterial and anti-cancer properties due to specific biochemical which involving in its allelopathic interactions as well.

Methods

In order to, ethanolic and aqueous extract of studied plant and disk method and subsequently mic (at different concentration including 1000, 500, 250, 125, 62.5, 31.25, 15.6, and 7.81 Âµl/ml) were used for evaluation of amaranth extractâ€™s anti-bacterial effect. bacterial strains that used in this research were including staphylococcus aureus and escherichia coli.

Results

The mic of redroot pigweed ethanolic and aqueous extract for s.aureus were â‰¥ 250 and â‰¥ 1000 Âµg/ml respectively, but they werenâ€™t evaluable effect on e. coli. both the extracts have shown inhibitory effect against s.aureus and the ethanolic extract posses highest activity against s. aureus (14 mm), while aqueous extract showed low activity against it (10 mm). according to the disk results, susceptibility of s.aureus to redroot pigweed ethanolic extract was more than 70% which was almost equivalent to gentamicin anti-bacterial activity. therefore, redroot pigweed ethanolic extract can be considered in the anti-bacterial applications on s.aureus.

Conclusion

It seems that, gram positive bacteria have more susceptibility to amaranth extract compared to gram negative bacterial strain such as e.coli. accordingly, evaluation of redroot pigweed different extracts such ethyl acetate and petroleum ether anti-bacterial effects on more gram positive, and even gram negative bacteria can provide an accurate view on the anti-bacterial properties of amaranth extract.

Keywords

Anti-bacterial, redroot pigweed, minimum inhibitory concentration (mic), disk method

Anti-ctla4 car t cell: auxiliary treatment in cancers

Alieh Fazeli,[1] Mehran bahreini,[2] Gholam hossein tammadon,[3,*]

1. Shiraz university of medical sciences
2. Iran university of medical sciences
3. Shiraz university of medical sciences

Abstract

Introduction

Based on this point that some of cancers do not respond well to conventional therapy or the possibility of the relapse, immunotherapy is currently under investigation. this is also potentially reduces systemic toxicities and late effects. one of its new branches is treatment with t cells that change their receptor(car t cell). the research on these cells is generally according to design a receptor against a specific tumor antigen. but this review attempts to show that by targeting the treg, as an important immune cell in the tumor microenvironment, can see good effects.

Methods

This review article has been prepared with electronic search based on key words related with the aim of this paper. we use the scientific databases such as scholar, pubmed, science direct, medline and springer. almost all the articles that were used, are for the last 5 years.

Results

According to the studies, changes in tumor environment which inhibits immunsystem are caused the proliferation of malignant cells. one of the immune cells that are beneficial for the progression of the tumor is treg. for this purpose, car t cell is recommended to be designed. at first the leukocytes must be collected by leukopheresis method and then t cell isolated to design car t on them. car is a construct that expresses the receptor against a specific antigen in the tumor. it is difficult way to car t cell design so tils can be isolated from the beginning using existing methods. then these cells are grown in vitro and they will have a receptor against the tumor antigen and will therefore directly affect them. anti-ctla4 receptor in tils alone or in conjunction with an anti-nrp1 receptor are placed which requires their simultaneous expression in tils so that only special types of them that do not produce ifn-Î³ are detected. in addition to the above mentioned, a receptor ccr4 anti-chemokine ccl17, ccl22 within the tumor environment is reguired. after that, cloning and transferring to lentiviruses,then transferring this anti-ctla4 and anti-nrp1 to memory t cd8 + must be done. functionality, cytotoxicity, persistanse and prolifration assay should be evaluated. finally this car t into a patient with a solid tumor injected and simultaneous an anti-pd1 antibody or other drugs that is needed, administered.

Conclusion

Tumor environment factors can be the most important factors in the progression of tumor, metastasis, and suppression of immunity and resistance therapies. therefore, in the method therapeutic care should pay attention to the tumor environment. chemokines are also important factors that can influence tumor immune cell infiltration and regulate angiogenesis, proliferation, and survival of tumor cells. the targeting of chemokines, if accompanied by existing treatments for cancer, can have synergistic effects for immune responses. there are new methods of immunotherapy, including the use of checkpoint inhibitors, bispecific antibodies, and car t cell, each of which can be used in certain conditions. in this review, we try to introduce the effective methods with respect to the tumor and its environment, as a new type of car t cell that will have higher efficacy. many characteristics of the car t cell, such as its sustainability, are being investigated. to improve the stability of t and overcome the t cell exhaustion, it can be used t memory that has better stability and the patient is protected for a longer period against recurring diseases. il-15 and il-12 result in memory phenotypes and increased susceptibility. checkpoint inhibitors against pd1-pdl1 or ctla4 can also be used to further stabilize the t cell within the body. in this study, it is also thought that durability of car t may be high due to the use of t-memory and drug-resistant checkpoint. also toxicity would decrease significantly when the icas9 system was designed to prevent the hyperactivation of t cells. because of the bi-specificity of the receptor, the probability of binding to the non-specific antigen was low. of course, some of the problems with such a treatment are definitely its design, that its probably a lot of cost, because there are certainly many problems with the many factors involved in making a drug.

Keywords

Chimeric antigen receptor, immunotherapy, regulatory t cell, ctla4

Anti-diabetic effects of zinc oxide nanoparticle: a review

Sanaz Alioghli,[1,*] Mahdi bayrami,[2] Elham ghorbani,[3] Danial bajgiran,[4] Atena tazehdel,[5] Milad feyzollahi,[6]

1. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili
2. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili
3. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili
4. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili
5. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili
6. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili

Abstract

Introduction

Diabetes is a common metabolic disorder. it is characterized by metabolic disorders and long-term complications of ocular, renal, neurological, and blood vessels, which are affected by metabolic, genetic and environmental disorders. nanoparticles have different applications due to their amazing properties. for this reason, many physicochemical, biological and hybrid methods are nowadays used to synthesize various types of nanoparticles. the biosynthesis of nanoparticles is due to the fact that chemical and physical synthesis are often costly and polluting the environment.

Methods

To this purpose, we conducted extensive library research and compiled the latest reports of zinc oxide nanoparticles effects on improving blood glucose levels.

Results

Zinc oxide is a versatile semiconductor with a wide band equivalent to ev 3.3. which is used in many fields, such as electronic, optical and piezoelectric devices, transparent conductive materials and solar cells. in addition, zinc oxide nanostructures are one of the promising materials for making biological and chemical sensors due to its interesting and diverse properties, including biocompatibility, non-toxicity, chemical and photochemical stability, optical clarity, electrochemical activity, high electron density and ate. zno is essential in the association of over 300 types of enzymes and plays a key role in diverse biological processes, including glucose metabolism. increases in liver glycogenosis by signaling the insulin route, inhibiting intestinal glucose, increasing glucose absorb in skeletal muscle and adipose tissues, as well as helping to lower serum glucose levels.

Conclusion

In conclusion, zno nanoparticles in diabetes directly affect the expression of certain genes related with the disease in the pancreas, as well as the expression of insulin receptors and ultimately induction of insulin secretion.

Keywords

Diabetes, nanoparticle, zno, glucose

Anti-inflammatory activity of nannorrhops ritichieana h. wendl extract in animal models

Shahrzad Hashemi,[1,*] Zahra mousavi,[2] Jinous asgarpanah,[3] Parvaneh najafizadeh,[4]

1. Department of Pharmacology and Toxicology, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
2. Department of Pharmacology and Toxicology, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
3. Department of Pharmacognosy, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
4. Department of Pharmacology, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Nannorrhops ritichieana is the sole species in the genus nannorrhops in the palm family arecaceae. it is native to south western asia, in the historical region of baluchistan, from the southeast of arabian peninsula east through iran and afghanistan to pakistan. due to the study about the anti-inflammatory effect of the plant phoenix dactylifera that is also in the palm family we were promoted to assess the anti-inflammatory properties of n. ritichieana extract in animal model.

Methods

The acute anti-inflammatory effect of n. ritichieana (50,100 and 200 mg/kg ip), were assessed by carrageenan-induced paw edema method in 30 min, 1,2,3 and 4 hours after carrageenan injection, control and standard groups received normal saline and mefenamic acid. the chronic anti-inflammatory effect of n. ritichieana (100 and 200 mg/kg ip) were assessed by the cotton pellet-induced granuloma method in rats. control and standard groups received normal saline and indomethacin.

Results

In carrageenan test all studied dose of n. ritichieana significantly reduced the paw edema in comparison to the control animals (pË,0.05). anti-inflammatory activity of n. ritichieana (100 and 200 mg/kg pË,0.05) was found to be same as mefenamic acid group. in cotton pellet-induced granuloma n. ritichieana was also effective regarding the transudate and the granuloma formation amount. anti-inflammatory activity of n. ritichieana (100 and 200 mg/kg pË,0.05) was found to be same as indomethacin group.

Conclusion

The results suggest that n. ritichieana has significant anti-inflammatory effects.

Keywords

Nannorrhops ritichieana, extract, anti-inflammatory, rat.

Anti-inflammatory activity of rubiadin in carrageenan induced paw edema method in rat

Atefeh Zarezadeh,[1,*] Zahra mousavi,[2] Jinous asgarpanah,[3] Parvaneh najafizadeh,[4]

1. Department of Pharmacology and Toxicology, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
2. Department of Pharmacology and Toxicology, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
3. Department of Pharmacognosy, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
4. Department of Pharmacology, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Rubiadin is a bioactive anthraquinone with reported antioxidant and antifungal features from the rubiaceae family. we were promoted assess the anti-inflammatory activity of rubiadin using carrageenan induced paw edema method in rats.

Methods

: the acute anti-inflammatory effects of rubiadin (0.3 and 0.5 mg/kg ip) were studied by carrageenan induced paw edema method in 30min,1,2,3 and 4 hr after carrageenan injection. control and standard groups received vehicle and mefenamic acid (30 mg/kg ip), respectively. statistical significance was determined by one-way analyses of variance, followed by the tukey test using graphpad prism 6.

Results

In carrageenan test, all studied doses of rubiadin significantly reduced the paw edema in comparison to the control animals ($p<0.05$). the anti-inflammatory activities of rubiadin (0.5 mg/kg) was the same as mefenamic acid (30 mg/kg).

Conclusion

The results suggest that rubiadin has significant anti-inflammatory effects.

Keywords

: rubiadin, anthraquinone, anti-inflammatory activity, carrageenan induced paw edema method, rat.

Anti-inflammatory and anti-granuloma activity of rubiadin in rats

Romina Chitsaz,[1,*] Zahra mousavi,[2] Jinous asgarpanah,[3] Parvaneh najafizadeh,[4]

1. Department of Pharmacology and Toxicology, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
2. Department of Pharmacology and Toxicology, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
3. Department of Pharmacognosy, Faculty of Pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran (IAUPS).
4. Department of Pharmacology, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Rubiadin is a bioactive anthraquinone isolated from the rubiaceae family, including morinda citrifolia. antioxidant, hepatoprotective and anti-cancer effect of rubiadin have been reported. the aim of the present study was to evaluate the possible anti-inflammatory activity of rubiadin in rats.

Methods

Rats were anesthetized and pellets were subcutaneously implanted in the scapular region of each rat through a single needle incision. each group was treated daily, for 7 consecutive days with rubiadin (0.3 and 0.5 mg/kg, ip), indomethacin (5 mg/kg), and vehicle. on the eighth day, rats were anesthetized over again; the cotton pellets together with the granuloma tissues were separated surgically and made free from extraneous tissues. the wet pellets were weighed for the purpose of the wet weight, and then dried; after that, the dried pellets were weighed for a second time. the exudatesâ€™ quantity (mg) was calculated by subtracting the constant dry weight of the pellet from the immediate wet weight of the pellet. dry weight of granuloma was calculated after deducting the weight of the cotton pellet from the constant dry weight of the pellet and taken as an amount of granuloma tissue formation. comparisons between groups were made by one-way anova analysis followed by the post hoc tukeyâ€™s test and $p<0.05$ was considered as significant difference of means. the data were analyzed using the graphpad prism 5 statistical software.

Results

Rubiadin (0.3 and 0.5 mg/kg, ip) was showed anti-inflammatory effect. it was also effective regarding the transuda and granuloma formation amount when compared with the control group ($p<0.0001$).

Conclusion

The results suggest that rubiadin have a significant peripheral anti-inflammatory effect.

Keywords

Rubiadin, anti-inflammatory, rat

Anti-pathogenic effects of fucoidan extracted from algae

Arghavan Hosseinpouri,[1,*] Mahdi mohammadi,[2] Narges obeidi,[3]

1. Department of Cellular and Molecular Sciences,Faculty of Siences,Khalij fars University,Bushehr.
2. Departmet of Biotechnology,Persian Gulf Studies and Research Center, Khalij fars University,Bushehr.

Abstract

Introduction

Fucoidan is a group of carbohydrates rich in sulfate found in algae and recently found in plants. the adjustment of the immune system using fucoidan can be used as a means of cutting off pathogenic processes, including cancer and pathogenic infections

Methods

Natural polysaccharides, including fucoidans, may have a direct antibacterial effect on different microorganisms . it has been shown that fucoidan by controlling the alternative and classic complementary pathways can reduce the inflammation of the gastric wall due to the activation of the complement .

Results

Also, the daily intake of 1 g of fucoidan of the species undaria pinnatifida in the elderly helps to react antibodies to seasonal vaccines. a study showed that the fucoidan species of ascophylum nodosum increased the survival rate of caenorhabditis elegans with pseudomonas infection and reduced the toxic metabolites and minimal measurable bacterial count . studies have shown that oral or subcutaneous consumption of fucoidan results in endotoxin-induced metabolic damage . in the study of fucoidan antiviral effects, it has been shown that the fucoidan of undaria pinnatifida have been shown to increase the effects of oseltamivir in infecting different types of influenza a (h5n3, h7n2) in mouse models . it has been shown that the fucus vesiculosus fucoidan, in conjunction with dendritic cells, stimulates them and improves immune responses and activates cytotoxic t cells . fucoidan from laminaria cichroides, laminaria japonica and fucus evanescence are attached to the tlrs . the connection to the tlr-2 and the tlr-4 has enabled the activation of the nf-kb intermediates and the activation of the defense system . also, studies have shown that fucoidan of cladosiphon okamuranus have protective effects against the penetration of the new castle virus .

Conclusion

studies have shown that the use of fucoidan with antibiotics or alone has reduced drug resistance of germs and has inhibited their growth and death. these studies hope that the use of algae-derived fucoidans as an adjunct to its antimicrobial effects can prevent side-effects of antibiotics and microbial resistance.

Keywords

Fucoidan, brown algae, pathogen, virus, bacteria.

Anti-ror1 scfv-endog as a novel anti-cancer therapeutic drug

Ali Hakakian,[1,*] Mozafar mohammadi,[2] Peyman bemani,[3]

Abstract

Introduction

Immunotoxins are proteins that consist of an antibody fragment linked to a toxin, used as agents for targeted therapy of cancers. although the most potent immunotoxins are made from bacterial and plant toxins, obstacles which contribute to poor responses are immunogenicity in patients and rapid development of neutralizing antibodies. in the present study we proposed a new therapeutic immunotoxin for targeted cancer therapy of ror1 expressing cancers: an anti ror1 single chain fragment variable antibody (scfv)-endonuclease g (anti ror1 scfv-endog)

Methods

The three-dimensional structure of anti ror1 scfv-endog protein was modeled and structure validation tools were employed to confirm the accuracy and reliability of the developed model. in addition, stability and integrity of the model were assessed by molecular dynamic (md) simulation.

Results

All results suggested the protein model to be acceptable and of good quality.

Conclusion

Anti-ror1 scfv-endog would be expected to bind to the ror1 extracellular domain by its scfv portion and selectively deliver non-immunogenic human endonuclease g enzyme as an end-stage apoptosis molecule into ror1-expressing cancer cells and lead rapidly to apoptosis. we believe that anti ror1 and other anti-tumor antigen scfv-endog forms may be helpful for cancer therapy.

Keywords

Cancer therapy- ror1- immunoconjugate- scfv- endog- apoptosis

Antibacterial evaluation of imipenem/sulbactam combination on beatlactamase-resistant of acinetobacter baumannii isolated from patients admitted to the intensive care units to the shahid rajaii hosp

Saber Noshadi,[1] Alireza khodavandi,[2,*] Fatemeh hosseini,[3]

1. Department of Biology, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran
2. Department of Biology, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran
3. Department of Biolochsgy,Gachsaran Branch, Islamic Azad University,Gachsaran,Iran

Abstract

Introduction

: currently ,the most important factor in resistance to beta-lactam antibiotics in acinetobacter family is extended-spectrum beta-lactamases (esbl) the most common esbl enzymes. combination therapy would be one of the best strategies for the treatment of esbl-producing bacteria, due to increasing of drug resistance

Methods

In this study,50 isolatates of esbl- acinetobacter baumannii isolated from patients admitted to the intensive care units were identified via biochemical and bacteriological methods.then ,the antibacrerial activities of imipenem and sulbactam were evaluated in vitor alone and in combination using disk diffusion agar and broth microdilution tests according to clsi(m100 â€“ s25)for bacteria acinetobacter baumannii atcc29212 as a reference quality-control strains was employed.

Results

The mics range of imipenem and sulbactam against esbl were 0.125-512 respectively, while for imipenem in combination whit sulbactam was ranged from 0.128 to 8 ml .indeed , the combination therapy of imipenem/sulbactam was exerted the synergistic effects in esbls producing isoiates with fractional inhibitory concentration index ranged from 0.5 to 1.5 .

Conclusion

Our present study demonstrates that the combination of sulbactam with imipenem in incruases the efficacy of antibiotics , although the development of isolates of mdr and productive esls needs to be evaluated with other commonly used drug compounds.

Keywords

Acinetobacter, antibiotic resistance, extended-spectrum beta-lactamas

Antibacterial effects of endolysin and bacteriocin from semnan native producing strains

Shakiba Darvish alipour astaneh,[1,*] Fereshteh rahmani,[2] Shamsozoha abolmaali,[3] Nasrin shojaie,[4]

1. Semnan University, Semnan, Iran
2. Semnan University, Semnan, Iran
3. Semnan University, Semnan, Iran
4. Semnan University, Semnan, Iran

Abstract

Introduction

In recent years, antibacterial peptides have been considered as an alternative for antibiotics because of raising resistance to antibiotics within pathogen's microorganism.

Methods

In this research, isolated bacteria from semnan were investigated for production of bacteriocin and endolysin. the supernatant from five strains was condensed by ammonium sulfate precipitation followed by purification using gf 75 superfine gel sephadex chromatography. ddbcc46 with the highest antibacterial activity (agar diffusion method) among the tested isolates was the candidate for current study. the plate containing dead escherichia coli and pseudomonas aeruginosa was tested with purified supernatant from ddbcc46.

Results

A 22 mm halo against both bacteria was detected, while using 60% ammonium sulfate purified antibacterial agent resulted in a diameter of 35 mm on the pseudomonas cell wall, proteus; 32 mm, k. pneumoniae, salmonella (sp) and e.coli 18 mm. two bands of 30 and 11 kda in sds â€“page was supposed to relate to this antibacterial agent. after purification by gel chromatography, bands of 30 kda and about 11 kda were collected and examined in diffusion agar method. their antibacterial activity was 40 mm for k. pneumoniae, 35 mm for p. aeruginosa and e.coli and 22 mm for salmonella (sp).

Conclusion

The bacteriocin isolated from semnan-iran; n70, showed a moderate antibacterial effects on the indicators bacteria.

Keywords

Antibacterial effects, bacteriocin, endolysin, gel chromatography

Antibacterial properties and synergism effect of geranium oil on e coli, pseudomonas aeruginosa, staphylococcus aureus and bacillus

Saeedeh Ghiasvand,[1,*] Ali shalilian,[2] Firoozeh alavian,[3]

1. Department of Biology,faculty of science Malayer University
2. Department of Biology,faculty of science Malayer University
3. Faculty of science ,Farhangian University Tehran, Iran

Abstract

Introduction

Through past years, the serious problem of public health was and still is bacterial resistance which is increasing mostly because of overtaking antibiotics. bacteria can genetically gain resistance and be resistant to variety of antibiotics and drugs. for a long time, plants have been used to maintain human health and in last decade, the use of herbal medicine has grown and shown a significant result because of their natural and effective components which bacteria are less resistant to them. in this study we investigate the antibacterial effect of geranium oil by well diffusion method. geranium oil is the extract from pelargonium graveolens plant and was bought from guangzhou hengyu flavors & fragrances co. and it contains citonellol, nerol and geraniol. the bacteria that used for this study was e coli, pseudomonas aeruginosa, staphylococcus aureus and bacillus

Methods

To prepare the bacteria, first all bacteria were incubated in nutrient broth media for 24h and then cultivated in nutrient agar media with wells which have been filled with 25Âµl of geranium oil, then after 24h of incubation the inhibition zone was measured in millimeter by precise ruler. disk diffusion method was used for synergism effect for geranium oil with penicillin and cephalexin disks. for this method, e coli and pseudomonas aeruginosa were cultivated in nutrient agar media and then the disks were added at top of the plates.

Results

Geranium oil inhibition zone was 15mm for e coli, 25mm for bacillus and 12mm for staphylococcus aureus but geranium oil has no effect on pseudomonas aeruginosa and there was no inhibition zone. penicillin inhibited pseudomonas aeruginosa with 8mm diameter and inhibited e coli with 9mm and cephalexin inhibited e coli with 18mm diameter and had no effect on pseudomonas aeruginosa. the synergism result showed that if geranium was added to penicillin disk in e coli the inhibition zone shown 3mm increase and for pseudomonas aeruginosa shown 12mm increase and if geranium oil was added to cephalexin disk in e coli the inhibition zone shown 2mm increase and for pseudomonas aeruginosa shown 14mm increase.

Conclusion

Based on these results, geranium oil can be used as new components for antibiotics and as herbal components for recombinant drugs which bacteria are resistant to them.

Keywords

Geranium oil, herbal medicine, bacterial resistant, recombinant drugs

Antibacterial studies of synthesized titanium oxide nanoparticles

Elham Abdolmajid,[1,*] Fahimeh nemati,[2] Mojtaba falahati,[3]

1. Department of Biotechnology, Faculty of Advance Science and Technology, Tehran Medical Sciences, Islamic Azad University (IAUPS)
2. Department of Biotechnology, Faculty of Advance Science and Technology, Tehran Medical Sciences, Islamic Azad University (IAUPS)
3. Department of Nanotechnology, Faculty of Advance Science and Technology, Tehran Medical Sciences, Islamic Azad University (IAUPS)

Abstract

Introduction

In recent years it has been increasing attention on designing and development of new and more potent antibacterial particles due to the appearance of drug resistant bacterial strains. particularly, tio2nps have been extensively introduced as effective antibacterial agents in the last decade. in this regard, this study is focused on the fabrication of tio2 nps by sol-gel method and exploring their antibacterial activities against pseudomonas aeruginosa; escherichia coli.

Methods

Tio2 nps were synthesized by sol-gel route. to determine the antimicrobial activity of fabricated tio2 nps, the â€œwell diffusion methodâ€• was carried out using pseudomonas aeruginosa (atcc 27853); escherichia coli (atcc 25922) and staphylococcus aureus (atcc 25923). the minimum inhibitory and minimum bactericidal concentrations of tio2 nps were determined against bacterial strains by micro dilution method.

Results

Tio2 nps showed a nano-sized distribiution of around 30 nm with strong antibacterial affect against e.coli, p. aeruginosaand s. aureus with mic= 50Â±0.77, micâ•• 50Â±0.80 Âµg/ml, and micâ•• 25Â±1.77Âµg/ml, respectively. the mbc observed in the present study for synthesized tio2 nps was50Â±0.57Î¼g /ml, 50Â±0.50 Î¼g /ml and 25Â±1.77 Î¼g /ml for e. coli, p.aeruginosa and s.aureus, respectively.

Conclusion

The mic of tio2 nps against e.coli, p. aeruginosa and s. aureus were reported to be 9.7Âµg/ml,19Âµg/ml and19.5Âµg/ml, respectively. it seems that the difference between the results of the present study and other reported data is due to different colloidal stability and size distribution of nps. in conclusion, the fabricated tio2 nps pronounced antimicrobial activity against both gram-negative and gram-positive

bacteria. the synthesized tio2 nps show great potential to be utilized as antimicrobial nanomaterials against microorganisms.

Keywords

Titanium oxide nanoparticles, fabrication, antibacterial

Antibiotic resistance pattern in microorganisms isolated from blood and spinal cord injuries in patients hospitalized in golestan hospital, in 1395

Mohammad hosein Shiveh,[1,*]

Abstract

Introduction

Background: early in the twentieth century, the first microbe-cidal and-static drugs were identified. the clinical use of antibiotics was initiated mid-twentieth century after the discovery of penicillin. however and quite soon, it was documented that microbes broadly developed resistance to antimicrobial drugs. this prompted research into the discovery of new antibiotics or research aimed to develop prophylactic and therapeutic approaches differing from the straightforward use of antibiotics. thus began a race between drugs and microbes that has continued into modern day and has culminated in the recent detection of bacterial strains that are essentially resistant against all clinically useful antimicrobial agents. treatments that were simple and successful in the past have now been compromised; 70 years ago penicillin could be universally used in the treatment of infections caused by staphylococcus aureus, now penicillin is ineffective in the vast majority of staphylococcal infections. it is believed by many and accepted by most that this scenario will apply to any classical antibiotic that enters the market, effectiveness will be limited until microbes have developed a or more ways around the static or cidal effects.

Methods

The study was a cross-sectional descriptive epidemiologic study in order to investigate the prevalence of microorganisms in b/c and csf in patients admitted to golestan hospital of ahwaz. this retrospective study was conducted for 12 months in patients. the study population included patients admitted to all parts of the golestan educational hospital who were suspected to have an infection in the blood or cerebrospinal fluid, standard samples from patients for the detection of microorganisms.

Results

All microorganisms resisted at least one drug in three classes of antibiotics (or more). except for staphylococcus aureus, which showed only the csf and klebsiella in the b/c of this resistance, all of the microorganisms tested in the blood and csf were resistant, so monitoring the use of antibiotics and the determination of multi-drug resistant strains it can prevent the development of resistance to bacteria

Conclusion

All microorganisms resisted at least one drug in three classes of antibiotics (or more). except for staphylococcus aureus, which showed only the csf and klebsiella in the b/c of this resistance, all of the microorganisms tested in the blood and csf were resistant, so monitoring the use of antibiotics and the determination of multi-drug resistant strains it can prevent the development of resistance to bacteria.

Keywords

Antibiotic, microorganisms, resistance, staphylococcus aureus, klebsiella

Antibody- biodot conjugation as detection platform: in fluorescence immunoassay

Nasrin Mohajeri,[1] Mohammad pourhassan moghaddam,[2] Abolfazl akbarzadeh,[3] soodabeh davaran,[4] Nosratollah zarghami,[5,*]

1. Department of Medical Biotechnology, Faculty of Advanced Medical Science, Tabriz University of Medical Sciences
2. Department of Medical Biotechnology, Faculty of Advanced Medical Science, Tabriz University of Medical Sciences
3. Department of Medical Nanotechnology, Faculty of Advanced Medical Science, Tabriz University of Medical Sciences
4. Department of Medical Nanotechnology, Faculty of Advanced Medical Science, Tabriz University of Medical Sciences
5. Department of Medical Biotechnology, Faculty of Advanced Medical Science, Tabriz University of Medical Sciences

Abstract

Introduction

Fluorescence immunoassays are generally used in medical diagnostics, life science investigations. detection of biological molecules is considered as the main task in medical diagnosis procedures. various tags of different chemical composition are used for tracking biological target molecules present in the specimen, and regarding the several biosafety issues associated with the application of chemical tags for biodiagnosis purposes, the application of biocompatible tags is needed to avoid such issues. moreover, biocompatible tags can be safely used for in vivo diagnosis, particularly in vivo imaging procedures. therefore, in this work, the aim of the study was to prepare and apply a novel biocompatible dot in bimolecular detection.

Methods

Biodots were prepared by heating dna as starting material at 80à§¹c overnight. after preparing dna- dot and antibody, conjugation occurs in pbs buffer. moreover, the absorbance and intensity of the as-prepared dots were measured using uv-vis spectrophotometer and in vivo imaging equipment. the size and surface chemical groups were determined using high resolution electron microscopy, xps, ftir, zata potential and dls. the biocompatibility of the dots were evaluated by mtt assay. biodots were conjugated to the anti-igg antibody using coupling the surface free phosphate group of biodot and â€“nh2 group of antibody by edc/nhs chemistry. dot blotting and gel electrophoresis was confirmed antibody bio-dot conjugation. the bioconjugates were used to detect igg using an immunoassay test. anti- egfr bio dot photoluminescence images of the lung cancer cell line were obtained on cytation5 system.

Results

The synthesized dots showed a spherical morphology and have an average size of about 20 nm. xps showed the presence of po41- and co groups on the biodots. mtt assay did not demonstrate any cytotoxicity on the human cells. the dots were highly photolumincent and they had a maximum absorbance in 258nm. the observed lifetime of bio-dot was 10.44ns. for biodetection, the bio-dot conjugates could detect anti- goat igg on paper blotting and egfr on cancer cell line with 5 deferent concentrations. this probe was used for fluorescent labeling of the cells approximately 95%.

Conclusion

The developed biodot conjugates can be easily used for biodetection purposes and they are great promise in designing novel biocompatible in-vivo imaging tests in the future.

Keywords

Antibody bio-dot bioimaging

Antidermatophyte effect of olea europaea leaf extract on trichophyton mentagrophytes

Parya Roghani,[1,*] Arezoo dastpaak,[2]

1. Department of Biology, Faculty of sciences, Central Tehran Branch, Islamic Azad University, Tehran, Iran
2. Department of Biology, Faculty of sciences, Central Tehran Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Dermatophytosis is a common fungal disease that caused by dermatophytes. dermatophytes are of keratin friendly fungi that involve keratinized tissues such as hair, nail and skin. in recent years, increased antifungal drug resistance was reported, in addition, antifungal drugs have limited effects and have many side effects. for example griseofulvin has been available antifungal agent for the treatment of dermatophytosis for about 40 years, but it has side effects such as nausea, diarrhea, headache, rash, and sometimes allergy, ketoconazole causes the inhibition of liver enzymes and increase in the concentration of other drugs, and inhibition of synthesis of steroid hormones. recently scientists interested to treatment infection diseases by herbs. herbals are effective alternatives for chemical treatment methods. in this research, the antidermatophyte effect of olea europaea leaf extract on trichophyton mentagrophytes (zoophilic dermatophyte),was studied.

Methods

We collected olive leaves and dried in shade then put them in powder form and extracts of olea europaea leaf were extracted using soxhlet. trichophyton mentagrophytes (ptcc 50541) was used in this study were prepared from fungal colocation of tehran university then cultured in scc and incubated in 280c for 7-14 day. antifungal effect of them was measured by disc diffusion method , mic80 and mfc.

Results

The results showed that the diameter of the inhibition zone of the olea europaea leaf extract was 24Â±0.5 mm which is not significantly different from that of griseofulvin)pâ‰¤0.05). the concentration of extract obtained as a mic80 has been 0.78Â±1mg/ml and the concentration of extract obtained as a mfc has been 0.39Â±1.2 mg/ml which is not significantly different from that of griseofulvin, nystatin and terbinafine (pâ‰¤0.05).

Conclusion

According to the results, the olea europaea leaf extract has a high antifungal effect potential on trichophyton mentagrophytes. as a result, the extract of plants are a very suitable and safe substitute for the treatment of fungal diseases such as dermatophytosis.

Keywords

Dermatophytes, dermatophytosis, olea europaea, trichophyton mentagrophytes

Antidermatophyte effect of stachys schtschegleevii essential oil on trichophyton rubrum (ptcc 5143)

Shiva Mirfattah,[1,*] Behin omidi,[2] Arezoo dastpak,[3]

1. Islamic Azad University, Central Branch, Tehran, Iran
2. Assistant professor of Biology Group, Islamic Azad University, Central Branch, Tehran, Iran
3. Assistant professor of Biology Group, Islamic Azad University, Central Branch, Tehran, Iran

Abstract

Introduction

Trichophyton rubrum is one of the most common dermatophytes that causes dermatophytosis in the world and iran, it can cause infection in the skin, hair and nails. according to epidemiological reports, fungal diseases are on the rise and on the other hand, drug resistance has also been observed, and the fungal drugs that are used today have high side effects so researchers are looking for new drug for the treatment and control of dermatophytosis infections. plants have a high potential for influencing pathogenic microorganisms, so in this study we used stachys schtschegleevii essential oil against trichophyton rubrum (ptcc 5143) .

Methods

Stachys schtschegleevii plant was collected from a habitat around tabriz city and then confirmed by herbarium of jahad agriculture. trichophyton rubrum (ptcc 5143) was used in this study were prepared from fungal colocation of tehran university then cultured in scc and incubated in 280c for 7-14 day. the essential oil of the stachys schtschegleevii was taken by the clevenger and then kept it in dark glass .ÙŽantifungal effect of them was measured by disc diffusion method , mic80 and mfc.

Results

: the results showed that the diameter of the inhibition zone of the stachys schtschegleevii essential oil was 22.47Â±1 mm which is not significantly different from that of griseofulvin)pâ‰¤0.05). the concentration of essential oil obtained as a mic80 has been 3.125Â±0.5mg/ml and the concentration of essential oil obtained as a mfc has been 1.56Â±0.85mg/ml which is not significantly different from that of griseofulvin, nystatin and terbinafine (pâ‰¤0.05).

Conclusion

: according to the results, the essential oil of stachys schtschegleevii has a high antifungal effect potential on trichophyton rubrum. as a result, the essential oil of plants are a very suitable and safe substitute for the treatment of fungal diseases such as dermatophytosis.

Keywords

Trichophyton rubrum, stachys schtschegleevii, dermatophyte

Antileishmanial, and cytotoxic activities of quercus infectoria olivier extract.

Mitra Noori kamari,[1] Hossein mahmoudvand ,[2,*] Bahram delfan,[3] Farnaz kheirandish ,[4]

2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
4. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran

Abstract

Introduction

Currently, there is no effective vaccine available, and chemotherapy is the main approach for treatment of cutaneous leishmaniasis (cl). during recent decades, studies have demonstrated that a number of plant-derived compounds may act as new therapeutic tools against leishmaniasis. this study was evaluated the antileishmanial, antioxidant, and cytotoxic activities of quercus infectoria olivier (oak) extract

Methods

This extract (0-80 Î¼g/ml) was evaluated in vitro against promastigote and intracellular amastigote forms of leishmania major (mrho/ir/75/er) using mtt assay and in a macro-phage model, respectively. moreover, cytotoxicity effects of oak in murine macrophage cells were tested by mtt assay.

Results

The findings revealed that oak significantly ($p<0.05$) inhibited the growth rate of promastigote of (ic50 12.65Î¼g/ml) and amastigotes (ic50 10.31Î¼g/ml) as a dose-dependent response. selectivity index of greater than 10 for oak revealed that oak extract had no cytotoxic effects on macrophage cells.

Conclusion

To conclude, the present study showed potent antileishmanial and antioxidant activity of oak extract; whereas this plant had no toxic effect on mammalian cells.

Keywords

Cutaneous leishmaniasis; leishmania major; macrophage; oak

Antimicrobial effect of rosemary extract

Faezeh Fallah,[1,*] Amir arasteh,[2]

1. Islamic Azad University of Rasht

Abstract

Introduction

Rosemary is a herbaceous, stable plant that has a wooden stem to a height of half to one meter.its green leafs are permanent and very fragrant, also they are slim and long and sharp. this plant is native to the mediterranean but it is cultivated in different parts of the world. historical reports on rosemary therapeutic use as a herbal medicine are available. from centuries ago, rosemary was one of the oldest known medicinal plants that has been used to strengthen memory and brain activity.

Methods

antimicrobial effect of rosemary extract on pseudomonas aeruginosa and acinetobacter with disc diffusion method and minimum inhibitory concentration (mic) and minimum bactericidal concentration (mbc) with the tubular method was tested.

Results

inhibition zone of pseudomonas aeruginosa and acinetobacter are, the well diffusion 10mm and disc diffusion 10mm, the well diffusion 19mm and disc diffusion 22mm respectively .and the results of mbc and mic are 2.5 mg/ml and 1.25 mg/ml for pseudomonas aeruginosa and no mbc and 5 mg/ml for acinetobacter respectively.

Conclusion

today, because of the medicine resistance that is one of the worldï¿½s greatest concern, rosemary can be used for medical purposes.

Keywords

Rosemary, antimicrobal, acinetobacter, pseudomonas aeruginosa

Apoptosis induction of the essential oil from the leaf of pycnocycla bashagardiana mozaff. in ht-29 cells: association with expression bcl-2 and bax

Shima Aramideh ,[1] Masoumeh heshmati,[2,*] Jinous asgarpanah,[3]

1. pharmacy student, Pharmaceutical Sciences Research Center, Tehran medical Sciences, Islamic Azad university,Tehran ,Iran
2. Department of Molecular and Cellular Sciences, Faculty of Advanced Science & Technology ,Tehran medical Sciences, Islamic Azad university,Tehran ,Iran
3. Department of Pharmacognosy, Faculty of Pharmacy,Tehran medical Sciences, Islamic Azad university,Tehran ,Iran

Abstract

Introduction

Pycnocycla bashagardiana mozaff is a rare endemic species that has been used in folk medicine in south of iran. it is commonly distributed in jask county, hormozgan province. due to the presence of myristicin as the major component (more than 65 % of oils)cytotoxicity and anti-cancer properties of p. bashagardiana essential oil are proposed.on the other hand colorectal cancer is the third most lethal cancer in men and fourth in women. so far, various drugs have been used to treat the disease, but because of the emergence of drug resistance to chemical drugs, the need to achieve the new natural compounds of medicinal plant derivatives is felt more active. due to the presence of other substances, the herbal substance has a balanced biological state, so it does not accumulate in the body and has no side effects and can play an important role in the treatment of cancer. the aim of this study was to investigate the effect of pycnocycla bashagardianaÊ¼leafs cytotoxicity and anti-cancer on ht29 cells and l929 mouse fibroblast cells in vitro

Methods

In this study, the cytotoxicity effects of pycnocycla bashagardianaÊ¼leafs was studied at different concentrations 3.1-500 Âµg/ml of essential oils on ht29 and normal l929 cells at 48 h by trypan blue exclusion assay and mtt assay .apoptosis induction was determined by flow cytometric analysis (annexin-v-fitc). the expression levels of bax and bcl2 in ht29 cells and normal l929 cells were detected using quantitative real- time pcr (qrt-pcr)

Results

Pycnocycla bashagardianaÊ¼leafs has cytotoxic effects depending on concentration and time. ic50 values were observed at concentration of 52 Î¼g / ml at 24h and 12.5 Î¼g / ml at 48,72 h in the ht29 cells and at 500 and 50 Î¼g / ml at 48 and 72h and no cytotoxicity was recorded at 24 h in l929 cells by trypanblu exclusion assay. according result by mtt assay, ic50 values were recorded at 170, 72 and 12.5 at 24,48 and 72h in ht29 cells and 500, 100 and 50 at 24,48 and 72 in l929 cells. apoptosis results were resulted 1.2 , 2.27 and 2.06 fold in ht29 cells and 1.3, 1.45 and 1.62 in l929 cells at concentration 6.25, 12.5 and 25 Î¼g

/ ml. the decreased and increased expression level of bax and bcl2 was recorded in ht29 cells and l929 cells , as whole the ratio of bax?bcl2 in ht29 cells was more than l929 cells.

Conclusion

Comparison results by trypan blu exclusion, mtt, apoptosis and gene expression assays suggests that the pycnocycla bashagardianaÊ¼leafs has toxicity in cancerous cells and normal cells,but can induced apoptotic cell death in cancerous cell more than normal cells.

Keywords

Apoptosis, pycnocycla bashagardiana mozaff, bcl-2 -bax

Apoptosis induction of the essential oil from the leaf of pycnocycla bashagardiana mozaff. in ht-29 cells: association with expression bcl-2 and bax

Shima Aramideh ,[1] Masoumeh heshmati,[2,*] Jinous asgarpanah,[3]

1. pharmacy student, Pharmaceutical Sciences Research Center, Tehran medical Sciences, Islamic Azad university,Tehran ,Iran
2. Department of Molecular and Cellular Sciences, Faculty of Advanced Science & Technology ,Tehran medical Sciences, Islamic Azad university,Tehran ,Iran
3. Department of Pharmacognosy, Faculty of Pharmacy,Tehran medical Sciences, Islamic Azad university,Tehran ,Iran

Abstract

Introduction

Pycnocycla bashagardiana mozaff is a rare endemic species that has been used in folk medicine in south of iran. it is commonly distributed in jask county, hormozgan province. due to the presence of myristicin as the major component (more than 65 % of oils)cytotoxicity and anti-cancer properties of p. bashagardiana essential oil are proposed.on the other hand colorectal cancer is the third most lethal cancer in men and fourth in women. so far, various drugs have been used to treat the disease, but because of the emergence of drug resistance to chemical drugs, the need to achieve the new natural compounds of medicinal plant derivatives is felt more active. due to the presence of other substances, the herbal substance has a balanced biological state, so it does not accumulate in the body and has no side effects and can play an important role in the treatment of cancer. the aim of this study was to investigate the effect of pycnocycla bashagardianaÊ¼leafs cytotoxicity and anti-cancer on ht29 cells and l929 mouse fibroblast cells in vitro

Methods

In this study, the cytotoxicity effects of pycnocycla bashagardianaÊ¼leafs was studied at different concentrations 3.1-500 Âµg/ml of essential oils on ht29 and normal l929 cells at 48 h by trypan blue exclusion assay and mtt assay .apoptosis induction was determined by flow cytometric analysis (annexin-v-fitc). the expression levels of bax and bcl2 in ht29 cells and normal l929 cells were detected using quantitative real- time pcr (qrt-pcr)

Results

Pycnocycla bashagardianaÊ¼leafs has cytotoxic effects depending on concentration and time. ic50 values were observed at concentration of 52 Î¼g / ml at 24h and 12.5 Î¼g / ml at 48,72 h in the ht29 cells and at 500 and 50 Î¼g / ml at 48 and 72h and no cytotoxicity was recorded at 24 h in l929 cells by trypanblu exclusion assay. according result by mtt assay, ic50 values were recorded at 170, 72 and 12.5 at 24,48 and 72h in ht29 cells and 500, 100 and 50 at 24,48 and 72 in l929 cells. apoptosis results were resulted 1.2 , 2.27 and 2.06 fold in ht29 cells and 1.3, 1.45 and 1.62 in l929 cells at concentration 6.25, 12.5 and 25 Î¼g

/ ml. the decreased and increased expression level of bax and bcl2 was recorded in ht29 cells and l929 cells , as whole the ratio of bax?bcl2 in ht29 cells was more than l929 cells.

Conclusion

Comparison results by trypan blu exclusion, mtt, apoptosis and gene expression assays suggests that the pycnocycla bashagardianaÊ¼leafs has toxicity in cancerous cells and normal cells,but can induced apoptotic cell death in cancerous cell more than normal cells.

Keywords

Apoptosis, pycnocycla bashagardiana mozaff, bcl-2 -bax

Apoptosis-induction in human acute promyelocytic leukemia nb4 cells by bioactive compounds from redroot pigweed

Hamideh Bakhshayeshan-agdam,[1,*] Nastaran sedghi ,[2] Majid mahdavi,[3] Seyed yahya salehi-lisar ,[4] Rouhollah motafakkerazad ,[5] Jafar razeghi ,[6]

1. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
2. Department of Animal Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
3. Department of Animal Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
4. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
5. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
6. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.

Abstract

Introduction

Leukemia cancer is currently one of the major causes of cancer-related deaths among humans. extracts of plants including weeds may be a potential source for treatments of leukemia cancer. redroot pigweed is weed species with well-known potential in bioactive compounds production. this plant has diverse therapeutic effects such as anti-cancer properties due to specific biochemicals which involving in its allelopathic interactions as well. we have proved anti-cancer potential of redroot pigweed on human acute promyelocytic leukemia (apl) cancer cell lines (nb4 cells) previously and amaranth ethanolic extract ic50 (160Âµg/ml) was determined by mtt assay. in this regard, to further investigation anti-cancer effects of redroot pigweed, the induction of apoptosis by amaranth ethanolic extract was studied and thereafter the existing compounds in the extract were identified.

Methods

In order to, ethanolic extract of redroot pigweed and annexin v-pi double staining assays were used for cell treatment and apoptotic cells investigation, respectively. subsequently, identification of amaranth phytocompounds via gc-ms analysis was conducted. quantitative assessment of apoptosis is evaluable by redistribution of the plasma membrane of cells (as hallmark of apoptosis) to visible phosphatidyl serine (ps) after double staining by annexin v-pi. after treatment of the cells with 160Î¼g/ml amaranth extract for 24-72 h, the cells were investigated for the detection of early and late apoptosis and necrosis cells by flow cytometry.

Results

The translocation of phosphatidyl serine (annexin v positive) was increased after 24, 48 and 72 h. the rate of early apoptosis (annx+/piâˆ’) and late apoptosis (annx+/pi+) and necrosis (annxâˆ’/pi+) in the cells treated with redroot pigweed ethanolic extract for 24, 48 and 72 h was calculated 25.70, 18.20 and 20.80 percent, 11.50, 25.20, 33.40 percent and 2.27, 3.60, 2.96 percent, respectively. these findings represent an increase in rate of apoptosis in a time-dependent manner. based on the gc-ms analysis results, 87

compounds were characterized and identified from the found peaks in the redroot pigweed extract in comparison to the mass spectra of the compounds with the nist library. briefly, gc-ms analysis showed that the ethanolic extract of redroot pigweed largely contained terpenoid compounds (51.71%) as the main bioactive compound groups. among terpenoid compounds, carvacrol (11.33%) was the key compound, followed by thymol (8.55%), alpha-pinene (4.73%), germacrene-d (4.61%), zingiberene (3.92%), and so on.

Conclusion

According to the obtained results, redroot pigweed contains various bioactive compounds with allelopathic and therapeutic properties and is recommended as a plant whit pharmaceutical importance. accordingly, screening novel herbs such plants existing in amaranthus genus with allelopathic traits and evaluation of possible potential therapeutic compounds can lead to improving traditional herbal medicine.

Keywords

Acute promyelocytic leukemia (apl), apoptosis, gc-ms analysis, redroot pigweed, ethanolic extract

Application of ag, zno and cuo nanoparticle on wound healing: a review

Mahdi Bayrami,[1,*] Faezeh nasrollahi nia,[2] Milad feyzollahi,[3] Danial bajgiran,[4] Sanaz alioghli,[5] Amin bayrami,[6]

1. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
2. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
3. Department of Biology, Faculty of Science, University of Mohaghegh Ardabili
4. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
5. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
6. Faculty of medicine science, Azad University of Sari, Sari, Iran.

Abstract

Introduction

Wound healing still remains a challenging clinical problem for which efficient wound management is necessary. there is a desire for novel strategies to achieve expeditious wound healing because of the enormous financial burden worldwide. in recent decades, researchers have focused on the development of nanotechnology. drug delivery systems are expanding to meet the specific goal and increasing the burden of treatment using nanotechnology. to minimize wound infections, they often use disinfectants to coat the wound. the aim of this study is investigate application of ag, zno and cuo nanoparticle on wound healing.

Methods

To this purpose, we conducted extensive library research and compiled the latest reports of application these nanoparticles on wound healing.

Results

Silver (ag0 or ag+) has strong antimicrobial properties and is known to deal with a wide range of bacteria. in addition to antimicrobial properties, silver also has anti-inflammatory properties. the reports suggest that zno nanoparticles could induce proliferation and migration of endothelial cells and led to the formation of new blood vessels. further, zno nanoparticles can act as h2o2 generators in the tissue engineering structure, which act as key regulators that increase cell proliferation and wound healing. also, it has been shown that copper (cuo) contributes to the process of wound healing by increasing angiogenesis by inducing vascular endothelial growth factor production as well as increased expression of integrin. copper also improves wound healing by increasing the stability and constancy of fibrinogen and collagen and activating copper-dependent enzymes and important polysaccharides that are important for matrix regeneration, cell proliferation and cell renewal.

Conclusion

In conclusion, nanotechnology-based therapy has recently announced itself as a possible next-generation therapy that is able to advance wound healing to cure chronic wounds, on the other hand the nanoparticles can be synthetized with natural products to enhance synergistic effects.

Keywords

Nanotechnology, wound healing, zno, ag, cuo

Application of inorganic nanoparticles in hiv vaccines

Saideh Yoosefi,[1,*] Hamideh gharamaleki ,[2] Robabe mohammadi,[3]

1. Department of Chemistry, Faculty of Science, Arak University
2. Department of Anatomical Sciences, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz-Iran
3. Shahed University, Tehran, Iran

Abstract

Introduction

Vaccination has considerably improved human health and it has played a key role in eradicating the diseases. despite this successful history of vaccines, having an effective vaccine against aids still remains elusive. aids is now considered as a global pandemic which is caused by the human immunodeficiency virus (hiv). in 2017 an estimated 36.9 million people globally were living with hiv and 940 000 people died of hiv-related illnesses. therefore, there is an urgent need for a safe and effective preventive hiv vaccine in order to save millions of lives. in recent years, inorganic nanoparticles (npcs)-based formulations have offered the promise of vaccine development. the unique properties of inorganic nps such as small size, high surface area to volume, simple synthesis methodology, biocompatibility, surface functionality, stability in biological fluids, make them promising adjuvants and delivery systems for hiv vaccines.

Methods

Here, the general overview of the field is provided and the recent advances in the use of inorganic npcs in hiv vaccines along with related challenges and prospects are described. we reviewed all the literature between 2013 and 2018 related to three categories of inorganic nps including aluminum-based nanoparticles, gold nanoparticles and silver nanoparticles. also, related challenges and prospects are discussed.

Results

There are some reports showed that inorganic nps can inhibit the hiv virus from binding to host cells. on the other hands, the surface modification of inorganic nps by different functional groups to achieve targeted antigen delivery has opened new avenues for vaccination against hiv. since the characteristics of inorganic nps extremely depend on their size, shape and structure, the control of the parameters is vital to achieve the desired immunological responses.

Conclusion

Developing a safe and effective hiv vaccine still is so challenging, due to the complicated nature of hiv and the potential toxicity of inorganic nps to biological organisms. hence, the extensive research efforts to improve our understanding of hiv and the performance of nps are highly required.

Keywords

Inorganic nanoparticles, hiv, vaccine, aids

Applications and efficacy of platelet-rich plasma in cosmetic and dermatology

Mohammad Hadian jazi,[1,*] Roxana zandi,[2] Ronak zandi,[3] Sogand mirzaaghayi,[4]

1. Student Research Committee, Islamic Azad University Tehran Medical Branch
2. Islamic Azad University Pharmaceutical Sciences Branch
3. Islamic Azad University Tehran Medical Branch
4. Islamic Azad University Tehran Medical Branch

Abstract

Introduction

Beauty challenge is one of the difficulties in the recent decades and because of the expenses, length of treatment and recovery duration, many medicinal methods was presented. one of the medicinal methods was prp that many practitioners discussed about it; in this article weâ€™re going to talk about prp and its efficacy on many topics as dermatology, hair loss and orthopedics which have received extensive publicity these days in our country. platelet-rich plasma (p.r.p.), is a concentrate of platelet-rich plasma protein and growth factors derived from whole blood, centrifuged to remove red blood cells. increased levels of growth factors improve signaling and recruitment of cells to an injury site and optimize the environment for healing. this treatment is also known as autologous conditioned plasma (a.c.p.), has been used to assist in the treatment and recovery of injuries.

Methods

We searched the cochrane wounds specialized register, central, medline (through pubmed), embase, and scopus. on additional searched clinical trials registries for continuous and unpublished research and checked reference lists to recognize additional research.

Results

Prp stimulates new follicles and deactivates follicles, it has demonstrated effects on the activity of dpc (dermal papilla cells).a recent study has divided 40 hair transplant into two groups (prp-treated and non-prp-treated) after 6-month all of them were evaluated with the hair growth and activity in dormant follicles. a histopathological study on 68 patients proved that prp injection alone is more effective than microdermabrasion in the healing of stria distance and the combination of these two was better in a short period. a trial on twenty asian females has shown that prp is significantly effective for skin rejuvenation, compared with ppp and normal saline, which proves that prp is more safety and more easily applied. a recent study also showed that the prp injection in three sessions at one month resulted in improvement of skin elasticity. on the other hand, prp shows great effects on fractional co2 from facial rejuvenation to acne and scars. however, the significant effectiveness of prp in orthopedic line (as osteoarthritis of knee and various orthopedic indications) has not been reported, saying that no significant risk regarding this prp has been reported so far as well. although some of the studies have shown that there is a success to some extent for prp injection in the case of graft maturation. the point we should mention is that we could

not generalize that result in the whole 7 studies though. however, prp can play an important role on foregoing subjects but there are still some lingering questions about it.

Conclusion

To wrap-up the following items, the platelet-rich plasma has positive effects on dermatology, wound healing and hair growth. to study the efficacy of prp on dermatologic therapy we have found several advantages that there is some literature about dermatological applications such as facial rejuvenation, scar, strea distance (s.d.) and synergistic effect with fractional co2 but the following applications show few side effects after prp injection .furthermore, we have summarized the usage of prp on hair growth and it has shown prp as a new treatment in hair loss and it has a beneficial role in hair growth. but in one of the orthopedic subjects indicates that prp can increase the quality of healing, not the rate of healing, and there are still some continuous efforts in our knowledge on the human skeleton. in conclusion, we need more details to discuss before clinical applications but the role of prp in dermatology is an exciting frontier that may gradually lead to superior therapies in the near future.

Keywords

Platelet-rich plasma , dermatology, cosmetic

Aptamer as the cell-targeting probe and intracellular detector (review article)

Fatemeh Heidari,[1] Nasrin mohajeri,[2] Mohammad pourhassan moghaddam,[3] Fatemeh radnia,[4] Nosratollah zarghami,[5,*]

1. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
2. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
3. Department of Medical Nanotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
4. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
5. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences

Abstract

Introduction

aptamers are single-stranded oligonucleotides (usually 20â€“80 nucleotides) which serve as different molecular detection through creating three-dimensional folding self. they are preferred as diagnostic probes compared to antibodies due to characteristics such as minimal bioavailability, appropriate stability and high biocompatibility. by increasing the application of aptamers in the field of diagnosis and treatment, they have captured attention to optimize molecular targeting in the live cell. the aptamers internalization is used for two different approaches. at first, aptamers in conjunction with drug, nanoparticles (np), and sirna would create targeted delivery agents for drug delivery, gene therapy and imaging respectively via targeting cell surface. secondly, the aptamers can also detect intracellular targets in order to monitor the activity of the cells through the traceability of metabolites, developing the live cell imaging and study of rna expression level.

Methods

in this article, aptamers are assessed as tools for the introduction of np, drug, toxin and sirna into cells. the different nps such as qd, graphene, ag, gold and ce6 are conjugated with aptamers for the signaling purpose, typically by the edc/nhs catalyst. the conjugations are analyzed with electrophoresis, flow cytometer and fluorescent microscopy. it has been reviewed that the intracellular targets such as atp, nadh, interfron_gama, mrna, microrna and glutathione are successfully detected with aptamers. furthermore, the biochemical and physical strategies have been developed for the internalization of aptamers. the physical delivery strategy includes electroporation and microinjection and there is the increasing number of endocytic pathways that the internalization via clathrin-dependent endocytosis is most accepted

Results

as a result of this study, found that targeting efficiency between 30 -70 percentage and specificity of the cell-targeting aptamers could be suitable which are evaluated by flow cytometry assay and confocal laser scanning microscopy. the data demonstrated a high fold (around 70-fold) enhancement in the binding of bioconjugates (nanoparticle-aptamer) compared with nonconjugated in the target cells. the number of attached aptamer per nanoparticle is different based on size and type of the nanoparticle. the gene expression changes caused by drug and gene delivery was confirmed by rt-pcr method. these outcomes provide a promising outlook for aptamerâ€™s application in the field of imaging, drug delivery, gene therapy and biosensing.

Conclusion

Finally, in spite of the several challenges and further limitations in this emerging field, there is a promising perspective for using cell-targeting aptamers and internalizing aptamers.

Keywords

Cell-targeting aptamer, internalizing aptamer, intracellular detection

Aptasensors for detection of hepatitis b surface antigen

Fataneh Fatemi,[1,*] Javad shabani,[2]

1. Shahid Beheshti university
2. Shahid Beheshti university

Abstract

Introduction

Hepatitis b is an infectious disease caused by the hepatitis b virus (hbv) that affects the liver. recent estimates suggested that hbv infection caused 686 000 deaths in 2013. as 25% of people who acquire hbv as children will develop primary liver cancer or cirrhosis as adults, chronic hepatitis b virus infection (chb) is a major public health issue worldwide. hbsag is the first serological marker to appear in the blood and is the most important marker of hbv infection. hbeag appears in the serum during the high replicative phase of hbv infection, which makes it a serum marker of active viral replication. hbeag is a viral protein, which is soluble and closely related to non-secretory capsid antigen hepatitis b core antigen (hbcag). the different immunoreactivity between hbeag and hbcag is created by a different conformation of the b cell epitopes. detection of hbsag in serum samples is commonly carried out using an immunoassay such as an enzyme-linked immunosorbent assay (elisa), which is complex to perform, time-consuming, and unsatisfactory for testing sensitivity. therefore, new methods for highly sensitive detection of hbv infection are urgently needed. aptamers are specific recognition molecules with high affinity and specificity toward their targets. biosensors that employ aptamers as biorecognition elements are known as aptasensors. in this study, we select an hbsag-specific aptamer and use it to develop a new electrochemichal aptasensor based on reduced graphen oxide-functionalized gold nanoparticles.

Methods

In this work, we have developed an aptasensor platform for ultrasensitive hbsag detection based on hbsag-specific aptamer and reduced graphene oxide/au nano particles (rgoaunps). after fabrication of aptasensor electrode, its electrochemical response was studied using cyclic voltammetry technique. synthesis of rgoaunps: graphene oxide was synthesized from commercial graphite according to hummers method with a minor change. the product, graphite oxide, was exfoliated in deionized water in an ultrasonic bath to form graphene oxide (go) nanosheets. by adding the product to water-dispersed au nanoparticles and sonication for 24 h at 40 Â°c, rgo/aunps were synthesized. the final product was filtered using a buchner funnel and washed with deionized water three times then dried at 50 Â°c for 12 h. electrochemical measurements: a conventional three-electrode cell with an ag/agcl reference electrode (argental, 3 m kcl) were used in order to carry out electrochemical experiments.

Results

Our results indicated that the new hbsag aptasensor is highly sensitive for electrochemical detection of hbsag. the detection limit of this hbsag-detecting aptasensor is as low as 3ng/ml, which is much lower

than the limit of a typical elisa used in hospitals. furthermore, this aptasensor works well and is highly specific to hbv infection.

Conclusion

In this work, electrochemical sensing of hbsag was studied using ssdna aptamer. our results show that this aptasensor can detect hbsag molecules preciously. electrochemical data illustrated that nucleotides sequence of aptamer were selected successfully. using rgo/aunps in the structure of biosensor electrode enhanced the conductivity and surface area of the electrode.

Keywords

Hepatitis b, hbsag, aptamer, electrochemical aptasensor

Artificial micro-rna designing for epigenetic blockade interference with il-12 in pathogenesis of auto-immune disorders

Kambiz Banihashemi,[1,*] Leila.alimardanian,[2] Abouee mehrizii s,[3] Ebrahimi p,[4] Jamshidabadi sh,[5]

1. MD, ATU, MSRT
2. PhD, SRBIAU, Department of molecular genetics
3. MD, Parseh Medical Genetics Clinic
4. PhD, Parseh Medical Genetics Clinic
5. 5. MSC, Parseh Medical Genetics Clinic

Abstract

Introduction

Interleukins, such as il-12, play a role in the pathogenesis of autoimmune disorders through inflammation and activation of t-cells. in this state, micrornas provide potential to intervene the process through inhibition of il-12 function. thus, synthetic microrna (amirnas) has the ability to inhibit il-12 mediated inflammation. in this research, such a potent therapeutic molecule is designed.

Methods

Transcription intervention can be effective in gene production measures; hence we provide the interfering amirna .the as1 segment of the gene was chosen. using the sidirect software (version 2.0, 2018) three amirna molecules reproduced, considering specifications such as avoiding the gcs, avoiding interference with the coding areas, using "a/u" repeats, and observing the thermodynamic rules, including the difference in the Î”g at the beginning and end of the chain.

Results

The result after technical filtration was two suitable sequences: aaaugaaagcgaaauguucgc as guide and gaacauuucgcuuucauuuug as passenger sequences with the lowest off-target possibility of action. the selection was based on the thermodynamic analysis of the native mirna/mirna and mirna/target duplexes and microenvironment spatial probable interferences.

Conclusion

In order to control the clinical phenomena induced by il-12 effects in inflammation and autoimmune processes, blocking of the transcription of this gene would be therapeutically applicable using our designed amirna. the future stages of research include treating the candidate cells with this amirna and evaluation of the interactions with other micro-secretome elements.

Keywords

Autoimmune disorders, mirnas, il 12

Assessing methylation of kmt2d and igf2 genes in patients with non-small cell lung cancer

Arash Matinahmadi,[1,*] Shohreh zare karizi,[2] Morteza karimipoor,[3]

1. Islamic azad university of varamin branch
2. Department of biology, varamin pishva branch, islamic azad university
3. Department of molecular medicine, Biothechnology research center, Pasture institute

Abstract

Introduction

Aberrant promoter methylation of cpg islands is an important mechanism for regulation of gene expression. recent data suggest that epigenetic abnormalities may occur very early in lung carcinogenesis. systemic methylation changes may be a diagnostic marker for tumor development or prognosis. in this study, the changes methylation of kmt2d and igf2 genes were investigated in the lung cancer tissue compared to the adjacent normal tissue.

Methods

The status of methylation of kmt2d and igf2 genes was investigated in 30 patients with nsclc after genomic dna extraction using bisulfite treatment and ms-hrm method.

Results

The hypermethylation of kmt2d gene promoter was detected in 2 of 30 nsclc tissue samples (6.67%), so that none of the normal samples adjacent to it were methylated ($p>0.05$). also, the hypermethylation of igf2 gene promoter was detected in a sample of 30 nsclc tissue samples (3.34%) and no methylation was observed in any of the normal samples ($p>0.05$).

Conclusion

This study shows that methylation changes in the promoter of kmt2d and igf2 genes in nsclc tissue samples were not observed compared to adjacent samples. however, this study was designed as a pilot study, and further investigations are required to confirm our findings.

Keywords

Dna methylation, igf2, kmt2d, ms-hrm method, non-small cell lung cancer (nsclc).

Assessing the drug resistance of acinetobacter baumannii strains isolated from isfahan province hospitals in 2017

Ahmadreza Shahniani,[1,*]

1. Ph.D Student of Cell Biology and Molecular Microbiology;kazeroon branch;Azad Universty

Abstract

Introduction

The drug resistance patterns of hospital pathogen bacteria may vary among hospitals to a great extent. due to the fact that acinetobacter bumannii is one of the essential factors in hospital acquired infections, assessing the drug patterns of this bacterium is necessary.

Methods

In this cross-sectional study 168 samples are applied. to begin with, first, the clinical samples are sent to the laboratory for acinetobacter bumanni identification through chemical tests, next, the existence of this bacterium is confirmed by the pcr molecular method and then, the antibiotic sensitivity test is run on the samples, followed by their their analysis through spps and chi-square test.

Results

: the percentages of acinetobacter bumannii isolates in relation to imipenem, meropenem and ciprofloxacin in the dilution serial method are 40.9%, 60% and 77.7%, respectively.

Conclusion

The results obtained here reveal that the resistance rate of acinetobacter bumannii isolates is very high due to cooperation of several factors in a simultaneous manner

Keywords

Acinetobacter bumannii, carbanim, drug resistance

Assessment of atp1b1 gene expression in nerve growth factor-treated pc12 cells

Elnaz Agi,[1] Ali namvar ,[2] Soheil moradifard ,[3] Azam bolhassani,[4,*]

1. Iranian Comprehensive Hemophilia Care Center, Tehran, Iran
2. Iranian Comprehensive Hemophilia Care Center, Tehran, Iran
3. Iranian Comprehensive Hemophilia Care Center, Tehran, Iran
4. Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran

Abstract

Introduction

Nerve growth factor (ngf) contains three subunits such as Î±, Î² and Î³ subunits. the Î² subunit is responsible for ngf biological activity. ngf-Î² plays an important role in development, maintenance and survival of the central and peripheral nervous systems; thus it can be used as a therapeutic agent for the treatment of neurodegenerative diseases such as alzheimerâ€™s disease. the studies showed that ngf-Î² induces neuronal differentiation of pc12 pheochromocytoma cells in vitro and regulates the expression of some neuron-related genes. in this study, we evaluated the atp1b1 gene expression in ngf-treated pc12 cells. the glycoprotein subunit of na+/k+-atpase (b1 subunit) regulates the number of sodium pumps transported to the plasma membrane

Methods

At first, the pet39b plasmid was used to generate ngf-Î² in bl21 (de3) bacterial cells. gene expression was induced by addition of isopropyl thio-Î²-d-galactoside (iptg). the ngf-Î² protein was purified by ni-nta agarose and its biological activity was confirmed using the differentiation of pc12 cells upon ngf-Î² stimulation, in vitro. for this purpose, pc12 cells were plated in 12-well plastic culture dishes and the recombinant ngf-Î² was added in final dose of 50 ng/ ml diluted in rpmi 1640. finally, total rna was extracted from harvested pc12 cells at day 7 after treatment and used to analyze the expression level of atp1b1 gene by real-time pcr.

Results

Our data showed that the recombinant ngf-Î² could be expressed in e. coli bl21 strain at 4 h after induction at 37Â°c. the purified ngf-Î² protein under native conditions migrated as a clear band of ~ 42 kda in sds-page. moreover, the pc12 differentiation was observed after 7 days upon ngf-Î² addition. the atp1b1 expression was upregulated 2.3-fold as compared to glyceraldehyde-3-phosphate dehydrogenase (gapdh) as a reference gene, following addition of ngf protein.

Conclusion

In general, our study demonstrated that the treatment of pc12 cells with ngf-Î² protein induces neural morphological changes leading to the regulation of the neuron-related gene such as atp1b1. the expression

profile of other neuron-related genes will be studied in near future and the results of this study will be developed in experimental model.

Keywords

Pc12 cells, ngf-Î², atp1b1, real time pcr

Assessment of torque teno virus prevalence in a wastewater treatment plant in iran, tehran

Shadi Tavakoli nik,[1,*] Seyed reza mohebbi ,[2] Seyed masoud hosseini,[3] Hamed mirjalali,[4] Esfandiar jalilzadeh,[5] Mohammad reza zali,[6]

1. Department of Microbiology, Faculty of Biological Sciences, Shahid Beheshti University
2. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences
3. Department of Microbiology, Faculty of Biological Sciences, Shahid Beheshti University
4. Foodborne and Waterborne Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
5. Department of Water and Wastewater Quality Control Laboratory, Water and Wastewater Company, Tehran, Iran.
6. Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Torque teno virus (ttv) was detected for the first time as a cause of hepatitis with unconventional etiology in japan. although multiple researches could not reveal a clear and strong association between ttv and serious health risks, some types of ttv are possibly linked to human diseases. ttv is a non-enveloped virus which has a circular single-stranded dna. ttv is a member of anellovirus belongs to the family circoviridae. ttv can be isolated from healthy individuals and hepatitis patients therefore, it is considered to be transmitted by oral fecal route. since ttv has high stability in environment and also be excreted and transmitted through stool, it can be used as an indicator of water-fecal contamination. the aim of this study was to determine the presence of ttv in the effluent of a treatment plant in tehran.

Methods

13 effluent samples of the treatment plant of the city of tehran were obtained monthly for a year from september 2017 to july 2018.the samples were concentrated by means of positive charge filters adsorption-elution technique. adsorbed viruses were eluted with beef extract reagent and eluates were concentrated using organic flocculation method. viral dna was extracted and nested-pcr was carried out to amplify and detect ttv genome.

Results

The study samples comprised of 7 effluent wastewater samples before chlorination and 6 effluent wastewater samples after chlorination. totally, 9 of 13 samples (76.92%) were positive for ttv. all 7 effluent wastewater samples before chlorination (100%) were positive for ttv and 50% of effluent wastewater samples after chlorination were positive for ttv.

Conclusion

The results indicate that ttv is one of the most prevalent contaminations of the tehranâ€™s wastewater treatment plant. setting up a new sewage treatment system and methods is necessary to avoid river and surface water pollution.

Keywords

Torque teno virus, ttv, wastewater, tehran, molecular detection

Assessment of water health in rural water distribution network of urmia city in terms of microbiological parameters

Kandal Karimi,[1,*] Vahid tanhaei,[2]

1. Department of Biology, Urmia Branch, Islamic Azad University, Urmia, Iran
2. Department of Biology, Urmia Branch, Islamic Azad University, Urmia, Iran

Abstract

Introduction

after the industrial revolution and the flourishing of science in various fields, the human need for and dependence on the existence of water was felt more than ever. rural communities have particular conditions due to geographical and cultural characteristics, and access to safe water in villages is always considered

Methods

In this study, water health in rural distribution network of 50 villages of urmia city functions was investigated in a four-month time interval in terms of microbiological parameters by mpn method and evaluated

Results

100 samples were taken and transferred to the laboratory for microbiology of water. then, the general measurements of the forms and streptococci were performed according to standard number 3759. the results of the experiments showed that of 100 samples, 72 were reported to be safe

Conclusion

The study found continued monitoring of rural water resources is one of the most important steps for access to safe water

Keywords

Water, mpn, coliform, streptococci

Association between electromagnetic field exposure and abortion in pregnant women living in tehran

Masoumeh Abad,[1,*] Hossein malekafzali ,[2] Masoumeh simbar,[3]

Abstract

Introduction

electromagnetic fields have entered into human life more than acceptable limits. according to the powerful absorption rate and the noticeable spread of electromagnetic fields, extremely low frequency it is necessary to non-investigated their probable effects on biological systems more than ever. the effects of severe exposure to these fields have been indicated in some old books, but the effects of the long time exposure to the protected waves have been considered recently. clinical trials in different parts of the world have shown that different physiologic processes like reproductive ability, fertility, fetus genesis process, and the balance of nervous and hormonal systems and some cardio respiratory factors can be affected inappropriately by these environmental factors and cause different anomalies directly or indirectly. pregnant women and fetuses are both together vulnerable, because the radio frequency radiation (rf) is in interaction with cells of embryoâ€™s development. microwave radiation can damage to placenta barrier. the membrane prevents the transfer of substances between blood, and this fact mentions that a pregnant woman should not use cell phone except in case of emergency. according to recent findings, there is an association between cell phone use by mothers during pregnancy and greater chance of miscarriage, congenital anomalies, and behavioral problems in children. spontaneous miscarriage (sm) is the most common complication of early pregnancy. pregnancy loss before the 20th week of gestation is defined as spontaneous abortion, or miscarriage. the incidence of sm by the 20th of gestational weeks is 12 to 15 percent. risks related to sm are controversial. some reported its association with the number of pregnancies. other findings consider women at risk with more than 3 pregnancies, in contrast with those who reported the high incidence of sm in the first pregnancy (6%); however, low incidence of miscarriage has been reported among women with history of healthy pregnancy,. overall, two of etiologic factors have been found out are uterine malformations and parental balanced chromosomal rearrangements.

Methods

In this longitudinal study, 462 pregnant women with gestational age <12 wks from seven main regions of tehran city in iran with similar social and cultural status were participated. women were interviewed face-to face to collect data. reproductive information was collected using medical file recorded in those hospitals the subjects had delivery. the measuring device measured electromagnetic waves, narda safety test solutions with valid calibration date at the entrance door of their houses.

Results

A significant likelihood of miscarriage in women who exposed to significant level of electromagnetic wave. however, this association was not confirmed by wald test.

Conclusion

This study may not provide strong or consistent evidence that electromagnetic field exposure is associated or cause miscarriage. this issue may be due to small sample size in this study.

Keywords

Electromagnetic field- abortion- pregnant women

Association between genetic polymorphism of xrcc7 and susceptibility to acute lymphocytic leukemia

Farnoush Farokhian,[1] Mani ramzi,[2] Zahra beyzaei,[3,*]

1. Islamic Azad university of Zarghan, Shiraz, Iran
2. Hematology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
3. Islamic Azad university of Zarghan, Shiraz, Iran

Abstract

Introduction

acute lymphoblastic leukemia (all) is the most common malignant tumor in the children that comprises over 80% of all the acute leukemia. the etiology and pathogenesis of all are unclear up to now. previous studies make a plausible hypothesis that crucial sequential events involving specific chromosomal translocations or fusion genes as the first hits to initiate all and further genetic or epigenetic events such as gene deletions or mutations as the second hits to cooperate to the outbreak of all. one of the most important initiating events is thought to result from the misrepair of double-strand dna breaks (dsb) during non-homologous end-joining (nhej). xrcc7 (mim: 600889) is one of the most important dna double-strand break (dsbs) repair gene, involved in non-homologous end joining (nhej) pathway. moreover, it is reported that dna repair function could be modified by genetic polymorphisms. it could cause genetic instability and even carcinogenesis if dna repair capacity is of deficiency. functional polymorphism in xrcc7 (g6721t) may be risk factors for all. therefore aim of the present study is investigated the association between the genetic polymorphism of xrcc7 and risk of all.

Methods

The present caseâ€“control study was performed a total of 100 all patients, and 200 normal people, as a control group. control group had no history of any cancer with pe. genotypes of subjects were determined using a pcr/rflp based method. a chi-square test was performed for xrcc7 polymorphisms to determine if the sample groups demonstrated hardyâ€“weinberg equilibrium. the association between the study polymorphisms and susceptibility to all was examined using the odds ratios (or) and 95 % of conï¬• dence intervals (cis). statistical analysis was performed using spss statistical software package (version 16) for windows (spss inc., chicago, il, usa).

Results

The genotypic frequencies for the polymorphism among controls were in hardyâ€“weinberg equilibrium (Ï‡2 = 6.048, df = 1, p = 0.048). the prevalence of 6721g allele in our control group (0.4697) was similar to the caucasian populations. in this study base on classification of acute lymphocytic leukemia was founded significant associations between b cell group compared t cell group (or = 0.33, 95% ci = 0.1 â€“ 0.9; or = 3.4, 95% ci = 0.88 â€“ 19.4, respectively). also, a significant association between gt genotype (xrcc7) in patients group compared to control group (or = 1.8, 95% ci = 1.09 â€“ 3.06) were observed.

Conclusion

Although there were some deficiencies in this study, the comprehensive research results showed that xrcc7 6721g>t polymorphism could increase the risk of childhood all, which was to be significant to some extent. because this not only can deeply enhance our knowledge of the childhood all pathogenesis, which will offer potential targets for therapeutic intervention, but also assess the risk of childhood all in order to take effective measures to protect vulnerable populations meanwhile, it is essential to study the correlation between all and gene polymorphism in iranian children. more researches are needed to investigate the relationship between dna repair genes polymorphisms and childhood all.

Keywords

Xrcc7, single nucleotide polymorphism, acute lymphocytic leukemia, childhood

Association of a novel pericentric inversion of chromosome 9 and recurrent miscarriage: a case report

Mahan Narjabadifam,[1] Shahin behrouz sharif,[2] Saba dayem omid,[3] Aziz khorrami,[4] Seyyed vahid mohaddes ardebili,[5] Seyyed mojtaba mohaddes ardebili,[6,*]

1. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
2. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
3. Drug Applied Research Center, Tabriz University of Medical Sciences
4. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
5. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
6. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Pericentric inversion of chromosome 9 is one of the most common structural balanced chromosome rearrangements in human and also considered as a heterochromatic polymorphism. due to some studies this inversion can be observed in 1% to 3% of the population and does not usually have a phenotypic effect in most heterozygous carriers. although there are several reports on the relationships of this inversion with infertility, recurrent miscarriage and abnormal clinical phenotypes.

Methods

In this study we investigated a phenotypically normal iranian azeri couple referred to the dr. mohaddes medical genetics laboratory (tabriz, iran), with a history of recurrent miscarriage in the first trimester. conventional chromosomal analysis was performed on the basis of g-banding for both partners to ascertain the role of chromosomal abnormalities.

Results

Chromosomal analysis of the male demonstrated a normal 46, xy karyotype. while the woman was diagnosed with inv (9)(p13q21) which was acknowledged as the reason for her otherwise unexplained abortions.

Conclusion

A novel pericentric inversion of chromosome 9 (inv (9)(p13q21)) was detected in a female with recurrent miscarriage. this case and the other studies on chromosome 9 common inversions are strong evidences to reject the harmlessness of this chromosomal aberration and stresses the importance of chromosome analysis as a routine for couples with unexplained recurrent abortions.

Keywords

Pericentric inversion of chromosome 9, recurrent miscarriage, g-banding, recurrent abortion

Association of xrcc1 polymorphism in angiographically proven coronary artery patients in a population of iran

Seyed mohammad Hosseini,[1,*] Mahdi bijanzadeh,[2]

1. Department of Medical Genetics, Faculty of Medicine, Ahvaz Jundishapur University of Medical
2. Department of Medical Genetics, Faculty of Medicine, Ahvaz Jundishapur University of Medical

Abstract

Introduction

Coronary artery disease (cad) is a multifactorial genetic disease caused by the interaction between genetic and environmental factors. angiography is the gold standard method for the diagnosis and determining the stage of cardiac disorder. in this study, we focus on determining whether x-ray cross-complementing group 1 (xrcc1) polymorphism might be associated with increased risk for cad.

Methods

In this study, two polymorphisms in 287 patients and 229 matched controls were confirmed by angiography and analyzed. genotype analysis was carried out by polymerase chain reaction amplification followed by restriction fragment length polymorphism.

Results

A significant difference for the xrcc1 gene polymorphism (p= 0.002) and increasing severity of angiographic evidences of coronary artery disease was observed.

Conclusion

The significant association of the xrcc1 gene with the coronary artery patients in an iranian population have been detected. the introduction of candidate genes with other related variants can help the development of early diagnosis and effective interventional strategies that are safe, effective, necessary and individualized for cardiac patients.

Keywords

Xrcc1, polymorphism; angiography, coronary artery disease

Association study of ankrd55 (rs6859219) gene polymorphism in multiple sclerosis patients

Sepideh Mandegarfard,[1,*] Seyed abolhassan shahzadeh fazeli,[2] Seyed mohsen miresmaeili,[3]

1. Sepideh mandegarfard, Department of Biology, Science & Arts University , yazd , iran
2. Departments of molecular and Cellular Biology, Faculty of basic Sciences and Advanced Technologies in Biology, University of Science and Culture,Tehran, Iran ,Iranian Biological Resource center (IBRC), ACECR., Tehran, Iran
3. Seyed Mohsen Miresmaeili, Department of Biology, Science & Arts University , yazd , iran

Abstract

Introduction

multiple sclerosis is an inflammatory disease in which the myelin sheaths of the nerve cells are damaged in the brain and spinal cord. this damage affects the ability of parts of the nervous system that are responsible for communication. in this regard, the gene ankrd55 (ankyrin repeat domain-containing protein 55(located on chromosome 5q11.2 , encodes the â€˜ankyrin repeat domaincontaining protein 55â€™the function of which is currently unknown. rs6859219 is located in intron 7 of the gene, which is highly expressed in cd4 effector memory cells. ankyrin repeats are abundant in a large number of different proteins in humans and mediate proteinâ€“protein interactions. dna-sequence variants in ankyrin repeat domain-containing proteins have been linked to a wide range of diseases. aim this study is association of ankrd55 gene polymorphism in multiple sclerosis patient and has not been studied in these patients with multiple sclerosis, and this is the first time in iran is done.

Methods

In this study, blood samples were taken from 40 healthy persons and 40 patients. the dna was extracted and pcr was performed then pcr products were sequenced. finally, the results were analyzed by spss software

Results

The target mutation has three gg (healthy), gt (heterozygote), tt (patient) genotypes. based on statistical analysis, the patient group had 62.5% gg genotype, 32.5% gt genotype and 5% tt genotype. in the control group, 85% had gg genotype, 10% gt genotype and 5% tt genotype. the results of statistical analyzes as well as sequencing tests showed that, in the study of the relationship between genotype and disease with chi-square test, this relationship was statistically significant with 95% confidence interval (p.value = 0.046)

Conclusion

There is a significant relationship between ms and genotype, and the heterozygote gt genotype can increase the risk of ms, but in another study, using a logistic regression test for multivariate testing (eg, age, gender, smoking, addiction, and proximity to chemicals), in which 95% had no significant relationship with other variables and ms. the different results obtained in these studies can be due to differences in sampling criteria and geographical distribution.

Keywords

ankrd55, multiple sclerosis , polymorphis

Association study of ms4a6a gene polymorphism rs610932 with sporadic late-onset alzheimers disease

Sharare Sadeghian firouzabadi,[1] Dariush d.farhud,[2,*] Marjan zarif yeganeh,[3] Rana hajilou,[4]

1. Masters of cellular and molecular sciences, Islamic azad university tehran-East, Tehran, Iran. Farhud Genetic Clinic,Tehran, Iran.
2. Farhud Genetic Clinic,Tehran, Iran. School of Public Health, Tehran University of Medical Sciences, Tehran, Iran. Department of Basic Sciences / Ethics, Iranian Academy of Medical Sciences Tehran, Iran.
3. Farhud Genetic Clinic,Tehran, Iran. Cellular and Molecular Endocrine Research Center, Research Institute for Endocrine science , Shahid Beheshti University of Medical Sciences, Tehran ,Iran.
4. Masters of cellular and molecular sciences, Islamic azad university tehran-East, Tehran, Iran. Farhud Genetic Clinic,Tehran, Iran.

Abstract

Introduction

Alzheimers disease is the most common cause of dementia in middle age and aging. the disease was first described in 1906 by a german neurologist alois alzheimer. alzheimer is associated with deficiencies in cognitive, memory loss, loss of ability to perform targeted movements and personality changes. the disease is genetically heterogeneous and is influenced by environmental and genetic factors. certain brain regions such as temporal lobes, hippocampus, part of the cortex, and a smaller portion of the lobe of the forehead are involved in alzheimer. alzheimers disease is divided into two early-onset (starting at the age of less than 65 years) and late-onset (beginning at the age of 65 years) based on the age of the onset of the disease. more than 97% of the patients have a late-onset type of alzheimers disease (without family history), while premature alzheimers disease early-onset of only 3% of the population. the ms4a family contains at least 16 parallogues. each gene is probably created through an ancestral cascade of intra-chromosomal duplication during vertebrate evolution. ms4a cluster genes, including ms4a6a, are present in human chromosomes 11q in a continuum with an inherited hypersensitivity. in the expression level in the cerebellum and the temporal cortex, also in the foramen, nasal bridge, or lymphoblast cell lines. several studies have suggested that genes through mechanisms such as the accumulation of beta-amyloid ms4a, lipid metabolism and phagocytosis may be involved in alzheimers disease. this study was conducted to show the association of ms4a6a (rs610932) gene polymorphism with the risk of sporadic alzheimers disease in iranian population.

Methods

This study is an analytical case study of case-control type. after confirmation of alzheimers disease by a specialist, 117 patients and 130 controls individuals were sampled. the entry criteria for controls also included the absence of alzheimers disease in individuals and at least the first-degree members of their families. information and sequencing of the ms4a gene was obtained from ncbi and ensembl sites and designed for the polymorphism using suitable primer software. blood samples from controls and patients were extracted from the dna by salting out method. after encoding the samples, the concentration of each

of them was determined by reading their absorption (od). tetra arms-pcr condition was adjusted for the desired gene, and then for all controls and patient samples, pcr was performed to replicate the desired part. the products were made on a polyacrylamide gel, electrophoresed and then stained to ensure that the pcr was performed and the desired component was multiplied. finally, the results of the two groups of patients and control were compared to examine whether there was a significant difference between them. 20% of the samples were confirmed by the sequencing.

Results

Based on the existence of two alleles c and a, based on the chi-square, cc / ac / aa genotypes of ms4a6a gene, the distribution and frequency of genotypes in two groups of control and diseased patients with no variables (age and sex) were not significant. the distribution of c and a alleles in rs610932 is identical in both control and patient groups. based on bayesian logistic regression, rs610932 polymorphism, since p value of ac and aa genotypes is more than 0.05, therefore, or in both univariate and multivariate comparisons is not significant and is equal to one, and also has a significant effect between alleles a and c do not absent. control of theeffect of three variables on age and sex and polymorphism rs610932 showed that female sex does not have a significant effect on alzheimers disease and has protective effect. in both univariate and multivariate modes, age has no significant effect on the incidence of disease.

Conclusion

This study showed that distribution of ms4a6a gene rs610932 polymorphism in two control and patient groups did not have a significant relationship with sporadic late-onset alzheimers disease.

Keywords

Alzheimers disease, ms4a gene, polymorphism

Awareness about colon cancer in patients referring to health centers in tehran, 2017

Ashraf Pirasteh,[1,*] Zahra jouhari,[2] Kobra khajavi shojaie,[3]

1. Shahed University
2. Shahed University

Abstract

Introduction

Colon cancer is the most common malignancy in the digestive tract. its incidence is the same in men and women and has remained almost constant over the past 20 years. screening once every 5 years to identify people at risk has led to a 60-70% reduction in the incidence of this cancer. the main goal of this study was to determine the level of awareness of the patients to the health center by risk factors, symptoms of colon cancer and the screening of the disease.

Methods

: this cross-sectional study was carried out in 2017 using available sampling method on 150 clients of the health center. data was collected by standard questionnaire. the questionnaire has 27 questions in four areas. participants answered questions about (age, sex, level of education, marital status and family history of colon cancer) and risk factors (9 items), symptoms (10 questions) and screening (3 questions). first, the objectives of the study were explained to all participants. all those who were willing and literate entered the study. the questionnaires were completed in their own right. data analysis was done using spss software version 18.

Results

The age range of participants was 17 years to 77 years with a mean of 37.5 Â± 12.7. of the 150 participants, 92 (61.3%) were female. the majority of participants (54%) had diploma and lower education. also, 70% of the participants were married. in the knowledge of risk factors, the mean scores were 8.5 Â± 1.4. in the knowledge section of the disease, the mean scores were 6.5 Â± 1.9. in the knowledge section of the disease screening, the mean scores were 1.5 Â± 0.87. there was a direct correlation between the level of knowledge of people and their educational level.

Conclusion

In this study, it was found that the participants knowledge about the risk factors for colon cancer at moderate level in symptoms of illness was high and screening of the disease was low.increasing people awareness of the symptoms and risk factors of the disease, improve their attitude to the disease and increase their collaboration in screening. as a result, timely screening will cause early diagnosis and reduce the incidence and mortality of the disease.

Keywords

: colon cancer, health center, awareness

Axon elongation of differentiated motor neuron-like cells from human endometrial stem cells by microtubule stabilizer drug

Narges Mahmoodi,[1] Jafar ai,[2] Somayeh ebrahimi-barough,[3] Zahra hassannejad,[4] Elham hasanzadeh,[5] Vafa rahimi-movaghar,[6,*]

1. Sina Trauma and Surgery Research Center, Tehran University of Medical Sciences
2. Department of Tissue Engineering and Applied Cell Sciences, School of Advanced Technologies in Medicine, Tehran University of Medical Sciences
3. Department of Tissue Engineering and Applied Cell Sciences, School of Advanced Technologies in Medicine, Tehran University of Medical Sciences
4. Pediatric Urology and Regenerative Medicine Research Center, Tehran University of Medical Sciences
5. Department of Tissue Engineering and Applied Cell Sciences, School of Advanced Technologies in Medicine, Tehran University of Medical Sciences
6. Sina Trauma and Surgery Research Center, Tehran University of Medical Sciences

Abstract

Introduction

Epothilone b (epo b) is a microtubule stabilizing agent that recently is mentioned to promote axon regeneration of damaged axons of mature neurons after spinal cord injury. the aim of this study is to evaluate the effect of epo b on axon elongation of motor neurons differentiated from human endometrial stem cells (henscs).

Methods

The 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (mtt) test was used to assess cell viability. the axon elongation in motor neuron-like cells differentiated from human endometrial stem cells was evaluated by immunofluorescence (if) using beta tubulin (tuj 1) marker to show the whole cell morphology.

Results

The mtt test did not show any cytotoxicity on henscs (epo b doses less than 5 nm). the results of if of differentiation group with 10 nm epo b showed more axon elongation compared to the differentiation group without using epo b. the if also showed brighter expression of beta tubulin under the fluorescence microscopy.

Conclusion

The eop b promotes axon elongation during motor neuron differentiation of henscs.

Keywords

Axon elongation, epothilone b, endometrial stem cells

â€¢ studying the delivery of nucleic acids into eukaryotic cells using magnetic nanoparticles based dextran-spermin by use of magnetic field

Mehrnoosh Kazemi ashtiyani,[1,*] Parviz abdolmaleki,[2] Mohammad satri,[3]

1. Tarbiyat modares university
2. Tarbiyat modares university
3. Tarbiyat modares university

Abstract

Introduction

Gene therapy is one of several approaches used to treat incurable diseases and genetic disorders. the success of this approach requires the development of innovative gene delivery vectors. research efforts have focused on the development of safe and effective viral and non-viral vector systems. although viral vectors have high transduction efficiency, they are immunogenicity to target cells, toxicity and enzymatic degradation. non-viral delivery systems are being pursued to facilitate therapeutic gene transfer in the clinic. these carriers, such as cationic polymers (spermine, polyethylene amine, etc.), typically interact with anionic dna via charged forces, condensing the long, string- like dna molecules into compact, nano-sized particles that are suitable for cellular uptake. dextranâ€“spermine-based polycations were found to be highly effective in transfecting cells in vitro. however, low transfection efficiencies (as compared to viral vectors) and the inability to target specific cells or tissues still remained unsolved. in order to overcome these difficulties, magnetofection was developed to enhance the delivery of nucleic acids associated with magnetic nanoparticles. magnetofection is a novel and highly efficient method of transfecting cells in culture. in the present study, superparamagnetic iron oxide nanoparticles coated with spermin/dextran were prepared. these surface cationic magnetic spermin/dextran -iron oxide nanoparticles can potentially enhance magnetofection efficiency to improve gene delivery systems.

Methods

Superparamagnetic iron oxide nanoparticles (mnps) were prepared and coated with spermin/dextran. these nanoparticles were characterized using fourier transform infrared spectroscopy (ft-ir), vibrating sample magnetometry (vsm) and dynamic light scattering (dls). the morphology of the particles was studied by scanning electron microscopey (sem). the ability and stability of spermin/dextran -iron oxide nanoparticles conjugates to bind to dna was studied by a gel retardation and serum stability assay respectively. human embryonic kidney 293 cells line (hek293) were cultured in dulbeccos modified eagle medium: nutrient mixture f-12 (dmem/f12). cell viability was determined using the mtt assay. luciferase assay was performed by luminometer to measure the transfection.

Results

Data was showed the size of the complexes was small enough to uptake by cell, and gel electrophoresis results indicated that the weight rate of the complex was found equal to 10 w/w (polycation/dna/mnp). the

data obtained from gel retardation as well as serum stability showed that it was able to form complexes with the pdna, while free pdna was completely digested with intracellular dnases. mtt assay showed that our spermin/dextran- pdna -mnp did not showed high toxicity. the result of luminometer showed that complex spermin/dextran- pdna â€“mnp magnetization enhanced luciferase activity and transfection rate in compared with complex spermin/dextran- pdna.

Conclusion

Spermin-dextran nanomaterials are able to deliver nucleic acid in cell culture. to increase the transfer efficiency of this nanocomplex, magnetic nanoparticles are joined to this polymer and formed spermine / dextran-mnp. studying spermine/dextran- pdna -mnp in human hek 293 cells suggests that these particles are less cytotoxic. according to our results surface cationic magnetic spermin/dextran -iron oxide nanoparticle was stable and enhanced magnetofection efficiency. these results showed the potential usefulness of using magnetofection with less toxicity and high performance compared with the common viral method.

Keywords

Gene therapy â€“ (spermin/ dextran- pdna-mnp) nanoparticle â€“magnetofection- luciferase activity

Â¬ propolis role of tumor necrosis factor in rheumatoid arthritis disease

Sareh Khosh safa,[1] Fatemeh rouhollah,[2,*]

1. Tehran Medical Branch. Islamic Azad University
2. Tehran Medical Branch. Islamic Azad University

Abstract

Introduction

Tumor necrosis factor (tnf-Î±) is known as an inflammatory index in various inflammatory diseases of the central nervous system including rheumatoid arthritis(ra). in patients suffering rheumatoid arthritis, the serum level of this factor has a direct relationship between arthritis and inflammatory. currently, there are several treatments for this disease with countless side effects. purpose of this research is to apply propolis medical properties in reducing (tnf-Î±) expression of lab rats suffering collagen-induced arthritis (cia).

Methods

21 laboratory rats â€“ aged between 6 to 8 weeks - were purchased from pastor institute. they were categorized into two main groups, and immunization was done through bovine collagen type ii, complete freund's adjuvant(cfa) and incomplete freund's adjuvant (ifa) by primer-booster method. disease level was approved by wood test and radiology. then, tumor necrosis factor gene (tnf-Î±) was evaluated by eliza testing method of propolis receptor groups.

Results

Results shows, tumor necrosis factor gene (tnf-Î±) in primer groups has shown a significant decrease of $p<0.05$ in comparing to booster group which has received 6.7 mg/g of propolis. this significant decrease is followed by a decline in expression of tumor necrosis factor (tnf-Î±) in primer groups.

Conclusion

Propolis function could be considered as a medical alternative in tumor necrosis factor (tnf-Î±) expression decline as an inflammatory index.

Keywords

(tnf-Î±); rheumatoid arthritis(cia); propolis; primer-booster

Baculovirus expression system expresses hplgf-1 strongly

Narges Arbabi,[1,*] Mahdi behdani,[2]

1. Infectious Diseases and Tropical Medicine Research Center, Resistant Tuberculosis Institute, Zahedan University of Medical Sciences, Zahedan, Iran.
2. Biotechnology Research Center, Venom & Biotherapeutics Molecules Lab, Pasteur Institute of Iran, Tehran, Iran.

Abstract

Introduction

Baculovirus expression system has been used successfully to over express eukaryotic proteins in insect cells. this system uses a very strong viral promoter, acnpv polyhedrin, for high level of protein expression. baculovirus system has brought advantages, such as fast growth ability, high density in simple and inexpensive environments, genetics and specific molecular biology, high rates of expression of recombinant protein. angiogenesis is the most important factor in physiological and pathological conditions. human placental growth factor (hplgf-1) protein is a member of the vegf family, which plays an important role in angiogenesis. hplgf-1 binds to vascular endothelial growth factor receptor-1(vegfr1) or flt1 (fms-like tyrosine kinase-1). hplgf-1 plays a role in the differentiation and growth of the fibroblast, and playing various roles in pathological angiogenesis which occurs in tissue ischemia, inï¬ammation, and malignancy, with its plasma level associated with the stage and the prognosis of cancers. in this report, we evaluated the efficiency of baculovirus as a shuttle vector for delivery of hplgf-1gene into insect cells and produce high levels of protein.

Methods

Hplgf-1gene cloned in pfastbac-ht vector and transformed in dh10bac. sf9 cells were grown in graceâ€™s medium with 1% penicillin-streptomycin and 10% fetal bovine serum and incubated in 27Â°c .the recombinant bacmid was extracted and used in sf9 insect cells and trasfected by cellfectin method. target protein expression was confirmed by sds-apge and western blotting.

Results

Transferring of the recombinant vector into bacmid was successful and the hplgf-1 gene sequences were confirmed. the recombinant bacmid dna was then generated by transfection of sf9 insect cells using cellfectinÂ® reagent and propagated in sf9 insect cells using the liposome mediated method. ten days after transfection, cytopathic signs were observed and the size of cells was increased and was gradually lysed. hplgf-1 and recombinant protein expression by western blotting was confirmed. it clearly demonstrated a band with a molecular weight of 60 kda.

Conclusion

The protein was produced at high level and was localized to the expected position in the cell. these two features are the basic characteristics of an appropriate expression system. baculovirus protein expression system expresses hplgf-1 and recombinant protein can be used in different tests.

Keywords

Baculovirus expressive system, hplgf-1, angiogenesis

Bergapten and xanthotoxin functionally inhibit mdr1 and bcrp protein pumps in cancer chemotherapy

Amir hossein Amiri,[1,*] Seyed abbas mirzaei,[2] Fatemeh elahian,[3]

1. Cancer Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran
2. Cancer Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran
3. Cancer Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Abstract

Introduction

Multidrug resistance (mdr) is one of the most obstacles in cancer chemotherapy. one of the main reasons that promote this phenomenon is increase expression of membrane protein pumps transferring drugs from inside the cell to outside, such as mdr1 in stomach cancer cells and bcrp in breast cancer cells. some studies have shown that furanocoumarins could enhance cytotoxicity of drugs, as they are natural compounds with lower toxicity to patients. bergapten and xanthotoxin belong to furanocoumarins family with some therapeutic effects that in present study we investigated their effects on mdr1 and bcrp protein pumps.

Methods

We studied the effect of bergapten and xanthotoxin on function of mdr1 and bcrp via flowcytometry followed by gene expression of them by real-time pcr. also, we measured protein expression of these pumps via flowcytometry. we did these investigations on epg85.257/rdb and mcf-7/mx cell lines representing excess mdr1 and bcrp pumps respectively.

Results

The above mentioned compounds inhibited function of the pumps as well as they decreased gene expression of them. however, they did not effect on protein expression of these pumps.

Conclusion

Bergapten and xanthotoxin inhibited function of mdr1 and bcrp, so they enhance the concentration and cytotoxicity of cancer chemotherapy drugs in cells. they did not apply this effect through reducing protein expression, but through mistune the function of pumps. our results suggest that these compounds can be attractive candidates to be used along with chemical drugs to diminish multi-drug resistance effects.

Keywords

Mdr1, bcrp, bergapten, xanthotoxin

Betatrophin can be used as anticancer drug in hcc

Nastaran Monzavi,[1,*] Seyed jalal zargar,[2] Nematollah gheibi,[3]

1. Department of Cell & Molecular Biology, School of Biology, College of Science, University of Tehran, Tehran, Iran
2. Department of Cell & Molecular Biology, School of Biology, College of Science, University of Tehran, Tehran, Iran
3. Department of Biothechnoligy, Faculty of Paramedicals, Qazvin University of Medical Sciences, Qazvin, Iran

Abstract

Introduction

Hepatocellular carcinoma (hcc) is one of the most prevalent cancer and is the third reason of cancer-related deaths worldwide. moreover, hcc is a cancer with the poorest prognosis among comÂ¬mon malignant tumors and currently, there are still no effective drugs for the treatment of patients with advanced inoperable liver cancer and any substance with ability of apoptosis induction on hcc cells is undoubtedly worthful. the purpose of this study was treatment of hepg2 cells with the betatrophin, a novel detected protein which has high level expression in hcc.

Methods

e.coli bl21 (de3) and the pet expression system were used for production of recombinant betatrophin. the cytotoxic effect of betatrophin was evaluated by mtt assay and apoptosis was detected by flow cytometry analysis using annexin v-fitc/pi on human liver carcinoma cells (hepg2).

Results

Mtt assay showed that cell growth was inhibited in a time-independent and dose-dependent manner up to 30% and apoptosis analysis revealed that hepg2 cells treatment with betatrophin induced early and late apoptosis up to 7.8 and 14.3%, respectively.

Conclusion

Betatrophin inhibits growth and induces apoptosis of hepg2 cells in concentration of 250 ng/ml partly. it shows that this substance is capable of considering as an anticancer drug after further studies.

Keywords

Hepatocellular carcinoma (hcc), betatrophin, apoptosis, hepg2

Beyond satiation: the spectrum of food-drug in traditional persian medicine and its clinical importance in personalized nutrition

Majid Anushiravani,[1,*]

1. Department of Persian Medicine, school of persian and complementary medicine, Mashhad university of medical sciences

Abstract

Introduction

Personalized medicine and personalized nutritional approaches are constantly growing to fill the missing aspects of the current linear understanding and one-sided clinical practices that neglect the complexity of dynamic interaction between food and real consumers as persons with different genotypes and phenotypes, different microbiome, different environments, habits, emotions, preferences and behaviors that interactively lead to different responses to nutrients. the new researches and models in nutrigenetics, proteomix, exposome studies, metabolomix and nutrigenomix, and also finding foods as functional entities all indicate the necessity of changing the routine nutritional advices and services to a more effective individualized health providing. interestingly the teaching of ancient sage physicians in persia (like avicenna) basically relies on the understanding of food-consumer complex interaction which considers the nutri-pharmaceutical spectrum of edible things from one hand, and personal bio-psychological temperament (mizaj) on the other hand. this article will try to present a part of the nutritional approach by ancient hakims and explain the concept of functional foods from the perspective of traditional persian medicine.

Methods

In this review, the reliable manuscripts of traditional persian medicine (especially canon of medicine by avicenna) searched for the words and statements related to food classification. then the textual findings analyzed, categorized, compared and interpreted.

Results

Based on the literature of traditional persian medicine, the live human body has two essential needs for healthy survival: the sustainability of various corporeal structures, and continuity of their bio-psychological functions. one of the main ways to meet both of these needs is consuming the proper edible things with both nutritive benefits to keep the structures, and pharmacologic effects to promote various functions in accordance to the person temperament. based on the teachings of ancient sage physicians in persia, edible things can be categorized from different aspects, including their potential effects on structural- functional states of the body. in general, eatable and drinkable things may serve the body in a wide spectrum from nutritive suppliers to medicinal agents. this spectrum includes at least four main types of edible things as follows: 1. â€œabsolutely nutritiveâ€• : supply structural needs like meat, bread, etc. 2. â€œnutritive-medicinalâ€• : mainly supply structural needs and have metabolic effects, with less

pharmaceutical actions, like milk and dairy products, ripe fruits (like grape, berry, quince, and pomegranate), some nuts (almond), honey, some vegetables (like lettuce, purselane, carrot, etc). 3. â€œmedicinal-nutritiveâ€• : mainly act as pharmaceutical agents, with less nutritive supply, including some vegetables like celery, basil, garlic, onion, etc. 4. â€œabsolutely medicinalâ€• : cause functional changes in the body systems, like culinary spices including pepper, ginger, saffron, thyme, etc. the â€œabsolutely nutritiveâ€• foods (like meat) finally convert to tissues without changing the physio-psychological state of the body, while â€œabsolutely medicinalâ€• ones affect the physio-psychological situation of the body; for example, saffron can accelerate the heart rhythm, and nerve conduction velocity just like a drug. in between these two absolute ends, there are two types of edible things with both effects more or less. for example in â€œnutritive-medicinalâ€• type, quince mainly converts to bodily structures, and also can increase the tonicity of lower esophageal sphincter, and improve the food transit from the stomach to intestine. in the â€œmedicinal-nutritiveâ€• type, onion can supply the structures to some extent and also has pharmaceutical effects like diuresis and vasodilation

Conclusion

The categorization of edible things in tpm, has not just a theoretical value, but leads to important practical outcomes. in fact the majority of pharmaceutical actions of foods are attributed to their inner qualities i.e. hotness, coldness, wetness, and dryness. these qualities are mainly responsible for the medicinal actions of â€œabsolutely medicinalâ€• , â€œnutritive-medicinalâ€• , and â€œmedicinal-nutritiveâ€• foods; so the physician should consider these categories and concerns the innate bio-psychological temperament (mizaj) of any individual, and his/her the requirements in health and illness to design appropriate personal regimens for health promotion or disease relief. regarding the compatibility between the food type and the consumer temperament is so essential in designing an individualized life style for healthy aging and longevity, and personal diet therapy in chronic diseases especially metabolic syndrome, cardiovascular disorders, and psychological ailments. merging the concepts and teachings of persian hakims with new studies and researches can help us to design more precise nutritional protocols for the sick people and to improve salutogenesis.

Keywords

Traditional persian medicine, functional foods, temperament, personalzed nutrition

Biochemical study of bee venom from fars province and its effects on the wound healing and cell adhesion of human fibroblast cells

Nafiseh sadat Dehghanyan,[1] Seyedeh sara hashemi ,[2,*] Alireza rafati,[3] Safoura sameni,[4]

1. Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran
2. Burn & Wound Healing Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
3. Department of Pharmaceutical Chemistry and Nutrition, Sarvestan Branch, Islamic Azad University, Shiraz, Iran
4. Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

Abstract

Introduction

Natural products have been used as alternative drugs for treatment, because they have a good efficacy and a low risk of side effects. bee venom is known as a therapeutic application for the treatment of various diseases. the bee venom stimulates the migration of keratinocyte and is a rich source of active peptidase a and a combination of proteins such as: mellitus, phospholipase a2, hyaluronidase, which all may induce wound healing activities.

Methods

In this study, bee venom poison was initially collected from fars province area. later gas chromatography and mass spectrophotometry (gc-ms) was carried out on the hydro-alcoholic extract of this bee product. fibroblast cells were removed from the foreskin of the human penis. the cells were grown in the dmem medium and by passage three were treated with different doses of the bee venom. afterwards, they were subjected to the mtt test, adhesion test and wound healing assay.

Results

The findings of this investigation have shown bee venom composition of fars province to include melittin, phospholipase a2, histamine and hyaluronidase. the main protein ingredients of this poison were respectively melittin (50%), phospholipase a2 (10-12%), and hyaluronidase (1-3%) elucidating probable high wound healing properties for the venom derived from honey-bee of various parts of fars province. our findings revealed that by increasing the concentration of bee venom, the amount of cell migration and adhesion increases, as compared to the control group. while, mtt results show that the control group perform a higher survival rate, followed by higher doses of treatment with the bee venom as compared to the lower-doses-treated ones.

Conclusion

As seen in the results of this study, in agreement with previous findings, honey bee venom increases the migration of cell fibroblasts in the laboratory environment, which can be attributed to the presence of

melittin and hyaluronidase in the poison, which decreases the intercellular adhesion. this may suggest a wound healing application for this naturally occurring product in later studies.

Keywords

Bee venom, fars, mtt, wound healing, cell adhesion

Biocompatibility evaluation of nanofibrous membranes

Sara Pouranvari,[1,*] Mahdieh sadat taghavi,[2] Firuz ebrahimi,[3]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Biology Research Center, Basic Science Faculty, IHU, Tehran, Iran

Abstract

Introduction

Nanoï¬• brous memberanes have great potential for using in many biomedical applications such as wound dressing, tissue engineering, protein immobilization, barriers for the prevention of induced adhesion after operation. electrospinning is a simple, versatile and cost effective method for forming non-woven nanoï¬• brous scaffolds. in the present study, we fabricated the chitosan/polyvinyl alcohol (chi/pva) nanofibers for biomedical application.

Methods

Chitosan and polyvinyl alcohol were selected due to theirs antibacterial and chemical resistance properties, respectively. stabilization of this nanofibers was performed using thermal cross-linking. the morphology and microstructure of electrospun nanofibers was determined by scanning electron microscopy, before and after cross-linking. finally, biocompatibility of chi/pva nanofibrous membranes for biomedical applications was tested in vitro using mtt (3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide) assay on the mouse fibroblasts cells (nih-3t3 cell line).

Results

Sem micrographs, before crosslinking, showed relatively fine, uniform fiber-structure (no bead), continuous and randomly oriented fibers were produced. according to sem micrographs, after crosslinking, the optimum temperature and time for thermal cross-linking of nanofibers was selected. mtt assay results showed that cell viability of nanofibers cross-linked with heat was significantly ($p<0.01$) higher than that of the control.

Conclusion

In conclusion, our fabricated nanofibers with thermal cross-linking method is excellent candidate for biomedical application specially wound dressing due to its porous structure and antimicrobial traits of the chitosan. however, it seems, in vitro evaluation is necessary for cytocompatibility assessment of fabricated nanofibrous membranes as biomedical material.

Keywords

Electrospinning, chitosan, polyvinyl alcohol, cross-linking

Bioinformatical study of nigella sativa extract on nonstructural protein 5b of hepatitis c virus

Zahra Latif,[1,*] Alireza jalalvand,[2]

1. Research Centre for Biosciences and Biotechnology, Malek-Ashtar University of Technology, Tehran, Iran
2. Department of Influenza and other respiratory viruses, Pasteur Institute of Iran, Tehran, Iran.

Abstract

Introduction

Hepatitis c virus (hcv) infection is one of the major causes of chronic liver disease worldwide. hcv infects an estimated 170 million people worldwide. about 60-80 % of patients develop chronic infection, whereby the infection may progress to cirrhosis and hepatocellular carcinoma (hcc). nonstructural protein 5b (ns5b) is an important protein in replication of viral rna with polymerization property. the aim of present research is the pharmacodynamics study of nigella sativa extract including nigellicin, nigellimine, kaempferol, quercitin, thymoquinone, and thymohydroquinon on ns5b for inhibition of the replication process with docking technique.

Methods

The structure of mentioned compounds were drawn by chemsketch software. crystallography structure of ns5b was prepared from protein data bank (pdb id 3phe resolution 2.2 angstrom). after energy minimization with spdbv software, gridding parameter file and docking parameter file was acquired from autodocktools 4 software. gpf file and dpf file was ruined with cygwin software. according to output of present research, dlg files were analyzed for finding best affinity between compounds and proteins. conformational analysis was performed by chimera software.

Results

According to acquired rmsd tables from dlg file, nigellicin, nigellimine, kaempferol, quercitin, thymoquinone, and thymohydroquinon binds to receptor with energy binding -5.63 kcal/mol, -6.75 kcal/mol, -8.01 kcal/mol, -7.77 kcal/mol, -6.81 kcal/mol, and -6.15 kcal/mol, respectively. kaempferol and nigellicin have highest and lowest affinity with ns5b.

Conclusion

Present research demonstrates nigella sativa is an herbal source that can inhibit replication of hepatitis c virus. among mentioned 6 compounds, kaempferol is better than other compounds for inhibition of ns5b. conformational analysis indicates kaempferol covers binding site of ns5b appropriately. we suggest to perform molecular dynamics and pharmacokinetics studies on kaempferol.

Keywords

Nigella sativa, hepatitis c virus, ns5b, kaempferol, bioinformatics

Bioinformatics analysis of has-mir-19a-3p targetome pathway and its snp function in patients with gastric cancer

Sajede Naghiyan fesharaki,[1,*] Sajad naghiyan fesharaki,[2]

Abstract

Introduction

Gastric cancer has been known as the second cause of mortality in consequence of cancer . this cancer can make many problem for families and societies and also this is a good reason for recognizing biomarkers. snps are the most important biomarker for personalizd medicine. microrna sparticipate in divers biological pathways and may act as oncogenes or tumore suppressors, so they could be used as a prognostic biomarker. the aim of our study is to expand ourrent knowledge about molecular function of mir-19a-3p and its snp in gastric cancer cells by using bioinformatics tools.

Methods

That is why databases such as mirnasnp , mirwalk 2.0, mirtarbase ,mirwalk and david have been used.

Results

Due to the studies in has-mir-19a-3p, validated and predicted targets of mir-19a-3p were obtained from mirtarbase and mirwalk databases respectively. unigene and david databases were used for further analysis. mirnasnp databases predict single nucleotid polymorphism in mir-19a-3p and its function. it is predicted that mir-19a-3p cts as a critical tumor suppressor microrna by inhibiting some important genes in sustained angiogenesis pathway. our data manifested kegg signaling pathway â€œ pathway in cancerâ€• as the most statistical relevant pathway with mir-19a-3p targetome.

Conclusion

Regarding to this confirmation of mir-19a-3p and its snp may be involved in gastric cancer prognosis by altering regulation of angiogenesis and some vital signaling pathways mrnas. to sum up c allele in this location can have prognostic value for angiogenesis and metastasis phenotype in patients with gastric cancer.

Keywords

Gastric cancer, biomarker , mir-19a-3p

Bioinformatics application in diagnosis of cancer

Amirreza Entezari,[1,*] Reza dehghan,[2]

1. Student Research Committee, Faculty of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran
2. Student Research Committee, Faculty of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Introduction

Bioinformatics is the knowledge of bioinformatics management that emerged in the late 20th century as the development of informatics knowledge developed. bioinformatics is mainly composed of two fields or disciplines; one is computer and information technology as a tool for analyzing massive data such as genome and proteome, and the other one is research for the integrated biology based on the knowledge of genome.

Methods

The following is the result of research in the field of bioinformatics and cancer diagnosis using pubmed, scopus and web of science data bases.

Results

Using this knowledge, medical researchers can store and process a large amount of information at a very short time. today, researchers use bioinformatics tools to transcribe and express genes, differences in the expression of different genes, the study of amino acids and low weight protein molecules, genomic sequencing prediction, the identification of genotypes that are susceptible to cancer and determine the correspondences in examining different genomes. understanding the differences in the expression of genes makes it possible to study the intracellular pathways that change when cancer develops; this, along with other bioinformatics applications, the measurement of small amounts of protein in the serum of patients, accelerates the process identification of patients with cancer, which itself has led to an improvement in the percentage of recovery among cancer patients. other advances after recognizing the differences in gene expression, the change in treatments has led to the use of specific molecules marked on the host body, which has been accompanied by a reduction in side effects to todays conventional methods. despite these advances, it is still not possible to say that these methods have completely succeeded in replacing the current methods in the treatment of cancer. microarray is another technology developed in the context of bioinformatics knowledge; it has facilitated genomic and proteomic investigations in cancer tumors. the application of this technology to identify the causes of change in the expression of genes, the determination of genomic content of living organisms and their comparison with each other, as well as the identification of single-nucleotide polymorphisms that are effective in estimating the occurrence of mutations in germ cells. ncbi is one of the best scientific and genealogy

databases in the field of genetic information and molecular biology that provides access to enormous genetic information as well as advanced tools for comparing genomic sequencing and sequencing of subsequent generations of the genome. over the past three decades, studies using bioinformatics have improved the understanding of pathophysiological cancer. using these tools has not only contributed to advances in diagnostic and prognostic methods, but also plays an important role in the development of drugs; clinical and pre-clinical. currently, diagnostic and therapeutic methods based on bioinformatics have been used in cancers such as prostate, breast, cervix and endocrine, and its scope is increasing day by day.

Conclusion

Bioinformatics now covers a wide range of fields of study; including: design database storage and data processing bio-accumulate genome, adjust the structure of the protein predicted secondary structures and tertiary analysis of the amino acids in the structure of the gene, measurement of molecular weight proteins, protein identification of candidate vaccines. bioinformatics analysis mainly focuses on the study of macromolecular structures and genome sequences and the analysis of the results of genomic data. finally, bioinformatics is now a practical knowledge that can play an important role in controlling and improving disease-causing illnesses in the world today.

Keywords

Bioinformatics , cancer

Bioinformatics evaluation of hsa-mir-19a-3p related to single nucleotide polymorphism (rs200409468) of ptgs2 gene in patients suffering from gastric cancer

Sajede Naghiyan fesharaki,[1,*] Sajad naghiyan fesharaki,[2]

1. Department of Laboratory sciences, Faculty of Basic Science,Babol Branch,Islamic Azad University,Babol,Mazandaran,Iran
2. Department of Laboratory sciences, Faculty of Basic Science,Babol Branch,Islamic Azad University,Babol,Mazandaran,Iran

Abstract

Introduction

Gastric cancer has been known as the second cause of mortality in consequence of cancer . this cancer can make many problem for families and societies and also this is a good reason for recognizing biomarkers. ptgs2 gene is located on choromosome position of . the surveys show that this gene is concerned with gastric cancer.based on accomplished studies, expression of this gene may be a prognostic indicator foe several type of cancer. single nucleotid polymorphisms are consisting genetic marker related to many of the genetic disease. micro rnas are counted as bio- markers with regulation and control of genes expression at level of mrna. genes that enforce their effects. our aim is assessment of bioinformatics analysis of hsa-mir-19a-3p concerned with single nucleotide (rs200409468) of ptgs2 gene and suffering from gastric cancer.

Methods

That is why databases such as ncbi , mirnasnp , mirwalk 2.0, phemomir, mirbase and david have been used.

Results

Due to the studies in rs200409468, have determined the position of this snp, t allele to c conversion, that caused possible effected on function and connection of micrornas related to this area. the performed studies on hsa-mir-19a-3p have determined that , this microrna with a high level of effect on 3â€™utr, is a subscript of ptgs2 connection.

Conclusion

Regarding to this confirmation of the role of hsa-mir-19a-3p in gastric cancer done by the aid of data bases for example phenomir, acquiring target gene by the aid of mirwalk2.0 database and assessment of signaling pathways concerned with use of david database, this micrornas has been choosen for next analysis stages. according to this, t allele in this snp location can be related with gastric cancer.

Keywords

Single nucleotide polymorphisme (rs200409468), ptgs2 gene, microrna (hsa-mir-19a-3p), gastric cancer

Biological effects due to reduced expression of human hla-g4 and g5 isoforms in women with unexpected miscarriage

Neda Yaghoubi,[1] Faramarz farzad,[2,*]

1. Department of Clinical Biochemistry, School of Medicine, Mashhad University of Medical Sciences, Mashhad, IRAN
2. Department of Immunology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, IRAN

Abstract

Introduction

Human leukocyte antigen-g, an immune tolerance effector molecule, has important roles in the prevention of recurrent spontaneous abortions. to determine which isoforms are more probable to affect fetus loss, we evaluated the expression of seven hla-g4 and g5 isoforms and their effect in threatened-abortion women compared with controls.

Methods

A total of 101 women with threatened abortion in comparison to healthy controls, were included in this case-control study. all of the participants were aged between 20 to 32 years. quantitative real time pcr was used for evaluation of hla-g isoforms expression. soluble hla-g isoforms including hla-g2 and g4, were also measured through an immunoassay method.

Results

Interestingly, our findings showed the reduced expression of hla-g4 and g5 isoforms. hla-g5 was the most effective isoform of hla-g in senile patients ($p < 0.001$). the most striking result to emerge from the data is that decreased expression of hla-g4 and g5 isoforms, may be the most probable cause of spontaneous abortion.

Conclusion

These results provide further support for the hypothesis that hla-g may have significant roles in pregnant women and can be considered as an important protective marker of unexpected abortion.

Keywords

Hla-g; soluble hla g; threatened abortion; pregnant women

Biomedical application of functionalized gold nanoparticles

Saideh Yoosefi,[1,*] Hamideh gharamaleki,[2] Robabe mohammadi,[3]

1. Department of Chemistry, Faculty of Science, Arak University
2. Department of Anatomical Sciences, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz-Iran
3. Shahed University, Tehran, Iran

Abstract

Introduction

The application of functionalized gold nanoparticles (aunpcs) in biomedicine has been the subject of growing research effort in the past few decades. the interesting properties of aunps such as low toxicity, simple synthesis process, size- and shape-dependent properties, and biocompatibility, make them as promising candidates in the biomedical field.

Methods

In this paper, we present the general overview of the field and recent advances in the biomedical application of functionalized gold nanoparticles. we reviewed the research articles published over the past five years. also, related challenges and prospects are discussed.

Results

The physicochemical properties of aunps can be controlled by regulating the size and the shape. the surface chemistry of aunpcs strongly influences their biological behavior. the surface of aunps can be modified or functionalized with different agents such as antibodies, enzymes, proteins, nucleic acids, and genetic materials, etc. therefore, functionalized aunps have attracted considerable attention as extraordinary molecular carriers which can be used in drug or gene delivery, bioimaging, cancer chemotherapy, and other therapeutic and diagnostic application.

Conclusion

Gold nanoparticles (aunps) have been widely studied for biomedical application due to their unique properties such as small size, biocompatibility, and low toxicity. however, more investigations are needed to understand the influence of surface functionalization on biological interaction and toxicity of aunps, in order to improve their biomedical application and reduce their adverse side effects.

Keywords

Gold nanoparticles, functionalization, drug delivery, bioimaging, gene delivery

Biosynthesis anti-cancer nanoliposomes containing essential oil of cumin(cuminum cyminum l.)

Shahrzad Salari,[1,*] Shahram pourseyedi,[2]

1. MSc of Biotechnology at Shahid Bahonar University of Kerman, Iran.
2. Associate Professor of Biotechnology, Shahid Bahonar University of Kerman, Iran.

Abstract

Introduction

Liposome is one of the nanocarriers that allows the loading of lipophilic and hydrophilic drugs. the cumin(cuminum cyminum l.) has an anti-cancer effect, an increase in the metabolism of respiratory diseases. herbal essences have limited application due to instability and low solubility. the goal of this study was to develop nano-liposomes containing essential oil of cumin as one of the nanocomposites of the drug and to evaluate their anticancer effect on the cell line of mcf7 for use in modern drug delivery systems.

Methods

The cumin(cuminum cyminum l.) essential oil was first extracted and then gas chromatography and mass spectrometry were used to identify the extracted compounds. thin-film hydration method was then used to create small liposomes loaded with the extract. the lipid phase was prepared with l-alpha phosphatidylethanolamine dioleoyl, cholesteryl hemisuccinate and the essential oil. finally, the cell toxicity of liposomal and free essential oil was compared on mcf7 cell line.

Results

The employed methodology produced nanoliposomes measuring 243.6 nm in size with 100% frequency and polydisparity index of 0.33. cell toxicity assay showed 13% increase in cancer cell death with liposomal essential oil.

Conclusion

In this study, nanoliposomes containing cumin(cuminum cyminum l.) essential oil were produced. cell toxicity assay showed increased cancer cell death of liposomal essential oil compared to the free essential oil.

Keywords

Nanoliposomes; drug delivery; essential oil; cumin(cuminum cyminum l.) and mcf7.

Biosynthesis of biogenic selenium nanoparticles and its protoscolicidal effects on hydatid cysts protoscoleces

Payam Sepahvand,[1] Hossein mahmoudvand,[2,*] Mojtaba shakibaei,[3]

1. Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Pharmaceutics Research Center, Kerman University of Medical Sciences, Kerman, Iran

Abstract

Introduction

Hydatidosis (cystic echinococcosis, ce) as a chronic and zoonotic parasitic infection caused by the larval stage of the dog tapeworm echinococcus granulosus is still a important economic and public health difficulty all around the world especially in developing countries. one of the treatment options for ce is surgical removal of the cysts combined with chemotherapy using albendazole and/or mebendazole before and after surgery. nowadays, several scolicidal agents, that have some aspect effects, are used for inactivation of the cyst contents. thus, the development of new scolicidal agents with low complications and more efficacies is an urgent need for surgeons. the present study was aimed to investigate the in vitro scolicidal effect of selenium nanoparticles biosynthesized by a newly isolated marine bacterial strain bacillus sp. msh-1 against protoscoleces of e. granulosus.

Methods

Protoscolices were aseptically aspirated from sheep livers having hydatid cysts. various concentrations (50-500 mg/ml) of se nps (in size range of about 80-220 nm) were used for 10-60 min. viability of protoscoleces was confirmed by 0.1% eosin staining.

Results

The results showed that biogenic se nps at all concentrations have strong scolicidal effects especially at concentrations 500 and 250 mg/ml after 10 and 20 min of application, respectively.

Conclusion

The findings of the present study indicated that se nps have potent scolicidal effects, therefore may be used in ce surgery. however, the in vivo efficacy of these nps remains to be explored.

Keywords

Cystic echinococcosis, selenium nanoparticles, protoscolices, echinococcus granulosus

Biosynthesis of silver nanoparticles by arum giganteum extract and antimicrobial effect of them

Aria Mohammadi,[1,*] Seyed mohammad mehdi hamdi,[2] Behin omidi,[3]

1. Department of Biology,faculty of sciences, Central Tehran Branch, Islamic Azad University,Tehran, Iran
2. Department of Biology,faculty of sciences,Central Tehran Branch, Islamic Azad University,Tehran, Iran
3. Department of Biology,faculty of sciences,Central Tehran Branch, Islamic Azad University,Tehran, Iran

Abstract

Introduction

Now a day antimicrobial resistance is the major problem in the world, researchers try to replace new drugs. metal nanoparticles are is the one of the best alternative. nanoparticles, which refer to particles with the dimensions between 1 and 100 nm. among the nanoparticles, silver have been suitable chemical and physical characteristics and numerous applications in medicine and pharmacology. several methods used to synthesized silver nanoparticles(agnps), but each of these methods had disadvantages, chemical methods have high toxicity and low stability, and physical methods are costly and low-efficient. recently, researchers have found a new method for synthesized agnps, which used plants and microorganisms this method is called eco-friendly or green synthesis or biosynthesis. in this study we used arum giganteum extract to biosynthesis of agnps and antimicrobial effect of agnps biosynthesized were studied.

Methods

Extract of arum giganteum were exploited. then 4cc of this extract was added to 6cc silver nitrate 0.001m, ph 5.6 and incubated at 28 -35-370c. the formation of agnps was monitored by change color uv-vis spectroscopy, sem, xrd, ftir, dls. aa assay antimicrobial effect of agnps was studied on staphylococcus aureus atcc 1337, e.coli atcc 1398, klebsiella pneumonia atcc 1290, pseudomonas aeruginosa atcc 1181, bacillus subtilis atcc 6051 by disc diffusion method . for minimum inhibitory concentration test (mic) we used elisa method.

Results

Result was shown that arum giganteum extract had good potentiality to biosynthesis of agnp. strong peak was observed at 420nm in uv-vis spectrophotometer, xrd and xrf results shows that agnps has been produced(strong pik in 111). size of this agnps was 38Â±1nm and their concentration was 620Â±0.5 ppm. antimicrobial test results include of staphylococcus aureus(15mm)(mic:250ppm), escherichia coli (16mm)(mic:500ppm), klebsiella pneumoniae(16mm)(mic:500ppm), pseudomonas aeruginosa(14mm)(mic:150 ppm), bacillus subtilis(13mm)(mic : 500ppm) .

Conclusion

According to results, we have successfully extra cellular synthesized of agnps by arum giganteum extract. this way is simple, safe, low cost, effective and ecofriendly, the agnps synthesized using this method are very safe and can be used in pharmacology industry and medicine .

Keywords

Silver nanoparticles, biosynthesis, arum giganteum

Bmi1 plays an important role in colorectal cancer tumorgenesis through the regulation of mir-200c

Mitra Karimi mazraeh shah,[1,*] Massoud saidijam,[2] Seyed mohammad tavangar,[3] Rezvan najafi,[4] Razieh amini,[5] Fatemeh karimi dermani,[6]

1. Research center for molecular medicine, Hamadan University of Medical Sciences, Hamadan, Iran.
2. Research center for molecular medicine, Hamadan University of Medical Sciences, Hamadan, Iran.
3. Department of Pathology, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran.
4. Research center for molecular medicine, Hamadan University of Medical Sciences, Hamadan, Iran.
5. Research center for molecular medicine, Hamadan University of Medical Sciences, Hamadan, Iran.
6. Research center for molecular medicine, Hamadan University of Medical Sciences, Hamadan, Iran.

Abstract

Introduction

Colorectal cancer (crc) is one of the most leading cancer deaths throughout the world. surgery, chemotherapy and radiotherapy are the current treatment for crc. despite advances in diagnosis and treatment, the mortality rate is high. therefore, finding appropriate biomarkers for timely detection and treatment is necessary. in cancer, recurrence after treatment has often been a critical clinical limitation indicative of another emerging stem cell category that evade the existing therapy, classified as cancer initiating cells (cics) or cancer stem cells (cscs). colorectal cancer stem cells are theorized but poorly characterized. cell population believed to be crucial for tumor growth, spread, and tenacity. crc stem cell share many similar characteristics of normal intestinal stem cells and are hypothesized originate from them. bmi1 surfaces as a bio-signature of cics/cscs. bmi1 is a member of polycomb repressive complex that has multiple role in gene silencing by regulating chromatin structure, and is indispensable for self-renewal of both normal and cancer stem cell, moreover dna damage repair, beyond its capacity as a transcriptional repressor of the ink/arf pathway. as a new paradigm for therapy resistance, the role of bmi1 in this perspective is also highlighted. the wide spectrum of malignancies that implicate bmi1 as a signature for stemness and oncogenesis also make it suitable candidate for a prognostic marker and therapeutic marker. mirnas are small endogenous noncoding rnas that regulated gene expression. up regulated mirna are considered as oncogene and down regulated mirna are tumor suppressors. mir-200c has been shown that has a critical role in cancer initiation and progression. in this study, we investigated the mir-200c expression in crc tissues and its effects in crc cell lines that mediated by bmi1.

Methods

Qrt-pcr and immunohistochemistry were employed to detect mir-200c and bmi1 expression in tumor tissues from 38 patients with crc and 38 non-cancerous tissues. hct-116 and sw-48 cells were transfected by lna-anti-mir-200c. western blot and real-time pcr were applied to determine the bmi1 protein and mirna levels. the apoptosis was analyzed via annexin/ pi staining and cell invasion was evaluated by transwell assay.

Results

Mir-200c was markedly down regulated in crc tissues whereas protein expression of bmi1 in crc tissues was up regulated compared with non-cancerous tissues. in the colon cancer cell lines, transfection of lna-anti-mir-200c increased bmi1 gene and protein expression as well as the cell invasion. down regulation of mir-200c by lna decreased the apoptotic cells.

Conclusion

The present study focused on mir-200c expression in crc and its role in apoptosis and cell invasion. our results showed the down regulation of mir-200c increases the invasion of tumor cells and decrease the rate of apoptosis. moreover, the expression of mir-200c has a reverse relationship with bmi1. finally, our finding indicates that mir-200c acts as tumor suppressor in crc through inhibiting of bmi1 expression.

Keywords

Colorectal cancer; cancer stem cell; bmi1; mir-200c; apoptosis

Broccoli, glucoraphanin and sulforaphane

Mahdieh Shojaei ,[1,*]

1. Pyame Noor University

Abstract

Introduction

in the cruciferous vegetable category, broccoli has over 500 different species with numerous therapeutic properties. broccoli, cauliflower, brussels broccoli and cabbage are among the most recognizable types of this great group. this category of vegetables has the mechanism of glucosinolate, myrosinas and isothiocyanate. glucosinolate is a plant protective form, isothiocyanate is a bioactive form of the plant. sulforaphane is a phytochemical and a member of the large isothiocyanate population family, discovered in 1992 by paul talaley and jank et al. sulforaphane is not a substance commonly found in the plant, but a combination of glucoraphanin , which is a highly stable glucosinolate , produced by the enzyme myrosinase transforms glucoraphanine into unstable and highly reactive sulforaphane as a defense mechanism against the plants flares. sulfuraphon is one of the most powerful natural activators of nrf2.

Methods

Sulforaphane adds keap1-nrf2 to the cytoplasm, and nrf2 is activated and transmitted to the nucleus and join to are then active nrf2-are and transcribes a set of protective genes or programming genes to a group of protective enzymes that make the enzymes an integral part of our protection against a variety of chronic diseases.

Results

Sulfuraphon , has an effect on il-6 and other inflammatory cytokines and has a direct impact on nf-kb, inhibits inflammation in the body and helps treat chronic diseases such as alzheimer, parkinson, and autism. this biologically active substance has an effect on the pathway mtor also contributes to autism spectrum disorders and is also effective in regulating thermal shock response.

Conclusion

sulfuraphone is also an anti-aging factor with an effect on reducing inflammation and reducing oxidative stress. it also improves gastrointestinal microbial levels and improves gastric ulcer and control of some cancers, such as stomach and bladder cancer.

Keywords

Broccoli, glucoraphanin and sulforaphane,nrf2

Bzatp induced expression and production of interleukin1 beta and tumor necrosis factor alpha by m2 macrophages from ankylosing spondylitis patients

Maryam Akhtari,[1,*] Seyed jalal zargar,[2] Mahdi mahmoudi,[3] Mahdi vojdanian,[4] Ahmadreza jamshidi,[5]

1. School of Biology, College of Science, University of Tehran, Tehran, Iran
2. School of Biology, College of Science, University of Tehran, Tehran, Iran
3. Rheumatology Research Center, Tehran University of Medical Sciences, Tehran, Iran
4. Rheumatology Research Center, Tehran University of Medical Sciences, Tehran, Iran
5. Rheumatology Research Center, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Ankylosing spondylitis (as) is an auto-inflammatory spinal rheumatic disease. the disease that affects spinal column and sacroiliac joints is characterized by inflammatory type of low back pain and progressive spinal stiffness. inflammatory tissues contain populations of macrophages that involved in the auto-inflammatory responses and fibrocartilage destruction in as. extracellular adenosine triphosphate (atp), regulates several immune and inflammatory responses in macrophages by interaction with p2x7 purinergic receptor. the p2x7r is a receptor/channel that activation by extracellular atp causes the formation of inflammasome protein complex and release of pro-inflammatory cytokines. the effects of p2x7r activity on the pathogenesis of as is still unknown. in this study, we investigated (by bzatp) on the production of pro-inflammatory cytokines in m2 macrophages from healthy individuals and as patients.

Methods

Monocytes were collected from 14 healthy controls and 14 active as patients, differentiated to m2 macrophages by macrophage-colony stimulating factor (m-csf) for 7 days. m2 macrophages were then treated with bzatp (200 Âµm) for 24 h. analysis of tumor necrosis factor-alpha (tnf-a) and interleukin 1Î² (il-1Î²) mrna expression and protein production was performed using sybr green qpcr and elisa method.

Results

Mrna expression level of il-1Î² and tnf-Î± was significantly increased ($p < 0.05$) following treatment with bzatp in m2 macrophages from as patients and healthy controls. protein production of tnf-Î± was also significantly up-regulated ($p < 0.01$) following treatment with bzatp in m2 macrophages from as patients and normal individuals. m2 macrophages from as patients have a higher rate of tnf-Î± release ($p < 0.05$) by bzatp stimulation compared to healthy macrophages.

Conclusion

Our results suggested that bzatp can modulate inflammatory signaling more specifically in macrophages from as patients and has a less effect on healthy macrophages. therefor modulating the p2x7 receptor activation could be used as a therapeutic approach for as treatment.

Keywords

P2x7 receptor, m2 macrophage, ankylosing spondylitis

Cancer stem cell protein, piwil2, influences on the proliferative and invasive capacity of pc3 cell line of prostate cancer

Taravat Shojaeian,[1] Shiva irani,[2] Hamid reza soleimanpour-lichaei,[3,*]

1. Department of Biology, Science and Research branch, Islamic Azad University
2. Department of Biology, Science and Research branch, Islamic Azad University
3. Department of Stem Cells and Regenerative Medicine, National Institute of Genetic Engineering and Biotechnology, Tehran, Iran

Abstract

Introduction

Prostate cancer is the most common cause of malignancy in men. piwil2 as a stem cell protein and a member of argonaute gene family is highly expressed in many cancers. the most important causes of death in prostate cancer is metastasis which is caused by the invasive characteristics of prostate cancer cells under the control of the mediators of the epithelial to mesenchymal transition phenomenon or emt. in this study, the effects of piwil2 overexpression on the invasive and proliferation characteristics of the pc3 cell line of prostate cancer was investigated.

Methods

Pc3 cell line was cultured in the rpmi media containing 10% fetal bovine serum (fbs) with 1% penicillin streptomycin (pen/strep) suggested by atcc. in order to provide pc3-piwil2 cell line, these cells were transfected by pcdh vector expressing human piwil2 gene driven by cmv promoter via electroporation method. puromycin was then applied to the transfected cells for 10 days to establish stable cell lines before further cell and molecular analysis. to investigate the effect of piwil2 gene overexpression on cell growth, doubling time method were performed and real time pcr methods was the undertaken to investigate the emt features between pc3-piwil2 and control pc3 cells.

Results

The doubling time analysis showed a significant increase in pc3-piwil2 cells growth rate compared to pc3 control cells, exhibiting 1.14 times higher growth in the cells overexpressing piwil2 ($p<0.05$). changes in the expression level of ecadherin and vimentin as two main emt biomarkers showed that piwil2 overexpression influenced on emt.

Conclusion

In this study our data showed that piwil2 promotes the proliferative capacity of prostate cancer cells as well as influencing on the invasive characteristics of these cells, hence underpinning the importance of piwil2 gene as a valuable biomarker for the purpose of cancer diagnosis and therapy.

Keywords

Piwil2, pc3, prostate cancer, emt.

Cancer treatment with rna interference

Rana Najafi,[1,*] Mona akbari,[2] Zahra sadeghzadeh,[3] Saira ebrahim abadi,[4] Fateme radnia,[5]

1. student research commitee golestan university of medical science, Gorgan, Iran
2. student research commitee golestan university of medical science, Gorgan, Iran
3. student research commitee golestan university of medical science, Gorgan, Iran
4. student research commitee golestan university of medical science, Gorgan, Iran
5. student research commitee, tabriz university of medical science

Abstract

Introduction

The cancer is one of the significant reasons for death in the world. up to now, many therapeutic approaches have been developed to deal with cancer, rnai mechanisms are briefly described in this review. at the moment, the cancer treatment mainly contains surgery, chemotherapy, radiotherapy, and multimodality therapy. rnai is a post-translational mechanism that suppresses genes by altering the chromatin structure, preventing protein translation, or destroying direct mrna and is found in eukaryotic cells. rnai is a powerful gene extinguishing process that has a perspective on cancer treatment in the future. many genetic products involved in carcinogens have been identified as targets for rnai intervention, and rna target molecules that are essential for the tumor- host and tumor resistance to chemotherapy and radiotherapy are also studied. in many studies, the extinction of essential gene products by the mechanism of rnai has produced significant effects of antiproliferative and/or proapoptotic in cell-culture systems or in preclinical animal models. advantage of rnai technology is to target a large number of different genes involved in distinct cellular pathways, which is particularly important for complex diseases such as cancer. the main pathways of the cell has changed in cancer include : include the receptor protein tyrosine kinase (ptk) pathway, adenomatous polyposis coli (apc) pathway, glioma-associated oncogene (gli) pathway, phosphoinositide 3-kinase (pik3) pathway, smad pathway, hypoxia-inducible transcription factor (hif) pathway, retinoblastoma (rb) pathway, p53 pathway, and apoptosis (apop) pathway. ptgs (post translation gene silencing) is a natural mechanism in the metazoa cells that suppresses the spread of genes when they are exposed against the dsrna molecules of the same sequence. in ptgs, the gene transcript has been synthesized without aggregation due to rapid degradation of the transcript. the therapeutic molecule using sirna to extinguish the gene has attracted significant attention to targeting the cancer-related genes. essentially, the sirna molecules are attached to the mrna with complementary base pairs to induce the destruction of mrna or/and block the synthesis of protein. many gene and gene-related proteins have been reported to date in targeting cancer-based sirna treatment. in addition, combining sirna with traditional anticancer drugs, synergistic anticancer effects, or overcoming drug resistance, improves the ability to target and minimize side effects. today, sirna therapies have made the cancer cells susceptible to chemotherapy by turning off genes that help with drug resistance during chemotherapy.sirna can target selectively and reduce the expression of the genes that cause the disease. since this is a hopeful way of treating cancer in the future, but effective transmission to the cytosol of the target cell is one of the problems that affects its clinical applications.

Methods

One of the promising methods for treating cancer in the future is the use of rnai mechanism which, by binding to the target, can prevent the expression and degradation of it, but one of the problems is its effective transmission to the target cell cytosol.

Results

According to the methods described in this article, the rnai mechanism can be effective in extinguishing genes that are related to cancer, along with other methods such as chemotherapy

Conclusion

Due to the increasing incidence of cancer in recent years and the relatively low efficiency of chemotherapy, the use of therapeutic approaches that interact with the natural defensive mechanisms of the body can be considered as less harmful and more effective methods for the treatment of these disease. using rnai is one of the best ways to suppress the growth and cancerous cells proliferation for cancer treatment.

Keywords

Cancer, rnai, mrna, ptgs, sirna

Car-t cell therapy and gene editing technologies

Narges Rashidi,[1] Amirhossein ahmadi,[2,*] Seyed javad hosseini,[3]

1. Department of Biology, Faculty of Science, Persian Gulf University, Bushehr, Iran
2. Department of Biology, Faculty of Science, Persian Gulf University, Bushehr, Iran
3. Department of Biology, Faculty of Science, Persian Gulf University, Bushehr, Iran

Abstract

Introduction

The increasing prevalence of cancer in human populations has become a major concern, encourage the scientists to find a safe and effective alternative therapy. one new rising alternative is immunotherapy which is harnessing the power of bodyâ€™s own immune system to battle against cancer. immune system, especially t lymphocytes have a critical role in identification of tumor-specific antigens. adoptive t cell transfer involves ex vivo expansion of fragments of resected tumors or genetically engineered patients derived t cells and sending them back for eliminating tumor cells. chimeric antigen receptor t (car-t) cell therapy is an effective and durable immunotherapy method which demonstrates better clinical results in hematological malignancies. car-t cells are genetically engineered t cells that express artificial proteins known as chimeric antigen receptor, which navigate these car-expressing immune cells to surface tumor antigens. development of next generation car-t cells using gene editing technologies enhance the therapeutic potential of car-t cell treatment for both hematological and solid tumors. to study the function of the genes and apply targeted manipulation of genome for therapeutic goals, we need highly efficient systems, such as crispr-cas9 to modify existing dna patterns with great accuracy. in crispr-cas9 system the cas endonuclease is guided by a targeting rna and induce a double strand break (dsb) in target site. crispr/cas9 system from streptococcus pyogenes together with a small guide rna (sgrna) was first used as a genome editing tool in 2013 in mammalian and now become a widely applicable dna editing system. in this system host cell could repair dsb through non-homologues end joining (nhej) or homology directed repair (hdr) which results in insertion/deletion or recombination respectively. the second way be exploited to introduce well defined mutations by transferring altered donor templates into targeted cells. crispr-cas9 is able to significantly expand the kind of cancer and patients that can be treated with car-t cells.

Methods

Today expanding the accessibility of current autologous car-t cell therapies face several limitations. this therapy has challenging quality control, being extremely expensive and not being suitable for patients with aggressive disease progression. however, some of these challenges would vanish with the use of allogeneic car-t cell therapy. indeed, limitations in generating autologous car-t cells for each patient led to the idea of making universal or of-the-shelf t cells which derived from healthy donors. but of-the-shelf car-t cells needs to beat graft versus host disease (gvhd). for this purpose, with the use of crispr-cas9 as a multiplex gene editor at a time, researchers investigate ways to silence or disrupt both tcrs and hla molecules.

Results

Recently cispr technology was used as a delivery system to knock in a cd-19 specific car into trac locus that placed the car expression under control of tcr promoter and caused enhanced potency, uniformed car expression, more memory characteristic and less exhausted phenotype in this car. in 2017 the first genetically engineered cellular drug was approved by fda. kymriah and yscarta are two cd-19 directed genetically modified autologous t cells were recently approved by fda as car-t cells that used in patients who had acute lymphoblastic leukemia (all).

Conclusion

Taken together, today hopes have raised for developing next generation car-t cell therapy specially by the use of gene editing technologies. although there is certain safety, efficiency and technical concerns still to be solved the promising results offset the risk.

Keywords

Cancer, crispr, car-t cell, genome targeting

Carba np test method for rapid detection of pseudomonas aeruginosa isolates producing carbapenemase enzymes.

Masoumeh Beig,[1,*]

Abstract

Introduction

The increasing resistance to carbapenems is a global clinical worry. the carba np test is a biochemical test with high sensitivity and specificity, and much shorter than the methods based on the culture in detection of carbapenemase producer isolates. the purpose of this study is to evaluated of sensivity,specifity,ppv,npvof the carba np test to quickly recognize carbapenemase producing isolates.

Methods

A collection of 49 carbapenemase-producing pseudomonas aeroginosa. isolates (including 11 kpc,20 imp ,19 vim, 25ampc,35 oxa48 producers) and 48 non-cpe isolates as confirmed by the pcr methods were tested by the carbanp method .

Results

The results of pcr showed that the highest gene prevalence was among the strains of the oxa48 gene (35.5%) and the least of them was kpc gene (11/34%). of the 49 (50/51%) that carbapenem genes were positive by pcr, 48 (48.49%) had positive carbanp assays and out of 48 (49/48%) that had negative pcr results for the carbapenem gene, 48 (49/48%) of their carbanp test were negative. therefore, the sensitivity,specifity,ppv and npv of this test was 100% ,96%,100 and 96% respectively.the specificity of the test was 96%.

Conclusion

The results of this study showed that a high percentage of p. aeruginosa was resistant to carbapenem antibiotics and the carbanp method was highly sensitive and specific for identification of such resistant isolates.

Keywords

Pseudomonas aeruginosa, pcr, carbanp

Carvacrol enhances skin flap survival by affecting on expression of cell apoptosis regulator pathways (bax, bcl2) and ros-involved proteins

Amir ali Ebadi fard azar,[1] Korosh khanaki,[2] Majid banimohammad,[3] Hamed shoorei,[4] Amirali ebadi fard azar,[5] Abbas majdi seghinsara,[6,*]

1. Anesthesiologist and pain fellowship, Rasoul Akram Medical Center, Iran University of Medical Sciences, Tehran, Iran
2. Medical Biotechnology Research Center, Faculty of Paramedicine, Guilan University of Medical Sciences, Rasht, Iran
3. Physiology Research Center, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran
4. Department of Anatomical Science, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran.
5. Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran
6. Department of Anatomical Science, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran.

Abstract

Introduction

Application of skin flaps is a main strategy for treatment of skin lesions but proper treatments should be applied to improve skin flap survival rate and achieve higher and better treatment quality. if we could decrease mentioned events and increase expression of the cell-survival pathways, we would have more survival and more beneficial results.

Methods

Forty sprauge-dawley rats (180-240g) were divided into four groups: (1)sham- skin was cut in 8Ã—3 cm without elevation, (2)flap- two parallel incisions were connected caudally and skin elevation, (3)low dose carvacrol+flap, and (4)high dose carvacrol+flap

Results

Carvacrol increased the viability of skin flaps, induced more neovascularization specially in distal flap areas, decreased mda contents, increased sod and decreased mpo activities, decreased bax and increased bcl-2 expression.

Conclusion

Our results proved that by administrating a therapeutic agent (carvacrol), samples show decrease in markers of ir-derived ros injury like these studies.

Keywords

Carvacrol, skin flap, bax, bcl2, apoptosis, oxidative stress.

Cd36 expression and pcsk9 in patients with subclinical hypothyroidism.

Monire sadat Fazaeli,[1,*] Alireza khoshdel ,[2] Mohammad reza shafiepour,[3] Mohadese rohban,[4]

1. Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran
2. Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran
4. Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran

Abstract

Introduction

Proprotein convertase subtilisin/kexin type 9 (pcsk9) is a serine protease and a secreted protein which increases cholesterol levels in plasma via inducing degradation of low-density lipoprotein receptor (ldlr). some studies have reported that pcsk9 levels increase in hypothyroidism. cluster of differentiation 36 (cd36) is a member of a family of cell surface proteins in many cells. cd36 involves in regulation of lipid metabolism by facilitating cellular uptake of fatty acids and participating in triglyceride storage. it has been suggested that pcsk9 regulates cd36 in some tissues.

Methods

Data and serum levels of tsh, ft4 and pcsk9 and expression level of cd36 on monocytes from 20 new untreated patients with sh and 20 age- sex- and bmi-matched controls were analyzed in a cross-sectional study. quantification of cd36 expression on monocytes was done by flow cytometry. then the relationships between these parameters were examined.

Results

Pcsk9 was significantly higher in patients. cd36 expression was lower in the patient group than in controls, but this difference was not significant. there was no significant relationship between pcsk9 and cd36.

Conclusion

Currently, pcsk9 inhibitors are used to reduce blood cholesterol levels as drugs. if it will be proven that pcsk9 can reduce the level of cd36, taking these drugs may have unwanted side effects. this study showed that there is no relationship between pcsk9 and cd36 in subclinical hypothyroidism and pcsk9 antibodies can still be used as an effective way to treat hypercholesterolemia.

Keywords

Subclinical hypothyroidism, proprotein convertase subtilisin kexin type 9, cluster of differentiatio

Cell-free fetal dna testing has a great false-positive in detection of trisomy 18 but not in trisomy 21 and sex chromosomes

Milad Babasalari,[1,*] Mohammadreza bazrafshani,[2] Zahra miri,[3] Farida hassanzade,[4]

1. Department of Medical Genetics, Kerman University of Medical Science
2. Assistant Professor of Kerman University of Medical Science
3. Department of Medical Genetics, Kerman University of Medical Science
4. Dr. Bazrafshani Medical Genetic Laboratory

Abstract

Introduction

After first-trimester scan, cell-free fetal dna (cfdna) testing could be used in women with high-risk, as a primary screening option. although this test is safe and preventing the 0.5-1.0% risk of miscarriage related to amniocentesis/cvs, but the false-positive results of its may be troublesome. based on this suppose, this study was conducted with the aim of examining this issue.

Methods

In this study, cfdna testing was performed on 126 patients with high-risk of trisomy 18, 21 in screening tests that were referred to dr. bazrafshani medical genetic laboratory in 2018. the pregnant women were tested in this study was at 10-14 weeks of gestations. the analysis of cfdna was performed by massively parallel sequencing. the threshold of fetal fraction for test evaluation was about 4-17%. then, invasive prenatal screening (amniocentesis) were performed on patients who the results of their cfdna testing were positive for trisomy 18, 21 and sex chromosomes.

Results

Cfdna testing was performed after first trimester scan in 126 patients. among them 14 patients were high-risk for trisomy of 18, 21 and sex chromosomes. amniocentesis (qf-pcr or karyotype or both of them) were performed these patients to confirm cfdna results. the results of cfdna in detection of trisomy 21 and sex chromosomes were so exact. also, all patients who had positive results for trisomy 21 and sex chromosomes detection had same results in amniocentesis. but we were surprised when the results of cfdna testing were not compatible with the results of amniocentesis. 75% (3 out of 4) patients with high-risk of trisomy 18 in cfdna testing had not positive results in amniocentesis. although in two patients who their cfdna results were positive for trisomy 18, their amniocentesis results were normal. in another patient, although the cfdna testing report was positive for trisomy 18, not only this result did not obtain through amniocentesis but also amniocentesis resulted in 46, xx, t (2;4)(q12;13.2). in this case screening markers candidated her as high-risk for trisomy 21 but the cfdna analysis demonstrated a trisomy for chromosome 18 in this patient.

Conclusion

Our study showed that cfdna testing was successful in detection of aneuploidies of 21 and sex chromosomes but this test has limitation in trisomy 18 detection. paying attention to this results may be informative for better screening and decrease the mental and financial pressure on patients. due to our low sample size we suggest more studies need to be performed.

Keywords

Cell-free dna, cfdna, nipt, false positive rate, amniocentesis

Changes in ahpf and tvia genes expression in salmonella enterica ptcc 1230upon osmotic and oxidative stress using real-time pcr

Hossein Zahmatkesh zakariaee,[1,*] Mohammad faezi ghasemi,[2]

1. Lahijan Branch- Islamic Azad University
2. Head Department of Cell and Molecular Biology, Faculty of Basic Sciences-Lahijan Branch

Abstract

Introduction

Salmonella is a member of the enterobacteriaceae family causing infectious disease in human and animals. the diseases causing by this bacterium are typhoid, bacteremia, enterocolitis, salmonellosis which are a health problem worldwide. the aim of this study was to evaluate the changes in expression of ahpf and tvia genes in salmonella enterica ptcc 1230 exposed to osmotic and oxidative stresses.

Methods

For osmotic stress, s.enterica ptcc 1230 subjected to 6, 8, 10, 12, and 14% (w/v) nacl concentrations and for the oxidative stress, h2o2at concentrations of 1200, 2400, 4800, 6000 and 7200 ppm were used. change in expression of ahpf and tvia genes were quantified using real-time pcr method.

Results

: based on the obtained results, nacl at concentrations of 14% and 10% and h2o2atconcentrations of 7200 (ppm) and 6000 (ppm) had maximum effects on the bacterial growth, respectively. in concentration of 7200 ppm, the expression of ahpf gene increased about 1.8 and 2.5-fold more thanh2o2at 6000 ppm concentration and reference gene (16s rrna).also, in 14% (w/v) sodium chloride concentration the expression of tvia gene increased about1.3 and 1.5 fold more than 10% and the reference gene (16s rrna), respectively.

Conclusion

In this study, changes in expression level of ahpf and tvia genes upon oxidation and osmotic stresses were studied in salmonella enterica ptcc 1230. the overall results of this study showed that the expression level of both ahpf and tvia genes were increased in stress condition and we recommend the study of the other genes incorporate in responses to environmental stresses.

Keywords

Osmotic stress, oxidative stress, tvia gene, ahpf gene, salmonella enterica ptcc 1230

Changes in expression of survivin anti-apoptotic gene under treating with cyclophosphamide after 24 hours in mcf-7 cell category of breast cancer

Somayeh Gholami,[1,*] Dr.golnaz asaadi tehrani,[2] Fateme modhejiyan,[3] Narges mohammadi,[4]

1. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
2. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
3. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
4. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran

Abstract

Introduction

Breast cancer is the most common type of cancer among women. one of the genes involved in breast cancer is survivin, which is an apoptosis inhibitor protein (iap) and plays an important role in regulation of cell cycle and apoptosis. distinct expression of this gene in tumor cells compared with normal mature cells, and high expression of this gene in malignant tumors has highlighted it as the fourth major transcriptum in tumors and also as a biomarker. cyclophosphamide is one of the most commonly drugs used for breast cancer chemotherapy. cyclophosphamide is an anti-neoplasm, an alkylated and an inhibitor of dna replication. therefore it is important to study expression of this gene under cyclophosphamide treatment.

Methods

Human breast tumor cell lines (mcf-7) were prepared and cultured from the iranian institute of pasteur cell bank, and after counting and passage, treated with cyclophosphamide at different concentrations of 1, 5 and 10 Î¼m and then the effect of the drug over a period of 24 hours was investigated for observing the survivin gene expression changes. rna extraction and cdna synthesis were performed using roche and takara kits, respectively then by optimizing the real time pcr condition, survivin gene expression was studied and finally the data was analyzed by using rest software.

Results

According to studies, considering the fact that survivin is an anti-apoptotic gene, and high expression of survivn escalate breast cancer, the results indicate that expression of this gene after 24 hours of treatment with cyclophosphamide significantly decreased ($p = 0.001$), which can be an important factor in improving the disease.

Conclusion

The study of the effect of taxol on the survivin gene expression suggests that the medicine regulates the gene for apoptosis in breast cancer cells, which actually reduces expression of survivin. in this study, the results also indicated that cyclophosphamide treatment of 24 hours reduces the expression of survivin and

apoptosis in cancer cells. by investigating the survivin gene expression under the cyclophosphamide treatment, early detection of cancer, more targeted chemotherapy for cancer control and accelerated treatment of this disease can be achieved.

Keywords

Breast cancer, survivin, cyclophosphamide, rest

Changes in expression of xiap anti apoptotic gene in mcf-7 cell category of breast cancer after 24 hours treatment with cyclophosphamide

Somayeh Gholami,[1,*] Dr.golnaz asaadi tehrani,[2] Narges mohammadi,[3] Fateme modhejiyan,[4]

1. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
2. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
3. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
4. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran

Abstract

Introduction

Breast cancer has become a serious problem for human societies in recent fifty years. data shows that approximately one out of nine women experiences breast cancer during their lifetime. breast cancer occurs as a result of disorders in key genes. xiap is one of these key genes that has a great influence in breast cancer. xiap is a human x chromosome dependent, apoptosis controlling protein and as an internal caspide controlling factor, xiap inhibits caspases 3, 7 and 9 and any functional defection or disorder in these proteins can result in cancer, neurodegenerative diseases and self-immunity disorders, it also plays an important role in regulation of intracellular signaling and accelerating the reaction of receivers. cyclophosphamide is a dna replication and an anti neoplasm alkylation inhibitor and is one of the most common medicines used for treatment of cancer. this study deals with genetic changes in order to help diagnose and treat breast cancer.

Methods

For this propose, were prepared cell category of human breast cancer (mcf-7) from cellular bank of pastor institute and were treated with cyclophosphamide at concentrations of 1, 5 and 10 Âµm after counting and passage. roche and takara kits were used respectively for rna extraction and cdna synthesis and optimize the situation of real time pcr was used to estimate effectiveness of the medicine in changing expression of xiap after 24 hours of treatment and finally the data was analyzed using the rest software.

Results

Our study showed that xiap is an anti apoptotic gene and the more it is expressed the worse breast cancer gets; the results showed that after 24 hours of treatment with cyclophosphamide, this factor resisted against this medicine (p=1) and did not have any positive influence in decreasing xiap expression and death of cancer cells.

Conclusion

The studies showed that taxol regulates xiap and decreases its expression and that is how it regulates breast cancer cells by regulating their apoptosis. but our results showed that 24 hours of treatment with cyclophosphamide does not decrease expression of xiap and apoptosis in breast cancer cells.

Keywords

Xiap, breast cancer, cyclophosphamide, rest

Characterization of pseudomonas aeruginosa resistant isolates at the hospital in iran

Hossein Fazeli,[1,*] Nazari farzaneh,[2]

1. Isfahan universsity of medical sciences

Abstract

Introduction

Pseudomonas aeruginosa is an opportunistic pathogen and it is commonly responsible for nosocomial infections. the aim of this study was analysis of pseudomonas aeruginosa resistant isolates at the hospital in iran.

Methods

Antimicrobial susceptibility was analyzed for p. aeruginosa isolates. ceftazidime resistant (cazres) isolates with a positive double-disc synergy test were screened for the presence of esbl-encoding genes. phenotypic test to detect metallo-Î²-lactamase strains of p. aeruginosa were performed on imipenem resistant (impres) isolates.

Results

Of 155 p. aeruginosa isolates, 71%, 45% and 45% of isolates were cazres, impres and multidrug resistant (mdr) respectively. 57% of isolates carried the blaoxagroup-1.

Conclusion

Study shows high rate of mdr p. aeruginosa isolates at the hospital in iran. it seems mdr isolates of p. aeruginosa with unique resistance pattern disseminated in this hospital

Keywords

Mdr, pseudomonas aeruginosa, antimicrobial susceptibility

Check the pattern of antibiotic resistance in pseudomonas aeruginosa strains isolated from patients in sari hospital

Anahita Nejaty,[1,*] Hami kabousi,[2] Fatemeh peyrouvi ghadikoulaei,[3]

1. Islamic Azad University of Ayatollah Amoli
2. Islamic Azad University of Ayatollah Amoli
3. Islamic Azad University of Qaemshahr Branch

Abstract

Introduction

: pseudomonas aeruginosa is one of the most opportunistic pathogens and as one of the main factors of hospital infection. the aim of this study was to determine the antibiotic resistance of pseudomonas aeruginosa strains isolated from samples of isolates in clinical trials.

Methods

In this descriptive cross-sectional study, in 2017, sampling for 2 months, treatment centers, city of sari. by performing biochemical diagnostic tests and the use of differential environments, on 40 samples (wound and urinary tract), 30 samples infected with pseudomonas aeruginosa. in order to assess the pattern of antibiotic resistance, disk diffusion method was used.

Results

As a result of this research, the greatest resistance to ampicillin (34.83%) and tetracycline (66.76%) and the lowest resistance to amikacin and tobramycin (%10) view.

Conclusion

The present study suggests that the potential problems of bacterial resistance in the country and the province. so with the supervision of the treatment of antimicrobial activity and reviews the test sensitivity in vitro with adherence to antibiotic treatments, policies can be used to control the spread of drug-resistant germs make it easy.

Keywords

Pseudomonas aeruginosa, hospital infections, antibiotic sensitivity

Chemical composition and antifungal activity of nectaroscordum tripedale extract against some pathogenic dermatophyte strains

Zahra Chegeni,[1] Behrouz ezatpour,[2] Asghar sepahvand,[3] Mojtaba mirshekari sloeimani,[4,*]

2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
4. Bam University of Medical Sciences, Bam, Iran

Abstract

Introduction

Diseases caused by fungi belonging to the three main genera of microsporum spp, trichophyton spp and epidermophyton floccosum are called dermatophytosis; which caused significant medical and health problems in all countries around the world. currently, the use of chemical treatments available for this disease is limited because of their high toxicity, as well as the occurrence of some drug resistance. this investigation aims to assess the chemical composition and antidermatophytic properties of nectaroscordum tripedale against some pathogenic dermatophyte strains.

Methods

In vitro antidermatophytic effects of n. tripedale extract on trichophyton mentagrophytes, microsporum canis, and microsporum gypseum was determined using the determination of minimum inhibitory concentration (mic) and minimum fungicidal concentration (mfc) based on the broth microdilution method, according to the protocol m38-a2 of the clinical and laboratory standards institute (clsi) for filamentous fungi with some modifications. the components of the n. tripedale extract were identified by gas chromatography/mass spectroscopy (gc/ms) analysis.

Results

The results demonstrated that n. tripedale extract had both fungistatic and fungicidal activities with the mic and mfc ranging from 16.6 to 66 mg/ml. the main compounds are decadienal (11.1%), hexadecanoic acid (10.3%), and heptadecane (9.5%), respectively.

Conclusion

Obtained results of this investigation recommend a first step in the search of new antidermatophytic agent and support the use of n. tripedale in the folk medicine for dermatophytic infections.

Keywords

Gc/ms, microsporum canis, microsporum gypseum, trichophyton mentagrophytes, in vitro

Chemical composition, protoscolicidal effects and acute toxicity of pistacia atlantica desf. fruit extract

Zeynab Shirbandi fard,[1] Payam sepahvand ,[2] Hossein mahmoudvand,[3,*]

1. 1Student Reseach Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
3. 2Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran

Abstract

Introduction

Hydatid cyst or cystic echinococcosis (ce), a widely zoonotic disease caused by the infection with metacestodes (larval stage) of the tapeworm echinococcus granulosus, remains a major public health concern on several continents. the present study was designed to evaluate the chemical composition and scolicidal effects of pistacia atlantica desf. extract against protoscoleces of hydatid cysts and its acute toxicity in mice model.

Methods

Various concentrations of the methanolic extract (5â€“50 mg/ml) were used for 10â€“60 min. viability of protoscoleces was confirmed using eosin exclusion test (0.1%). acute toxicity was also determined in mice model. the main components were Î²-myrcene (41.4%), Î±-pinene (32.48%) and limonene (4.66%).

Results

Findings demonstrated that p. atlantica extract at the concentrations of 25 and 50 mg/ml after 20 and 10 min of exposure killed 100% protoscoleces. the ld50 of the intraperitoneal injection of the p. atlantica methanolic extract was 2.43 g/kg and the maximum non-fatal dose was 1.66 g/kg.

Conclusion

Obtained results showed the potential of p. atlantica extract as a natural source with no significant toxicity for the production of new scolicidal agent to use in hydatid cyst surgery.

Keywords

Hydatid cyst; scolicidal; toxicity; p. atlantica

Chemokines are related to sperm dfi in fallopian tube

Roudabeh Mohammadi,[1] Seyed omidreza mousavi,[2] Zahra zandieh,[3] Samaneh aghajanpour,[4] Marjan sabbaghian,[5] Reza aflatoonian,[6,*]

1. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
2. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
3. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
4. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
5. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
6. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran

Abstract

Introduction

Chemokines are one of the major compartments of immune system. it was showed that the chemokines have relevance in ovulation, sperm capacitation and fertilization. the human fallopian tube is an active assembly that undergoes the variation of chemokines. recently, the influence of dna fragmentation in sperm function has been interested for scientist. accordingly, in the current investigation the expression of different chemokines like il6, il8, il10 in human fallopian tube in presence of sperm with normal and abnormal dfi was evaluated.

Methods

Chemokine genes and proteins were evaluated in fallopian tube epithelial cells. sperm samples from 20 donors with normal and abnormal dfi were collected and co-incubated with fallopian tube epithelial cells. subsequently, the level of genes mrna expression was compared using rt-pcr in different groups. furthermore, the supernatant of different groups was applied for determining of the protein levels using elisa.

Results

Chemokine expressions, especially il6 and il8 in fallopian epithelial cells under the effect of normal sperm were higher than control group. also these genes significantly increased in abnormal sperm dfi. il10 was not expressed in control group. however, it is expressing in fallopian tubes at the presence of sperm (normal or abnormal dfi).

Conclusion

It seems that abnormal sperm dfi is established as a pathogen which leads the increasing of chemokines in fallopian tubes. thus, it can be hypothesized that interleukins are essential for sperm and fallopian tube interaction. this communication prepared safe environment for important events in fallopian tube like sperm preservation, fertilization and so on.

Keywords

Chemokine, sperm, dfi, fallopian tube

Chimeric antigen receptor (car) tcells expressing b cell maturation (bcma) and other survival nf-kappa light chain antigens baff (blys) april taci and baff-r in treatment of multiple myeloma

Farshad Fatholahzadeh,[1,*]

1. SBMU (Shahid Beheshti Medical University)/ Shahid Rahimi Medical And Educational Center

Abstract

Introduction

The modern concept of targeted therapy in hematologic malignancies in general, aims at generating agents committed to targeting malignant cells more specifically, with less toxicity. using of car t-cells can be applicable to a broad range of patients irrespective of mhc type. based on 3 bold advantages: few side effects, working in a non-major histocompatibility complex-restricted manner and target non-protein taas; adoptive transfer of car-modified t cells is a promising strategy for remission of some specific malignancies

Methods

The chimeric antigen receptor (car) is a t cell surface receptor that simulates the physiological functions of the native t cell receptor (tcr). it is composed of an extracellular antigen recognition domain, a spacer, a transmembrane domain and an intracellular t cell activation domain.in 1989 gross et al. constructed a chimeric tcr (ctcr) gene made by replacing extracellular domains of the tcr with immunoglobulin homologs. the resulting ctcr was expressed on the surface of cytotoxic t lymphocytes, recognized antigen in a non-mhc-restricted manner. chimeric proteins have resulted in biochemical events of early t cell activation such as interleukin-2 (il-2) production and ca2+ influx. in 1993 eshhar et al. pioneered to design a gene composed of a single chain variable fragment (scfv) of an antibody linked with Î¶ chains, which is aimed to overcome the difficulty in activating anti-tumor tcells through the tcr. zhong et. al., have demonstrated enhanced cytokine production, improved in vivo t-cell survival, enhanced tumor elimination, improved pi3k/akt pathway activation, enhanced bcl-xl expression and reduced t cell apoptosis for a third generation car. cars for general hematological malignancies cd19 is a transmembrane glycoprotein that is involved in the regulation of the activation of b-cells. cd19 express uniformly at all stages of b-cell differentiation in over 95% of b-cell malignancies. malignancies such as chronic lymphocytic leukemia, b-cell nhl and b-cell acute lymphoblastic leukemia. cd19 has shown success in clinical settings to treat all of these disorders. despite the high levels of complete response rates in patients, relapse from cd19 car therapy can occur also long-term persistence of cd19-specific car-t cells is associated with elimination of normal b lymphocytes, resulting impairment of humoral immunity. with this in mind, new targets are being identified and evaluated. multiple myeloma (mm) is a malignancy defined by the accumulation of clonal plasma cells within the bone marrow with evidence of end organ damage. evidence of disease includes lytic bone lesions, pathologic fractures, hypercalcemia, anemia, renal impairment and increased susceptibility to opportunistic infections proliferation and survival antigens 1- il-6, ifnÎ± and il-6 related family of cytokines 2- pi3 kinase /akt pathway related factors 3-

factors activating nf-kappa b: the tnf family ligands, april interact with three tnfr family members: taci, baffr and bcma. april and taci bind independently to glycosaminoglycan structures such as those in syndecan-1 (cd138), or other proteoglycans. the interaction pattern between baff april and their receptors is both specific and redundant. baff b-lymphocyte stimulator (blys), is a tumor necrosis factor (tnf) homologue that activates apoptosis. april the architecture of the april gene resembles that of baff. however, april does not form 60-mers, but possesses residues that are crucial for binding to glycosaminoglycans. taci the genomic organization of taci is similar to that of bcma and baff-r, but the ligand-binding region is duplicated. bcma bcma (b cell maturation antigen) is a tnf receptor (tnfr) family member that is express on terminally differentiated b cells; a cell surface glycoprotein and nonâ€“tyrosine kinase receptor expressed on mm cell lines and patient mm cells at high levels

Results

Bcma is an attractive antigen for car t therapy. based upon the highly restricted normal tissue expression of bcma along with its high expression on malignant plasma cells, de-xiu bu, et al did an effort to minimize the clinical risk of car directed immunity that could result in anaphylaxis or immune-mediated loss of car t cells. they generate a car targeting bcma for adoptive t cell therapy of multiple myeloma

Conclusion

Anti bcma car t-cells, targeting an antigen other than cd19 can induce complete remissions of a hematologic malignancy. engineered car-bcma t cells have powerful activity against mm that was resistant to standard therapies. these results should encourage further efforts to enhance anti-bcma car t cell therapies

Keywords

Anti-bcma cars, multiple myeloma

Chitosan immobilization on bio-mof nanostructures: a biocompatible ph-responsive nanocarrier for doxorubicin release in treatment of breast cancer

Reza Abazari,[1] Ali reza mahjoub,[2,*]

1. Department of Chemistry, Tarbiat Modares University, P.O. Box 14115â€“175, Tehran, Iran
2. Department of Chemistry, Tarbiat Modares University, P.O. Box 14115â€“175, Tehran, Iran

Abstract

Introduction

One of the current research areas of medicinal chemistry is devoted to the development of manageable and targeted drug delivery systems to deliver effective doses of medicines to the targets of interest and avoid the intrinsic drawbacks of traditional therapeutic drugs. another example of inorganic drug delivery tools refers to metal-organic frameworks (mofs), which have received a great deal of attention due to their huge surface area, adjustable pore size, functionalizability, biological inertness and adjustable properties. to solve the solubility issue of bio-mofs, composites of bio-mofs and polymers, such as chitosan (cs), can be employed. cs is a multifunctional natural polysaccharide that is comprised of the Î²-(1,4)-linked glucosamine and n-acetyl glucosamine units. this polymer is highly biodegradable, bioavailable and nontoxic, and possesses many important medicinal properties. moreover, it can be converted to soluble polycationic salts or other derivatives to produce films, fibers, hydrogels and other agents with suitable traits. as combining both bio-mof and cs with an appropriate material can help to surpass the limitations of their application in drug delivery, this study proposes combining bio-mof and cs with each other to obtain their desirable properties and overcome their disadvantages.

Methods

Dox was considered as a model drug for the drug-loading and release tests. the two ph values of 6.8 and 7.4 were used to simulate the conditions of cancerous and healthy cells, respectively. mtt assay was performed to investigate cell viability. separate samples of the mcf-7 cells were incubated in solutions of free dox, pure cs/bio-mof and dox@cs/bio-mof for 12 h.

Results

The ft-ir spectra of the samples obtained through synthesizing cs/bio-mof from the pure bio-mof, along with the spectrum of cs, were recorded over the range of 400 to 4000 cm-1 to verify the presence of cobalt and adenine bonds and the other functional groups. pxrd analysis was employed to determine the crystallographic properties of the synthesized samples over the 2Î¸ range of 5 to 70Âº. the zeta potential of the prepared nanocarrier was measured as a function of ph. at ph 5, the zeta potential of cs/bio-mof is +33.0 mv due to the cationic nature of the polysaccharide chains of cs whereas the value of zeta potential declines to +2.4 mv at ph 7 as an outcome of cs deprotonation. application of uv/vis spectrophotometry determined that the dlc and dle parameters of the cs/bio-mof carrier are 48.1% and 92.5% while the dlc and dle values of the bio-mof carrier are 39% and 76%, respectively. results reveal the dramatic effect of

the ph-responsive swelling and contracting mechanism of the cs chains on dox release. cell viability in the presence of different concentrations of free dox and dox@cs/bio-mof was investigated by performing the mtt assay on the mcf-7 cell line in acidic media (ph 6.8). according to the results of mcf-7 cell viability, the 50% maximal inhibitory concentration (ic50) of dox@cs/bio-mof is 3.125 Âµg ml-1 while the ic50 value of free dox is 25 Âµg ml-1. based on the results, the mcf-7 cells exposed to dox@cs/bio-mof experience a significant increase in the percentage of apoptosis (27.34%) compared with the cells exposed to just free dox (12.21%). in other words, the flow cytometry results imply that dox@cs/bio-mof triggers a substantially higher extent of apoptosis in the mcf-7 cells relative to free dox. the endocytosis capacity of the carrier was determined by incubating the mcfâ€“7 cells with the dox@cs/bio-mofs for 6 and 12 h in the dark and following localization of the released dox molecules in the cellsâ€™ nuclei by the means of the dapi fluorescent nuclear marker. these emissions are observed after both incubation times and signify the significant endocytosis capacity of the cs/bio-mof carrier. these results approve that the dox@cs/bio-mofs can diffuse into cytoplasm and release dox, in addition to verifying that the released dox molecules can reach the nuclei of cancerous cells to pose their anticancer effect.

Conclusion

This study immobilized chitosan onto a biological metal-organic framework to create a ph-responsive system (cs/bio-mof) for controlled drug delivery to cancerous cells. throughout the study, optical microscopy, mtt assay, fluorescence microscopy and the trypan blue test were used to determine the in vitro cytotoxicity of the carrier against mcf-7 cells.

Keywords

bio-mof nanostructures, ph-responsive, breast cancer, doxorubicin.

Chitosan nanoparticles deliver nucleic acid structures to macrophages effectively

Fatemeh Karami,[1,*] Yaser mansoori,[2]

1. Department of Microbiology, Arsenjan Azad University
2. Department of Medical Genetics, Fasa University of Medical Sciences

Abstract

Introduction

Macrophages are one of the main antigen presenting cells (apcs) with important regulatory functions. chitosan nanoparticles could potentially deliver drugs and genes to the cells including macrophages.

Methods

In the present study we prepared fitc labeled scramble sirna encapsulated chitosan nanoparticles by coacervation process method. peritoneal macrophages were isolated from peritoneal cavity lavage of balb/c mice. chitosan/sirna nps were exposed to macrophages for 6 hrs (10 mg sirna/106 cell/ml) and the nps uptake was determined by flowcytometery. after 24 hrs of exposure expression of cd40, cd86 and mhc-ii co-stimulatory molecules were evaluated by flowcytometry. nitric oxide (no) production examined using the griess reaction. tnf-Î± level in the culture supernatants were determined using elisa method.

Results

Chitosan nps were effectively up taken by macrophages (<90% of the cells). expression of cd40, cd86 and mhc-ii co-stimulatory molecules were significantly enhanced by nps exposure ($p<0.05$). treated macrophages significantly produce more no ($p<0.05$) and also tnf-Î± release ($p<0.05$).

Conclusion

The results of our study demonstrated that chitosan/sirna nanoparticles can effectively deliver the nucleotides to the macrophages and the same time induces maturation of macrophages. this strategy can provide an effective method for delivery of drugs and genes for therapeutic purposes.

Keywords

Macrophages; chirosan; nanopartocles; sirna

Chitosan/nialfe-ldh composite: a ph-responsive bio-carrier of curcumin release for treatment of breast cancer

Reza Abazari,[1] Ali reza mahjoub,[2,*]

1. Tarbiat Modares University
2. Tarbiat Modares University

Abstract

Introduction

In the treatment of cancer, drug delivery plays a fatal role. however, it is essential to control the release of drug from drug delivery systems since very low drug concentrations are not therapeutically effective and very high dosages lead to cellular toxicity. though curcumin presents many pharmaceutical activities, its application is limited due to its low water solubility, high rate of decomposition at neutral ph and susceptibility to photochemical degradation, which result in its low bioavailability. some potential drug delivery materials include luminescent rare-earth compounds, mesoporous silica, hydroxyapatite, metal oxides and metal hydroxides. among these materials, layered double hydroxides (ldhs) have attracted much interest since they can be utilized for catalysis, sensor and biomedical purposes. the high surface area, great pore volume and uniform pore size of ldhs represent them as a suitable candidate for drug delivery. the problem is that ldhs are hydrophilic and toxic. moreover, the ph of cancerous cells is about 5.5 to 5.8 while the ph of normal cells is 7.4. therefore, the devised drug carrier should be ph-responsive to minimize the side effects of the loaded drug. in this respect, chitosan can be applied since it is biodegradable, biocompatible and ph-responsive and it can be coated on ldh to load curcumin.

Methods

Methyl thiazolyl tetrazolium (mtt) assay was performed to investigate cytotoxicity of the bio-carrier against the mcf-7 human breast cancer cell line. about 5120 cells were seeded into 96-well plates at 37 â„ƒ under a 5% co2 atmosphere. 0, 5, 10, 20 40, 80 and 200 mg/ml of the curcumin loaded carrier was added to the wells and the plates were incubated for 24 h. after that, 10 ml mtt (5 mg/ml) was injected to each well and the plates were incubated for 3 h. this treatment resulted in the formation of purple formazone crystals, which were dissolved in 100 ml dmso. after that, absorbance of the wells was recorded at 570 nm by a multi-well elisa plate reader to estimate their cell viability (%) as (asample/acontrol)Ã—100, where asample and acontrol are absorbances of the treated and untreated wells, respectively.

Results

After detailed characterization of the bio-carrier, its drug delivery performance was evaluated. as the first measure, its ph response was studied since normal extracellular ph is about 7.4 but tumorous tissues are slightly acidic (phâ‰ˆ0.5). the release behavior of curcumin is considerably ph sensitive. so that, just 23.7% curcumin releases at ph 7.4 whereas about 93.5% release is observed at ph 5.0, within 4 days. dpph

assay was adopted to investigate the overall anti-oxidant capacity of curcumin@chitosan/nialfe-ldh, chitosan/nialfe-ldh and chitosan. the associated results show that chitosan and the carrier possess nominal antioxidant activity while curcumin@chitosan/nialfe-ldh is able to scavenge radicals and act as a good antioxidant. in this respect, 150 Î¼l curcumin@chitosan/nialfe-ldh gave 92% scavenging activity and the level of activity remained almost constant using 200 Î¼l curcumin@chitosan/nialfe-ldh. mtt assay was conducted to investigate biocompatibility of the chitosan/nialfe-ldh bio-carrier. compared with the control group, cellular viability is greater than 90%, in the presence of chitosan/nialfe-ldh. it means that cytotoxicity of this carrier is insignificant and it can be used as a biocompatible and biodegradable drug delivery system. meantime, it is evident that this carrier is cytotoxic for the mcf7 cells and its corresponding inhibitory concentration at 50% (ic50) is 20 mg/ml. this finding suggests that the proposed composite is applicable to long-term and target-specific treatment of human tumors.

Conclusion

This study reports synthesis and characterization of chitosan/nialfe-ldh bio-carriers, as a mesoporous hydrophilic drug delivery system for treatment of breast cancer by curcumin. the results demonstrated that the drug release profile of chitosan/nialfe-ldh is ph sensitive. so that, it can release a noticeable amount of the loaded drug at ph 5.0 while it releases a negligible amount of the drug at ph 7.4. in addition to its ph-responsive property, the drug loaded carrier was approved to act as an antioxidant agent with low cytotoxicity against normal cells and high cytotoxicity against the mcf7 cell line. in general, the introduced carrier is appropriate for long-term release and target specific cancer therapy.

Keywords

Chitosan/nialfe-ldh bio-carrier; ph-responsive; biomaterials; curcumin; breast cancer cell line.

Chondroitin sulfate degradation and eicosanoid metabolism pathways are impaired in the focal segmental glomerulosclerosis

Hootan Yazdani,[1,*]

1. 3. Urology-Nephrology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Focal segmental glomerulosclerosis (fsgs), the most common primary glomerular disease, is a diverse clinical entity that arises after podocyte injury. although numerus studies suggested molecular pathways responsible for development of fsgs, many unknowns about its pathogenic mechanism is still remained. the present study investigated and confirmed the role of two important pathways that were predicted as candidates for pathogenesis of fsgs in our previous in silico analysis.

Methods

The expression level of four enzyme genes that were representative of â€œchondroitin sulfate degradationâ€• and â€œeicosanoid metabolismâ€• pathways were investigated in the urinary sediment of biopsy proven fsgs patients (n = 20) and healthy subjects (n=17) using quantitative real time polymerase chain reaction (q-rt-pcr). these target genes were arylsulfatase, hexosaminidase, cyclooxygenase-2 and prostaglandin i2 synthase. mannâ€“whitney u test was used to compare different variables between patient and control groups, patients with proteinuria of > 3 gr/day and < 3gr/day, as well as patients with egfr > 60 ml/min/1.73 m2 and < 60 ml/min/1.73 m2. correlation of target genes and clinical and pathological characteristics of the disease was calculated. receiver operating characteristic (roc) analysis was performed to to assess and compare the diagnostic accuracy of gene expression level between the study groups. combination of target genes as a diagnostic or prognostic panel for roc analysis was carried out using multiple logistic regression.

Results

The roc analysis revealed that combination of three target genes (i.e. hexosaminidase, arylsulphathase and cyclooxygenase-2) improve the diagnosis accuracy of patients group to 76%, however, the mean difference between healthy and patients groups was not significant. the expression level of prostaglandin i2 synthase was lowers the limit of rt-pcr detection. hexosaminidase were correlated with the level of proteinuria where cyclooxygenase-2 were correlated with interstitial inflammation and the serum creatinine level in the disease group. a combined panel of these three target genes improved the discriminant accuracy of disease progression in terms of proteinuria and glomerular filtration rate to 87% and 74% respectively.

Conclusion

Our data indicated that these target genes contributes in the pathogenesis of fsgs and can be considered as biomarkers for non-invasive evaluation of disease progression.

Keywords

Focal segmental glomerulosclerosis, molecular pathway, biomarker, chondroitin sulfate, eicosanoid me

Circulating tumor cells isolation using microfilters on a microchip

Hajar Moghadas,[1,*] Naeim jalali,[2] Mahdi moghimi,[3] Mohammad seyedjalali,[4]

1. Department of Gas and Petroleum, Yasouj University, Gachsaran 75918-74831, Iran
2. Department of Mechanical Engineering, Iran University of Science and Technology (IUST), Tehran, Iran
3. Department of Mechanical Engineering, Iran University of Science and Technology (IUST), Tehran, Iran
4. Mizan Microfabrication Technologies Co., Tehran, Iran

Abstract

Introduction

One of the strange characteristics of the cancer tissue is that their cells are very loose. the cancer cells are able to separate from the original tumor and circulate through the blood. in this situation, they are called circulating tumor cells (ctcs) [1]. isolation and detection of the ctcs from the bloodstream not only are singe of the metastasis but also provide valuable information about the cancer diagnosis and treatment [2]. microfluidic devices as a powerful technology have been used greatly for isolating ctcs using different methods such as immunomagnetic, dielectrophoresis, hydrodynamic and size-based filtration methods [3]. the size-based filtration methods applied the physical differences of the particles to separate and isolate them. in these simple methods, there is no need to use any chemical or magnetic agents. here we have produced a microchip to capture ctcs using microfiltration mechanism. the capture efficiency of the microchip has been evaluated by spherical polystyrene particles with an average diameter of 16 Âµm. these particles have been used as a model of the ctcs that generally are between of 7 to 30 Âµm.

Methods

The microchip has been fabricated using soft lithography technology with pdms (polydimethylsiloxane). it has been consisting of a main microchannel in which several diamond micropillars have been situated in four stages. the height of the microchannel is 40 Âµm and the distances between micropillars are 20, 15, 10 and 5 Âµm in stage 1, stage 2, stage 3 and stage 4, respectively. while the particles have been passed through the microchannel they will be trapped in the free spaces between the micropillars based on their sizes. the particles have been suspended in the distilled water. then the suspension has been injected from into the microchip using a syringe pump at a flow rate of 10 Âµl/min. to provide air bubbles trapping between the micropillars first distilled water has been injected into the microchannel at a flow rate of 2 Âµl/min for 5 minutes.

Results

The suspended particles have been inserted into the microchip at a flow rate of 10 Âµl/min. as it has been shown in fig. all the particle passes through the first stage with 20 Âµm free space between the micropillars. however, all of them have been trapped in the second stage with 15 Âµm free space. none of

the particles was able to escape the second stage as their diameter are 16 Âµm which is greater than the free space in the second stage that is 15 Âµm.

Conclusion

These data indicate that the capture efficiency of this microchip is 100 percent for the particles with an average diameter greater than 15 Âµm. respect to the fact that ctcs are greater than 5 Âµm, therefore, it is predicted that our microchip is able to capture them. as the future work, the capture efficiency of the microchip will be evaluated by cancer cell lines with different diameter suspended in the culture media as a more realistic model for ctcs.

Keywords

Circulating tumor cells, cancer, microfluidic, filtration

Circulating tumor dna(ctdna) plus protein biomarker test:an early diagnosis of pancreatic cancer

Anita Alizadeh,[1,*]

1. Higher Education Institute of Rab-Rashid

Abstract

Introduction

Pancreatic cancer has high morbidity and mortality and remain one of the most difficult cancer to treat.diagnosis of pancreatic cancer is devastating owing to its poor prognosis,with a five years survival rate of only nine percent.currently,most individuals are diagnosed at a late stage when treatment option are limited.therefore early detection of pancreatic cancer provides the greatest hope for making substantial improvements in survival.analyzing circulating tumor dna(ctdna) and protein biomarkers together could increase the sensitivity of detecting resectable pancreatic cancer and provides early diagnosis for pancreatic cancer.

Methods

The present study was conducted in a review of the library resources,digital resources and authentic scientific sources of the pubmed,google scholar and science direct with the key word of early diagnosis of pancreatic cancer and circulating tumor dna(ctdna) plus protein biomarker test.

Results

In this study,analyzing of patient blood samples for kras gene mutations in the ctdna,along with analysis of mutations in specific protein biomarkers:ca19-9,cea,hgf,opn and prolactin show that in comparision to the ctdna test or the ca19-9 test alone, the combination assay is more successful at early detecting the cancer irrespective of tumor size.around 30% patients with pancreatic cancer are early identified with using the kras gene test alone.adding ca19-9 to the detection strategy is improved the rate of diagnisis to 49% .

Conclusion

Ctdna plus protein biomarkers test in comparision to most current diagnostic methods is non invasive and early detection method that cause to treat of pancreatic cancer in early stages of disease,but it seems more research is needed to evaluate this method.

Keywords

Pancreatic cancer,circulating tumor dna,diagnosis,biomarker.

Clonal diversity, antibiotic resistance and virulence determinants among staphylococcus aureus strains isolated from health care workers in north of iran

Parisa Sabbagh,[1,*] Amirmorteza ebrahimzadeh namvar,[2] Soheil ebrahimpour,[3]

1. Infectious Diseases and Tropical Medicine Research Center, Babol University of Medical Sciences
2. 2. Department of Microbiology, School of Medicine, Babol University of Medical Sciences, Babol, Iran
3. Infectious Diseases and Tropical Medicine Research Center, Babol University of Medical Sciences

Abstract

Introduction

Staphylococcus aureus is responsible for high morbidity and mortality in both developed and developing countries. asymptomatic carriers are reservoir and important risk factor for transmission to others, particularly hospitalized patients. the aim of this study was to assess the molecular and epidemiological characteristics of staphylococcus aureus among healthcare workers in northern iran.

Methods

In this cross-sectional study, nasal swabs were obtained from 120 healthcare workers. antimicrobial resistance pattern was assessed by disc diffusion method. characterization of isolated s. aureus strains was determined by meca, icad, sasx, mecc and mupa, acme-arca genes detection. the strain typing pattern was further analyzed using random amplified polymorphic dna rapd-pcr method.

Results

A total of 38 s. aureus strains were collected from participants. antibiotic resistance testing revealed a maximum resistance rate (100%) to amoxicillin. multiple drug resistance rate was 86.84% (33/38). the most prevalent gene was mupa (81.6%) followed by icad (73.7%), meca (68.4%), acme-arca (57.9%) and sasx (28.9%). none of isolates were mecc. furthermore, polymorphic patterns consisting of 28 discernible rapd types were recognized.

Conclusion

Our results demonstrated high rate of antibiotic resistant s. aureus isolates among healthcare workers in northern iran. since healthcare workers are in close contact with patients, so they can be source of severe infections in hospitalized patients. we suggest future epidemiological studies on s. aureus isolates to better understanding the distribution of existing strains in northern iran. moreover, improving the knowledge of healthcare workers and measures for preventing the acquisition of s. aureus infection are also necessary.

Keywords

Nasal carriers, antibiotic resistance, staphylococcus aureus, molecular typing.

Cloning and expression of recombinant human arylsulfatase b in pichia pastoris

Nahid Sedighi khavidak,[1] Fataneh fatemi,[2,*] Seyed omid ranaei siadat,[3] Sareh arjmand,[4]

1. Shahid Beheshti University
2. Shahid Beheshti University
3. Shahid Beheshti University
4. Shahid Beheshti University

Abstract

Introduction

Arylsulfatase b belongs to the sulfatase family (arsb; n-acetylgalactosamine-4-sulfatase) (ec 3.1.6.12), is the lysosomal enzyme that removes the 4-sulfate group of n-acetylgalactosamine-4-sulfate at the non-reducing end of chondroitin-4-sulfate (c4s) and dermatan sulfate (ds) and thereby regulates their degradation. the lack of arsb associated with mucopolysaccharidosis vi (maroteauxâ€“lamy syndrome) and leads to the accumulation of its substrate, dermatan sulfate, and chondroitin 4-sulfate, which results in severe skeletal abnormalities, cardiac valve disease, reduced pulmonary function, and other malfunctions including the cns involvement. while there is no currently approved treatment for mps vi, enzyme replacement therapy (ert) using human recombinant arsb became available recently. so far, the human recombinant arsb is produced in mammalian expression system which is a high cost and time-consuming process. the yeast expression system has considered as the suitable host for the expression of many mammalian genes due to the specific characteristics and low-cost recombinant protein production process. the aim of this study was to produce the recombinant human arsb in the methylotrophic yeast pichia pastoris.

Methods

Cloning: native human arsb and the human formylglycine-generating enzyme (sumf1) cdna with a signal peptide coding sequence, was inserted in ppic9 plasmid to produce the expression vector ppic9-arsb-sumf1. vectors were linearized and used to transform competent cells of p. pastoris, x33 and x33 humanized strain. an empty ppic9 vector was used as a negative control. gene insertion was confirmed by pcr and sequencing. expression: p. pastoris clones were grown in ypd medium (yeast extract 1% p/v; peptone 2% p/v; dextrose 2% p/v) during 48 hours at 28 Â°c and 220 rpm. cells were harvested by centrifugation and the pellet was resuspended in bmg medium and cultured for 24 hours at 28Â°c and 220 rpm. finally, cells were recovered and resuspended in bmm medium and cultured for 120 hours at 28 Â°c and 250 rpm. methanol was added every 24 h to maintain a final concentration of 0.5%. arsb expression verified using sds-page and western-blot.

Results

The results of pcr, double digest and sequencing indicated that the human arsb and sumf1genes were inserted successfully in ppic9 plasmid. the analysis of transformed colonies compare to the negative

control, showed the presence of expression vector ppic9-arsb-sumf1in the x33 and x33 humanized p. pastorisâ€™s strain. evaluation of 25ml scale of p. pastoris culture for human arsb-sumf1 showed the presence of arsb activity for the intracellular and extracellular fraction.

Conclusion

Human arylsulfatase b and formylglycine-generating enzyme genes were cloned successfully in p.pastoris x33 and x33-humanized strain. the presence of enzyme activity in the intracellular and extracellular fraction of cell, indicated that despite of using signal peptide the recombinant arsb was not secreted completely to the medium. nevertheless, the condition of arsb expression in p.pastoris should be optimized.

Keywords

Mucopolysaccharidosis vi, arylsulfatase b, formylglycine-generating enzyme, pichia pastoris

Cloning of penicillium brevicompactum mpae gene from mpa gene cluster

Narmin Vatani,[1,*] Fatemeh rahmani,[2]

1. department of biology. faculty of science. urmia university. urmia.iran
2. department of biology. faculty of science. urmia university. urmia.iran

Abstract

Introduction

: mycophenolic acid (mpa) is a fungal metabolite possessing antiviral, antifungal, antibacterial, antitumor and antipsoriasis activities. it is being used as an immunosuppressive agent in kidney, heart, and liver transplantation patients. in the presence of mpa, proliferation of b and t lymphocytes is inhibited. the mpae gene resides in a 25kb gene cluster in the genome of penicillium brevicompactum.

Methods

Genomic dna was extracted from penicillium brevicompactum grown on pd medium. in order to amplify the mpae fragment, gene specific primers were designed using gene runner software according to penicillium brevicompactum ibt23078 sequence database under hq731031.1 accession number. the amplified mpae gene was cloned in to ptg19-t pcr cloning vector and transformed into ecoli top 10 competent cells.

Results

The insertion of mpae into the ptg19-t cloning vector was further confirmed by pcr. after the selection of positive screen colonies using colony-pcr, the sequencing of the recombinant plasmids was performed. the obtained sequence was analyzed using blast and clustalw software program. this sequence was compared and aligned with other mpae sequences in different species. results showed that this sequence had differences with other fungal species. according to the results of the current study a new sequence from strain mpae has been published for the first time.

Conclusion

The mpae amplification produced an amplicon (~780 nt) larger than mpae gene reported in database, implying a new strain of penicillium brevicompactum.

Keywords

Cloning, penicillium brevicompactum, mycophenolic acid, transplantation, mpae gene

Co-expression network analysis reveals biomarker mirnas and their functions in colorectal cancer (crc)

Pouya Salehipour,[1] Shadi mahdipour,[2] Masoumeh sepahvand,[3] Zahra bahmanpoor,[4,*]

1. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
2. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
3. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
4. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

Colorectal cancer (crc) is the third most common type of cancer worldwide and a leading cause of cancer death. as a result, vigorous effort has been made to find effective therapeutic strategies such as those on the basis of etiology. regarding this matter, various mirnas have been shown to associate with crc. in order to identify corresponding mirnas, several approaches can be applied including whole genome studies, and co-expression analysis among mirnas, lncrnas, and mrnas. finding these mirnas and their target genes facilitates the recognition of the signaling pathways in which they attend, and therefore, provide a promising therapeutic outcome. the significance of mirnas is well-defined regarding their role in the initiation and progression of crc as well as their diagnostic, prognostic, and predictive use as biomarkers. an exact knowledge of crc-specific mirnas, their interactions with genes and rnas, as well as regulation and deregulation mechanisms, is a potentially effective strategy to both improve current therapeutic approaches and help us find new ones. this study was designed to achieve this goal by analyzing 445 samples of crc using tcga-coad data along with co-expression analysis of mirnas, lncrnas, and mrnas.

Methods

Transcriptome profiling data of 445 crc primary tumors and 8 primary normal samples were extracted from the tcga-coad project. differential expression analysis and co-expression network analysis among mrnas, mirnas, and lncrnas were performed to create network pathways that reveal active mirnas. in addition, experimental targets of these mirnas were determined by mirtarbase database. to find the functions of these mirnas in crc, nested network analysis of identified mrnas was performed using kegg and string databases to identify altered signaling pathways in crc.

Results

Two mirnas, hsa-mir-141-3p and hsa-mir-194-5p, were identified as candidate mirna biomarkers in crc. both mirnas were up-regulated in crc. however, mir-141-3p was highly differentiated with a log2fc of -

4.762 and a p-value of 1.297e-10. network analysis determined that mir-141-3p was associated with hippo signaling pathway (adjusted p-value= 7.10e-04) by altering the expression of stk3, tgfb2, yap1, tcf7l1, gli2, and ywhag genes, and with pi3k-akt signaling pathway (adjusted p-value= 1.70e-02) by altering the expression of reln, eif4e, pten, phlpp1, phlpp2, and ywhag genes. in addition, mir-194-5p was associated with wnt signaling pathway (adjusted p-value= 1.90e-01) by altering the expression of rbx1, prickle1, and sox17 genes.

Conclusion

Deregulation of mirnas is a prevalent phenomenon in many types of cancer and occurs due to deletion or amplification of mirna encoding genes, abnormal transcriptional control, epigenetic changes, and aberrant mirna biogenesis. mirnas have been constantly reported as potential biomarkers in cancer that can serve as diagnostic, prognostic and therapeutic tools as well as targets. in the current experiment, we suggested a strategy to find mirnas that can serve as candidate biomarkers in crc. our results revealed that hsa-mir-141-3p and hsa-mir-194-5p are potential biomarkers in this type of cancer. mir-141 is an iconic mirna, which is reported to be up-regulated in crc. mir-141 promotes cell proliferation by targeting other genes such as sip1, or through inhibition of map2k4. genes involved in cell signaling comprise a major group of targets for mirnas. as for mir-141, a noticeable number of target genes are associated with signaling pathways: stk3, tgfb2, yap1, tcf7l1, gli2, and ywhag in hippo pathways and reln, eif4e, pten, phlpp1, phlpp2, and ywhag genes in pi3k-akt pathway. since signaling pathways are tightly regulated and controlled, any alteration in the genes that are involved in these pathways, such as mir-141 gene, would further affect cell signaling and lead to initiation or progression of cancer. finding other mirnas with similar contribution is an important step in the recognition of signaling pathways linked to different types of cancer, which also guides us through the path of finding improved and more effective therapeutics.

Keywords

Colorectal cancer (crc), mir-141-3p, mir-194-55, co-expression network analysis, signaling pathways

Co-expression network analysis reveals mir-182-5p as a biomarker which alter rap1 and mapk signaling pathways in prostate cancer (pc)

Shadi Mahdipour,[1] Masoumeh sepahvand,[2] Pouya salehipour,[3] Mojdeh mahdiannasser,[4,*]

1. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
2. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
3. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
4. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Circulating micrornas (mirnas) have provided an active and swiftly evolving region of common research that has a potential to improve cancer diagnostics and therapeutics. especially, mirnas could provide potential new biomarkers for prostate cancer (pc), one of the most common malignant tumors in men. common diagnostic tests for prostate cancer have low specificity and poor sensitivity. despite of the fact that many cases of prostate cancer are slow growing and therefore, do not impose a major effect on health, there are no specific tests that can differentiate these from cancers that will become aggressive and life-threatening. circulating mirnas are highly stable molecules and are detectable and quantifiable in a range of biofluids, so they could be potential diagnostic, prognostic and predictive biomarkers. deregulation of mirnas is involved in promoting cell proliferation and preventing apoptosis, which contributes to the pathogenesis of cancer. the relevance of mirna regulation in the induction of cancer can be tracked by analyzing mirna targeted genes. to recognize conserved mirna-mrna interactions in cancer, we have carried out an integrative analysis of transcriptomic data. we analyzed 491 samples of pc using tcga-coad data along with co-expression analysis of mirnas, lncrnas, and mrnas.

Methods

Transcriptome profiling data of 491 pc primary tumors and 51 primary normal samples were extracted from the tcga-coad project. differential expression analysis and co-expression network analysis among mrnas, mirnas, and lncrnas were performed to create network pathways that reveal an active mirna. for mirna analysis, we employed mirtarbase database to find experimental targets of mirna. in addition, to find the functions of mirna, gene pathway enrichment was performed by network analysis of identified mrnas using kegg and string databases.

Results

We identified hsa-mir-182-5p as a candidate mirna biomarker that was up-regulated in pc. mir-182-5p was highly differentiated with a log2fc of -2.570 and a p-value of 3.867e-21. however, no significant difference was observed between tumor and metastatic tumor samples. network analysis determined that mir-182-5p was associated with rap1 signaling pathway (adjusted p-value= 6.84e-14) by altering the expression of gnao1, met, rap1a, tiam1, adcy6, calm1, efna5, fgf9, fgfr2, mras, rras, and tln1, also was associated with mapk signaling pathway (adjusted p-value= 3.34e-13) by altering the expression of rap1a, bdnf, fgf9, fgfr2, map3k2, map3k3, mras, mef2c, ppp3cb, rras, srf,and tgfbr2.

Conclusion

Mirna variation might contribute to human tumorgenesis. investigation of differentially expressed mirnas in tumor samples has yielded important information on tumorgenesis. an understanding of the molecular pathways involved in pc tumorgenesis would improve the diagnosis and treatment of the disease. we screened 542 pc and normal samples, using tcga-coad data, and identified hsa-mir-182-5p that was up-regulated in tumor samples. this conclusion suggests that mir-182-5p could be a potential biomarker for pc. mir-182-5p is over-expressed throughout prostate cancer progression and might be useful as a prognostic biomarker. similarly, several other studies have suggested that mir-182-5p expression is significantly higher in prostate cancer compared to normal samples even though pathway analysis has not been carried out. subsequently, we identified target genes of mir-182-5p using mirtarbase database. the results of pathway analysis suggest the involvement of this mirna in the regulation of biologically important signaling cascades, including rap1 signaling and mapk signaling. deregulation of these pathways is likely to have a major effect on several aspects of prostate cancer biology. the results of our study suggest that mir-182-5p may play a significant role in these processes. in different cellular contexts, one mirna can probably modulate different pathways and cause various phenotypes depending on the availability of a certain population of mrna targets. this study showed that several number of target genes are associated with rap1 and mapk signaling pathways. since signaling pathways are highly controlled, any changes in the genes involved in these pathways may lead to the initiation or progression of cancer. analysis of mirna expression and recognition of target genes may provide an understanding of potential tumorgenic mechanisms in pc. further study to identify the targets of mirnas will increase our understanding of their mechanism and improve our ability to utilize them clinically as biomarkers or as therapeutic targets. in addition, the molecular mechanisms of mir-182 and its function in different tissues remain unclear and should be considered in future studies.

Keywords

Co-expression network analysis, biomarker, signaling pathways, prostate cancer

Co-occurrence of cfdna brafv600e mutation and rassf1/slc5a8 genes promoter hypermethylation in papillary thyroid carcinomas

Fatemeh Khatami,[1,*] Ladanteimoori-toolabi,[2] Bagher larijani,[3] Ramin heshmat,[4] Mohammad haddadi aghdam,[5] Seyed mohammad tavangar,[6]

1. Chronic Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute,TUMS
3. Endocrinology and Metabolism Research Center, Endocrinology and Metabolism Clinical Sciences Institute, TUMS
5. Molecular Medicine Departments, Pasteur Institute of Iran, Tehran, Iran
6. Departments of Pathology, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

The circulating cell-free dna (cfdna) has been considered as a non-invasive biomarker for cancer diagnosis and progression. both genetic (mutations) and epigenetic alteration (methylations) in cfdna can be evaluated in order to access the thyroid tumors markers. in addition to braf mutation, rassf1 and slc5a8 promoter methylation can be used for early diagnosis and prognosis of papillary thyroid cancers (ptc).in this research we assess the use of circulating plasma cfdna and tissue dna for brafv600e mutation, five promoter regions of rassf1 and slc5a8 methylation in the diagnosis, and management of ptc patients and goiter samples as controls.

Methods

Both plasma cfdna and tissue dna of 57 ptc and 45 goiter samples were extracted. brafv600e mutation of cf-dnas and their counterpart tissue dnas were measured by quantitative real-time pcr. moreover, we analyze the state of hypermethylation of five promoter regions of rassf1 and slc5a8 genes by methylation specific high resolution melting (ms-hrm), in order to evaluate their involvement in the ptc pathogenesis.

Results

The mutation brafv600e was found in 39 (68.4%) out of 57 ptc tissue dna samples, and 33(49.1 %) of cfdna. the circulating cfdna brafv600e mutation and clinico-pathologic features showed a significant difference between metastatic and non-metastatic ptc ones (22 of 33 vs. 5 of 34, p-value: <0.001). among three promoter region of slc5a8 and two promoter regions of rassf1 (b) (66.6% of ptc cases vs. 20.0 % of goiter samples, p-value: 0.001) and slc5a8 (c) (61.4% of ptc cases vs. 17.7 % of goiter samples, p-value: 0.005) as the core promoter regions showed the significant difference between ptc cases and goiter controls. the methylation level of tissues was the same as the methylation level of cfdna.

Conclusion

There is promising evidence that brafv600e somatic mutation and rassf1 (b) and slc5a8 (c) promoter hypermethylation in papillary thyroid cancer can be detected in circulating cfdna and are associated with more advanced ptc disease

Keywords

Cfdna, methylation, braf mutation

Coadministration of 7-geranyloxycoumarin and x radiation increased apoptosis in mouse colon cancer cells

Hamide Salari,[1] Maryam m. matin,[2,*] Fatemeh b. rassouli,[3] Mehrdad iranshahi,[4] Shokouhozaman soleymanifard,[5]

1. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. 1Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran 2Novel Diagnostics and Therapeutics Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran 3Stem cell and Regenerative Medicine Research Group, Iranian Academic Center for Edu
3. 1Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran 2Novel Diagnostics and Therapeutics Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran
4. Department of Pharmacognosy and Biotechnology, Biotechnology Research Center, Faculty of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran
5. Department of Medical Physics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Introduction

Colorectal cancer (crc) is one of the most common malignancies worldwide with high mortality rate. despite combinatorial use of chemical anticancer agents, crc patients still suffer from metastasis and drug resistance. to introduce a novel therapeutic strategy, we examined cytotoxic effects of 7-geranyloxycoumarin in combination with x radiation in vitro.

Methods

Mouse colorectal carcinoma cells, ct26 cell line, were treated with 10 Âµg/ml 7-geranyloxycoumarin for 24 h, irradiated with x radiation in different doses (2, 4 and 6 gry), and recovered for 72 h. to better evaluate combinatorial effects, untreated cells and cells treated with 0.4% dmso were also subjected to radiotherapy followed by 3 days recovery. then, quantitative assessment of cell viability was done using alamarblue, and apoptosis was detected by annexin v-pi staining and flow cytometry

Results

Cell viability assay indicated that pretreatment of ct26 cells with 7-geranyloxycoumarin followed by 4 gry radiation increased cytotoxicity up to 28%, as compared with control cells. improvement of toxicity was calculated as 23% and 25% when 7-geranyloxycoumarin was used in combination with 2 and 6 gry radiation, respectively. in addition, 25% apoptotic cells were detected after 7-geranyloxycoumarin treatment and 4 gry radiation, while this amount was less than 4% in all other control treatments.

Conclusion

Findings of present study indicated that coadministration of 7-geranyloxycoumarin and x radiation could be considered as a novel therapeutic approach against crc cells. nevertheless, more research is required to determine efficacy of this combination in vivo.

Keywords

7-geranyloxycoumarin, x radiation, colorectal cancer cells

Combination of microrna-96 and microrna-126 may serve as diagnostic biomarker for detection of early stage non-small lung cancer: review

Zahra Bahmanpour,[1,*] Fatemeh radnia,[2] Yousef daneshmandpour,[3] Reza mousavi,[4] Mahsa tahmasebi,[5] Babak emamalizadeh,[6]

1. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
2. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
3. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
4. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
6. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

Lung cancer is known as one of the most common fatal types of cancer worldwide. according to statistics, in 2017, it has been responsible for 155,870 deaths. non-small-cell lung cancer (nsclc) is one of the main types of lung cancer and accounts for a high percentage among different types. therefore, in order to try to reduce the mortality rate, many measures have been taken for early stage detection. today, micrornas are considered as potential biomarkers for the early detection of diseases, especially cancer. recently, extensive studies have been done on the roles of mirnas in nsclc

Methods

Recent studies by applying different methods on different stages of lung cancer in various clinical samples have represented that altered expression of mir-96 as oncomir and mir-126 as tumor suppressors has been determined to be involved in the pathogenesis of nsclc.

Results

According to studies, mir-96 in clinical specimen such as tissue and plasma of nsclc patients was significantly higher than normal subjects. also, in the case of mir-126 in the same clinical sample, there was a significant decrease in expressional level.

Conclusion

The present review reported significant changes in the expression level of mir-96 and mir-126 in patients with nsclc compared to non-cancer subjects, which point to the combination mir-96 and mir-126 for improving early detection of nsclc.

Keywords

Microrna-96, microrna-126, nsclc, early detection

Comparative genomes study of lactobacillus species for immunosuppressive motifs (isms) in order to determine probiotic anti-allergic species

Zakie Mazhary,[1] Najaf allahyari fard,[2,*] Zarrin minuchehr,[3]

1. Islamic azad university of science and research branch
2. National Institute for Genetic Engineering and Biotechnology
3. National Institute for Genetic Engineering and Biotechnology

Abstract

Introduction

The microbiota contributes to regulatory responses in the gastrointestinal (gi) tract. innate immune system plays a substantial role in immune responsiveness and homeostasis of intestine by toll-like receptors (tlrs), which identify conserved microbial structures. lactobacillus species are one of the most precious inhabitants of human gut microbiota which their immunosuppressive activity has been identified. genomic dna and cell wall components are responsible for the anti-inflammatory activity. it has been proven that the dna of live lactobacillus species have a profound role on immune responses. the existence of suppressive dna motifs was first annotated by krieg et al. in adenoviruses. the obligation of recognizing nucleic acids is done by tlr9. in allergic disease, stimulation of tlr9 could possibly deviate immune responses towards th1 type and thus overcome the allergy-related th2-type immune response. tlr9 is a primary mediator of anti-inflammatory activity which its stimulation may increase hsp70 expression to induce the anti-inflammatory effect. every lactobacillus dna has its own specific capacity to stimulate immune responses due to the frequency of immunosuppressive motifs (isms). these isms inhibit the activation of dendritic cells (dcs) and maintain treg cell conversion in face of inflammation. altogether, we studied different isms in in the genomes of lactobacillus species, which indicate the anti-allergic characteristic of these bacteria.

Methods

We studied genomes of all 190 species of lactobacillus, represented in ncbi database (https://www.ncbi.nlm.nih.gov/genome/browse#!/overview/). scaffold and contig data as partial data were ignored, and then complete genome of 46 lactobacillus species with 3 assemblies as replications were downloaded. the selected genomes of annotated species were searched for a list of isms. the process of identifying these isms in the bacterial genome sequences were done by fuzznuc from the emboss (http://emboss.bioinformatics.nl/cgi-bin/emboss/fuzznuc) and mast (http://meme-suite.org/doc/mast.html).

Results

In this study, we analyzed the frequency of 17 potent isms in genomes of 46 lactobacillus species. the most precious isms which were involved in our study are as follow: ttttgccg, ttaggg, tttcgttt and tcaagcttga. we assessed the frequency of each in the genomes of lactobacillus species. afterward,

lactobacillus species were ranked based on total amount of isms and frequency of motifs per million (mpm). our results indicate that lactobacillus species with probiotic activities have more isms than non-probiotic ones. by the way, the most effective anti-allergic species are: l. ruminis, l. rhamnosus, l. casei, l. paracasei and l. mucusae.

Conclusion

Lactobacillus species are potent commensal bacteria that their probiotic activity has been proved. we selected our lactobacillus species from ncbi database that their complete genome has been annotated. the frequency of isms in total genome and isms per million in genome were checked. we identified these probiotic species as the potent ones as follow: lactobacillus ruminis, l. rhamnosus, l. casei, l. paracasei and l. mucusae.

Keywords

Probiotic, lactobacillus, allergy, immunosuppressive motif

Comparative proteomes study of lactobacillus spp. for the identification of sortase-dependent proteins

Nahid Javanshir,[1,*] Najaf allahyari fard,[2] Gholamreza ahmadian,[3]

1. National Institute of Genetic Engineering and Biotechnology(NIGEB)
2. National Institute of Genetic Engineering and Biotechnology(NIGEB)
3. National Institute of Genetic Engineering and Biotechnology(NIGEB)

Abstract

Introduction

In recent years, the extensive studies have been carried out to prove the therapeutic potential and beneficial of probiotics such as bifidobacteria and lactobacillus in human health. these human-friendly bacteria are important for healthy digestive tract and to balance of intestinal microbiome to avoid dysfunction of the human gut microbiome.

Methods

In this comparative study, genomics and proteomics evalutions of 118 lactobacillus spp. as probiotic and non probiotic lactobacillus were studied and the mechanisms of bacterial-intestinal cell wall interactions were investigated by focusing on diversity of sortase-dependent proteins (sdps).

Results

These proteins are covalently coupling to the gram-positive bacterial peptidoglycan by sortase a enzyme through the conserved lpxtg motifs. genomes and proteomes wide screening based on these motifs showed that sdps are widely distributed in the either probiotic or non probiotic lactobacillus species and strains. the adhesive capacity of different probiotic strains to mucus and the gastrointestinal tract (git) may function to allow interactions with the local immune system in the(git) . recent interest in sortase and sdps has begun to focus on the role of these proteins in the immune modulatory. probiotics have the capacity to influence immune signaling of the colonic epithelium directly and through modulation of nf-Îºb signaling pathways. according to previous investigations some of probiotics such as l. rhamnosus gg and l. plantarum bfe have been shown to enhance innate immune signals by increasing the expression of toll-like receptors (tlrs) in ht-29 cells.

Conclusion

The hypothesis that sortase enzymes could play crucial roles in microorganism physiology further as mediating bacterial-host interactions has accelerated the study of this enzyme and its targets in different species of lactic acid bacteria(lab) . further investigation is required to find the specific sdps that are necessary for bacterial-host interactions in probiotic lactobacillus

Keywords

Proteomes , lactobacillus , sortase-dependent proteins , sdps

Comparison between local and systemic administration of msc-derived cm on ameliorating ova-inducted asthmatic changes in rats

Mahdi Ahmadi,[1,*]

1. Department of Physiology, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Today, stem cell therapy has opened a promising therapeutic strategy for asthma. selecting msc-derived conditioned media (cm) instead of stem cells, could circumvents some of the pitfalls of mscs such as risk of developing cancer, xenozootic contaminations and total costs. our objective was to compare the potential therapeutic effects of msc-derived cm after either local or systemic administration on ameliorating ova-inducted asthmatic changes.

Methods

28 male wistar rats (200-250 g, 6â€“8 weeks old) were enrolled to the current study. four healthy rats were blindly used for isolation of rat bone marrow-derived mscs (rbmmscs) and conditioned media (cm) harvesting. the rest of 24 animals were classified into four experimental groups (n=6 for each group); control rats (c group), sensitized rats (s group), sensitized rats received intratracheally 50 Î¼l cm (st+cm group) and sensitized rats received intravenously 50 Î¼l cm (sv+cm group). rats in the sensitized groups were actively exposed to ova over a period of 32 Â± 1 days. in the control group, normal saline solution was applied instead of ova. one-day post sensitization (day 33), sv+cm group and st+cm group received cm intratracheally and intravenously, respectively. two weeks post treatment with cm (day 45); the expression of interleukin (il)-4, il-13, and il-10 in lung tissues of asthmatic rats was measured by real-time pcr.

Results

Our data indicated a marked expression in the levels of il-4 and il-13 with decrease of il-10 in asthmatic groups as compared to healthy rats ($p < 0.001$ to $p < 0.01$). the expression of measured mrna in st+cm group showed drastic difference compared with other sensitized groups. in detail, the expression levels of il-4 and il-13 diminished significantly ($p<0.01$), whereas il-10 increased simultaneously ($p<0.05$). in addition, the pattern of il4, il-13 and il-10 expression in sv+cm group were more similar to group s.

Conclusion

The results of this study showed direct administration of cm could be effective in alleviation of asthmatic changes. however, no significant modulatory effects originating from systemic administration of cm were also evident in asthmatic rats.

Keywords

Asthma, msc-derived cm, intravenously, intratracheally

Comparison between sperm sorting techniques effect on dna fragmentation and aneuploidy: a systematic review and network meta-analysis

Yousef Daneshmandpour,[1] Fariba pashazadeh,[2] Fereshteh ansari,[3] Zahra bahmanpour,[4] Ebrahim sakhinia,[5] Mehdi yousefi,[6,*]

1. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Ira
2. Research Center for Evidence-Based Medicine, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran
3. Research Center for Evidence-Based Medicine, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran
4. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
5. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
6. Department of Immunology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

Assisted reproduction techniques (art) are used worldwide to treat infertile couples and in recent years multiple adjustments have improved the outcome of these techniques. sperm sorting techniques are used to choose the best sperm cell for art procedure. magnetic activated cell sorting (macs), density gradient centrifugation (dgc) and swim up (su) are most prevalent used sperm sorting techniques. dna fragmentation and aneuploidy are two damaging factors in art success and many studies try to find out effect of mentioned sperm separation techniques on dna fragmentation and aneuploidy. in current study we have conducted a systematic review and meta-analysis on previous studies to find out which technique can choose sperm cell with lower dna fragmentation and aneuploidy rate.

Methods

Pubmed, embase, proquest, cochrane, clinicaltrail.gov, irct.ir and google scholar was searched which after appraisal by two independent reviewers, twenty one studies included for meta-analysis and six studies narratively discussed. network meta-analysis performed with r software and netmeta package and direct and indirect evidence combined together. surface under the cumulative ranking curve (sucra) used to rank sperm separation techniques which can choose sperm with lower dna fragmentation.

Results

Our results indicated that combination of macs and dgc is best sperm sorting technique to choose sperm cell with lower dna fragmentation. also sperm sorting techniques can effectively reduce aneuploidy in sperm cells.

Conclusion

Macs is novel technique which can choose sperm cells with higher quality for art procedure. dna fragmentation and aneuploidy are damaging biomarkers and our meta-analysis show macs and dgc can effectively reduce dna fragmentation and aneuploidy. in order to reach more accurate results further studies with higher sample number is still required. also, studies try to evaluate dna fragmentation and aneuploidy, need to use rct principles in order to reach more precise results.

Keywords

Macs; dgc; su; sperm; fecundity

Comparison cure rate models by dic criteria in breast cancer data

Parviz Shahmirzalou,[1,*]

1. Department of Biostatistics, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran

Abstract

Introduction

One of the malignant tumors is breast cancer (bc) that starts in the cells of breast. there is many model for survival analysis of patients such as cox ph model, parametric models etc. but some disease are that all of patients will not experience main event then ususal survival model is inappropriate. in addition, in the presence of cured patients, if researcher can specify distribution of survival time, usually cure rate models are preferable to parametric models. distribution of survival time can be weibull, log normal, logistic, gamma and so. comparison of weibull, log normal and logistic distribution for finding the best distribution of survival time is purpose of this study.

Methods

Among 787 patients with bc by cancer research center recognized and followed from 1985 until 2013. variables stage of cancer, age at diagnosis, tumor size and number of removed positive lymph nodes (nrpln) for fitting cure rate model were selected. the best model selected with dic criteria. all analysis were performed using sas 9.2.

Results

Mean (sd) of age was 48.47(11.49) years and mean of survival time and maximum follow up time was 326 and 55.12 months respectively. during following patients, 145(18.4%) patients died from bc and others survived (censored). also, 1-year, 5-year and 10-year survival rate was 94, 77 and 56 percent respectively. log normal model with smaller dic were selected and fitted. all of mentioned variables in the model were significant on cure rate.

Conclusion

This study indicated that survival time of bc followed from log normal distribution in the best way.

Keywords

Breast neoplasm, cancer research center, cure rate model, deviance information criteria (dic)

Comparison of clinical features of type 2 diabetic patients with lada patients in a cross sectional study

Malihe Mohammadi,[1,*] Seyedeh solmaz moosavi,[2]

1. Department of biology, Faculty of basic science, University of Sistan and Baluchestan
2. Department of biology, Faculty of basic science, University of Sistan and Baluchestan

Abstract

Introduction

There has been a dramatic increase in the incidence of diabetes in human societies during the past decade. type 2 diabetes is the commonest form of diabetes constituting about 90% of the total diabetic population whereas type 1 diabetes constitutes about 10â€“15% of the diabetic population. while diabetes is classically divided as type 1 and type 2 diabetes, there are some forms of diabetes which cannot be classified into either of these categories. subgroup of patients diagnosed with type 2 diabetes has circulating antibodies to islet cell autoantibodies (ica) and more frequently to glutamic acid decarboxylase (gada) which distinguishes them from type 2 diabetes. this condition is accompanied by onset of diabetes after 35 years of age and not insulin requiring, at least during the first 6 months after diagnosis. this subset is named latent autoimmune diabetes in adults (lada). epidemiological studies suggest that lada may account for 2â€“12% of all cases of diabetes. since lada is often misdiagnosed as type 2 diabetes, it must be properly recognized and managed appropriately at the clinical level. in this cross-sectional study, we were looking for to investigate the prevalence of lada by measuring gada and comparison clinical features of gada positive and negative diabetic patients, in torbat-e heydarieh, razavi khorasan province, iran.

Methods

A total of 475 patients (277 females, 198 males) clinically diagnosed as affected by type 2 diabetes as per who criteria, were included in this study. lada patients was identified based on immunology of diabetes society criteria as follows: 1) the presence of type 2 diabetes and age â‰¥ 35 years; 2) a lack of requirement for insulin at least 6 months after the diagnosis of type 2 diabetes; and 3) serum gada positivity as tested by elisa. demographic data (age, gender, family history of diabetes) were collected from participants at the screening phase. bmi was calculated as weight in kilograms divided by the square of height in meters. in all subjects fasting blood glucose (fbg) was measured by god-pod colorimetric method. c-peptide was determined using commercial elisa kits (ibl, usa). gad antibodies were determined in the above-mentioned groups using isletest gad diagnostic kit (diametra co., italy cat: dko-082). all statistical analyses were performed with statistical package for social science (spss) version 16.0 and $p < 0.05$ was considered as statistically significant level.

Results

Of 475 patients, 53 ones (11.2%) were gada positive. significance difference was found between gada positive and gada negative patients in mean age (41.62 Â± 6.715 vs 53.87 Â± 7.739), fbg (154.62 Â±

9.46 vs 150.06 Â± 12.53), c-peptide levels (0.699 Â± 0.27 ng/ml vs 1.37 Â± 0.43 ng/ml) and need for insulin therapy to control of disease. there was no significant correlation between these two groups in gender, family history of diabetes and bmi value.

Conclusion

In this study the prevalence rate of lada was 11.2%. mean age of gada positive patients was significantly lower than gada negative subjects (p <0.001). our finding indicated that c-peptide levels are significantly low in autoantibody positive patients than autoantibody negative subjects (p <0.001). this is in agreement with this fact that lada is an autoimmune type of diabetes and progressive Î²-cell destruction may occur in this case. mean fbg in lada group is significantly more than non lada group (p = 0.011). these data indicated that the severity of the disease is higher in autoantibody positive group than autoantibody negative group. on the other hand, in lada group, 73.6% use insulin for better control of disease, but in type 2 diabetic patients only 21.3% use insulin therapy. although lada patients do not require insulin therapy early in the diagnosis of diabetes, within a few years, Î²-cell function is severely impaired, leading to insulin dependency in most lada patients. thus measurement of these parameters in type 2 diabetic patient could help physicians to identification and better control and treatment of lada disease.

Keywords

Type 2 diabetes, lada, glutamic acid decarboxylase antibodies

Comparison of different sources of mesenchymal stem cells for cell therapy in genomics aspects

Negar Ranjbaran,[1] Fatemeh khatami,[2] Mehrdad hashemi,[3] Babak arjmand,[4,*]

1. Ù• Ù• Department of genetics,Tehran Medical Sciences , Islamic Azad University , Tehran, Iran
2. Chronic Disease Research Center,Endocrinology and Metabolism Population Sciences Institute ,Tehran University of Medical Sciences, Tehran, Iran
3. Department of genetics,Tehran Medical Sciences , Islamic Azad University , Tehran, Iran
4. Cell Therapy and Regenerative Medicine Research Center, Endocrinology and Metabolism Molecular-Cellular Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran Metabolomics and Genomics Research Center, Endocrinology and Metabolism Molecular-Cellular Sciences Institute, Tehran University of Medical Science,Tehran,Iran

Abstract

Introduction

Countries are disquiet about dying from the disease.cancer, diabetes, road injury are the most common diseases that expressed by the world health organization (who) as the top ten causes of death in the world.they have common side effects including amputation, chronic ulcers, face and body deformities.when these occur, more time and more costs of treatment are needed. cell therapy is new therapeutic approach for treatment. cell therapists utilize mesenchymal stem cells that are isolated from different tissues of the body in cell therapy.considering the ethical concerns and invasive methods of isolation, selecting source of mesenchymal stem cells that easily isolated, contains large number of cells, and also can be waste part of surgery attracted attentions.

Methods

Mesenchymal stem cells were isolated from fresh tissues of body. cell surface markers examine by flow cytometry for cd105, cd90, cd73, cd34, and hla-dr. specific culture mediums induce differentiation of mscs into adipocytes, osteocytes, and chondrocytes. quantitative real-time polymerase chain reaction used to identify gene expressions.

Results

Comparison between cell lines shows that they display similar spindle shape and cell surface markers were positive for cd105, cd90, cd73 and negative for cd34, hla-dr.we also investigated the differentiation potential and their gene expression.

Conclusion

These data will help pundits to choose appropriate source of mesenchymal stem cells for clinical application.

Keywords

Cell therapy, differentiation, gene expression, mesenchymal stem cell

Comparison of germ cell genes expression in spontaneous (monolayer vs embryoid body) differentiation of mouse embryonic stem cells toward germ cells

Maryam Gholamitabar tabari,[1,*] Seyed gholamali jorsaraei,[2] Mohammad ghasemzadeh hasankolaei,[3] Aliasghar ahmadi,[4]

Abstract

Introduction

Genetic and morphologic similarities between mouse embryonic stem cell (escs) and primordial germ cell (pgcs) make it difficult to distinguish the two cell types in in vitro differentiation. using the expression of specific markers of germ cells that are not expressed or expressed at low levels in escs, can help recognizing in vitro differentiated cells.

Methods

In the present study, we attempted to differentiate the mouse embryonic stem cells, oct4-gfp into germ cell-like cells (gclcs) spontaneously in two different ways:1- spontaneous differentiation of escs without lif is its feeder cells (mef) for 14 days as a monolayer culture (sp) group. 2- spontaneous differentiation of escs using eb method. after 3 days culture for hanging drop and 4 days in bacterial plate, totally 7 days as (eb7), then single cell ebs culture for 7 more days without lif, totally 14 days, this group was named as eb culture methods (eb +sp).we tried to evaluate and compared the expression level of germ cell specific genes during in vitro culture duration in both groups.

Results

In both groups, mov10l1 was down regulated (p=0.3) and tex13 and riken were up regulated (p=0.3, p=0.04), respectively. fkbp6 and stra8 were decreased in eb+sp and increased in sp group with no significant differences between them (p=0.1, p=0.07). additionally, in sp group, gene expression of mvh and scp3 were up regulated and had significant differences compared with eb+sp group (p=0.00, p= 0.01), respectively. oct4 was down regulated in both groups. flow cytometry analysis showed that the mean fluorescent intensity (mfi) of the cells for mvh showed that more mvh positive cells were observed in the sp group (87.2Â±2.61) with significant differences compared to with undifferentiated esc (71Â±3.02), eb+sp (75.74Â±3.90), (p=0.00, p=0.01 respectively). but increased mfi of the cells for mvh was not significant differences compared with eb7 group (82Â±2.61), (p=0.3). immonostaning analyziz showed that positive expression of the mvh protein was examined with a florescence microscope with a representative red color. the round cells that defined as gclcs shown by dapi nuclei counter staining. we observed that round shape cells were red, indicating the expression of the vasa protein. this coloration in the cells of sp group was greater than that of cells in eb+sp group.

Conclusion

Oct4 down regulation as pluripotency factor and expression of meiosis markers indicated that escs differentiated successfully in to germ-cell like cells in both groups. evaluation of gene expression patterns in both groups demonstrated that monolayer culture was more efficient to produce germ cell-like cells in compression with eb methods. still further utilization of culture conditions and optimization will be needed for successful and high quality in vitro germ cells differentiation.

Keywords

Embryonic stem cells, differentiation, germ cell-like cell, monolayer, embryoid body

Comparison of microrna145-5p expression level in breast cell lines

Mohammad Shayestehpour,[1,*] Shaghayegh yazdani,[2] Talat mokhtari-azad,[3]

1. Autoimmune Diseases Research Center, Kashan University of Medical Sciences, Kashan, I.R. Iran
2. Department of Microbiology, Faculty of Advanced Science & Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
3. Department of Virology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Recent studies have reported that micrornas (mirnas) play critical roles in controlling cancer progression. mirna-145 is a tumor suppressive mirnas that down-regulates in cancer cells. there is not enough data on expression level of this pivotal mirna in some human cell lines to help researchers for selection of the best breast cancer cell line in them studies. therefore, the present study aimed to measure expression level of mirna145-5p in breast cell lines.

Methods

Hmepc, mcf-7, mcf-10a, mda-mb-231, mda-mb-453, mda-mb-468 and bt-20 cell lines were cultured in dulbecco modified eagle medium (dmem). small rnas were extracted from cells using high pure mirna isolation kit (roche, germany). one microgram of total rna was reverse transcribed into cdna using specific rt primers, and quantitative real-time pcr assay was performed. mirna expressions were normalized to small nuclear rna u6 expression.

Results

Mir145-5p was highly expressed in human mammary epithelial cells (hmepc) and mcf-10a as normal breast cells, but was significantly down-regulated in mcf-7, mda-mb-231, mda-mb-453, mda-mb-468, and bt-20 breast cancer cell lines. the concentration of mir-145-5p in hmepc was threefold higher than that of mcf-10a cells. the expression levels of mir-145-5p in mda-mb-453, mcf-7 and bt-20 were 0.012, 0.011 and 0.03, respectively, relative to hmepc cells. mir145-5p level in mda-mb-453 metastatic breast cancer cell line was 3 times lower than that in bt-20 non-metastatic cell line.

Conclusion

Hmepc has the highest level of mir145-5p that can be considered as a good normal breast cell line. mda-mb cells have low level of mir145-5p and can be the best option for mir-145 overexpression studies.

Keywords

Breast cancer, cell line, microrna

Comparison of protective and therapeutic effects of hibiscus sabdariffa and silybum marianum on liver tissue in cyprinus carpio with liver enzyme induced by tetrachloride carbon

Ziba Kolouei,[1] Tahereh naji,[2,*] Terife behyar,[3] Homayoun hosseinzade,[4] Mehdi rezayat,[5]

1. Department of Basic Sciences, Faculty of pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, lran.
2. Department of Basic Sciences, Faculty of pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.
3. Department of Basic Sciences, Faculty of pharmacy and Pharmaceutical Sciences, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.
4. Iranian Fisheries Science Research Institute, Agricultural Research and EducationOrganization, Tehran, Iran.
5. Pharmacy Faculty, Tehran University ,Iran.

Abstract

Introduction

Medicinal plants are herbs with one or some of their organs containing active ingredient. this substance, which forms less than 1% of the dry weight of the plant, has medicinal properties that affect living organisms.this study compared the protective and therapeutic effects of hibiscus sabdariffa and silybum marianum as powerful antioxidant agents on the liver of cyprinus carpio with hepatotoxicity induced by carbon tetrachloride.

Methods

Fishes with an average weight of 40Â±8 g were released. experiments were performed in 9 groups (3 control and 6 treatment groups) and each group containing 15 pieces of fishes. in the two first test groups hepatotoxic effects of hibiscus sabdariffa(doses of 50 and 100 mg/kg body weight fish) were investigated on common carp. in the two other groups, the protective effects of hibiscus sabdariffa(with the same doses) were studied on common carp liver. in the fifth treatment groups the protective effects of sillybum marianum extract at a doses of 100 mg/kg body weight in last group of treatment group therapeutic effects of this plants with the same dose of the therapeutic effects on liver toxicity were evaluated. at the first control group the effect of olive oil and in second control group effect of carbon tetrachloride diluted with olive oil on hepatotoxicity of liver was studied.a third control group remained unchanged for comparative studies. one day after the last injection, biometric of fishes were done. and liver of fish tissue to determine the weight of the liver and quantification of liver aminotransferase enzymes were prepared,then with spss software, fishes in the treatment and control groups were compared.

Results

Results of measurements of liver aminotransferase enzymes showed decreased levels of these enzymes in treated group with hibiscus sabdariff compared to treatment,with silybum marianum(pâ‰¤ 0/05). also results showed that the therapeutic effect of both plants were higher than the protective effect and effectiveness of herbal treatment is somewhat significant were not seen difference between treated and control treatments (pâ‰¥0/05). also by increasing doses of hibiscus sabdariffa in treatments that their hepatotoxicity before had been induced by carbon tetrachloride therapeutic and protective effect increased (pâ‰¤ 0/05).

Conclusion

histological results showed lesser histopathological lesions in treatment that treated with silybum marianum than treatment that treated with hibiscus sabdariffa. histopathological lesions of both these treatments were lesser compared to the control that the only carbon tetrachloride was injected. this indicated that the hibiscus sabdariffa treatment effect is more. also histopathological lesions in both plant were more in the conditions that have been used their protective effect and this indicate their better therapeutic effect on hepatocyte compared with their protective effect.

Keywords

Silybum marianum, hibiscus sabdariffa, cyprinus carpio, carbon tetrachloride, hepatotoxicity

Comparison of the effect of montain savory and dandelion on postpartum pain

Elnaz Abedini,[1] Mohammad asadi,[2,*]

1. 19 mayÄ±s univercity of Turkey
2. shahid beheshti uni

Abstract

Introduction

Postpartum pain relief in an effective way without danger so that not to disturb motherâ€™s ability to take care of her child is required. postpartum pain is associated with reduced resistance against infections, increased use of analgesics and delayed wound healing. this study was performed with aim to compare the effect of montain savory and dandelion on postpartum pain

Methods

This three-group randomized clinical trial was performed on 100 pregnant women who had referred to samsun hospital for postpartum in 2017. aromatherapy with 3 drops of essence was fulfilled on two intervention groups immediately after the onset of pain, 4, 8 and 12 hours after it. aromatherapy using normal saline was fulfilled on the control group in the same way. severity of pain was evaluated using visual analogue scale before and half an hour after each four interventions.

Results

mean of pain severity before the intervention was not significantly different between the three groups but with the test, there is a significant difference

Conclusion

There was no significant difference between of montain savory and dandelion groups in reducing postpartum pain, therefore, the use of both aromas is recommended as simple, noninvasive and inexpensive technique to reduce postpartum pain.

Keywords

montain savory , dandelion ,postpartum pain

Comparison study of the methylation moieties of the cyp1a1 gene promoter in gastric cancer patients

Leili Sadeghi amiri,[1,*] Ali barzegar,[2] Novin nikbakhsh zati,[3] Pooyan mehraban,[4]

1. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University
2. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University
3. babol university of medical sciences
4. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University

Abstract

Introduction

gastric cancer is the fourth common malignancies and the second leading cause of cancer related death worldwide. dna methylation of some genes has been considered as one of the most important changes which control organization and function of a cell. recent studies have revealed discrete methylation pattern of p450 cyp1a1 genes which is xenobiotics detoxification enzyme in tumeric versus its neighboring normal tissue.

Methods

Tissues were dissected from patients who were undergone surgery. genomic dna extracted using phenol-chloroform method was subjected to bisulfate treatment by qiagene kit. desired region located in cyp1a1 gene promoter were pcr-amplified and were sequenced in both directions in bioneer company. statistical analysis was conducted by mann-whitney method.

Results

: results showed that the methylation rates of some cpg dinucleotides are different in normal versus turmeric tissues. statistical analysis revealed that there are significant differences between methylation rates of turmeric and normal tissues (($p<0.05\%$).

Conclusion

Increasing the methylation rates of cpg dinucleotides present in cyp1a1 gene promoter is significantly associated with stomach cancer incidence in. regarding to the importance of respective region in cyp1a1 gene promoter as xenobiotic and transcription factors response elements, different methylation rate in turmeric versus normal tissues would change transcription rates which might lead to cancer incidence. screening methylation pattern of this region may be useful as tumor marker to evaluate susceptibility to stomach cancer

Keywords

Cyp1a1, dna methylation, gastric cancer, northern iran.

Computational molecular signaling pathway analysis of mir-375 targetome as a possible biomarker in gastric cancer induced by helicobacter pylori

Laleh Ebrahimi ghahnavieh,[1] Zhaleh ebrahimi ghahnavieh,[2,*]

1. Department of Biology, Tehran-east Payame Noor University, Tehran, Iran
2. Faculty of Medicine, Shahrekord University of Medical Sciences, Shahrekord, I. R. Iran

Abstract

Introduction

Gastric cancer is the 3rd common causes of cancer mortality among iranians. chronic infection with helicobacter pylori (h. pylori) is the most effective known risk factor for the development of gastric cancer. among the mediators induced in response to the infection, micrornas (mirnas) have the potential role as a significant impact on the outcomes of the bacteria-host interaction. mirnas can play as either oncogenes or tumor suppressors. mirna expression could be modified by h. pylori infection; therefore, these can be used as biomarkers for gastric cancer. mir-375, down-regulated in h. pylori-infected gastric tumors, would be a possible biomarker of gastric cancer diagnosis.

Methods

Collection of validated and predicted target genes of mir-375 from mirtarbase and mirwalk databases, was filtered by unigene database to recognize their expression in gastric cancer tissue. gastric expressed targetome of mir-375 was selected for enrichment analysis in functional annotation tool, david.

Results

David database including kegg signaling pathways showed target genes were significantly involved in cancer pathways further mapk signaling, tgf-beta signaling, wnt signaling and adherens junction pathways. comprehensive analysis of the coordinate expression of mirnas and mrnas reveals that mir-375 may play important role in the development of gastric cancer.

Conclusion

These signaling pathways lead to insensitivity to anti-growth signals, proliferation, angiogenesis and also evading apoptosis by irregulation in mtor signaling and hif-1 signaling pathway. however, limited studies on the role of h. pylori eradication in the impressed gene expression levels in gastric mucosa, such studies may reveal mirnas as molecular markers involved in inflammatory processes and gastric malignancy progression.

Keywords

Gastric cancer, h. pylori, mir-375, cancer signaling pathway.

Contribution of dna hypomethylation in gastric carcinogenesis

Shakiba sadat Mahdavi,[1] Fatemeh behnam rassouli,[2,*]

1. Department of Biology,Faculty of Science,Ferdowsi University of Mashhad
2. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

Gastric cancer (gc) is among the most common malignancies worldwide with high mortality rate. to design more effective diagnostic and therapeutic strategies, recognition of novel biomarkers that are epigenetically regulated during gastric carcinogenesis has been center of attention in recent years.

Methods

To review current knowledge regarding epigenetic modifications in gastric cancer, published papers including key words gastric carcinoma, dna hypomethylation and epigenetic modification, were extracted from pubmed, scopus, web of science, and google scholar.

Results

Local hypermethylation occurs in cpg islands and resulted in aberrant silencing of genes such as tumor-suppressor, cell cycle regulator and dna-repair genes. nevertheless, global dna hypomethylation, particularly in repetitive sequences, is generally associated with wide range of events including chromosome instability, loss of imprinting, repression of transposable elements and activation of oncogenes. in gastric carcinogenesis, dna hypomethylation, which has been discovered in a number of genes, was associated with clinicopathological features of the disease. for instance, demethylation of synuclein-Î³ was common in patients with lymph node metastasis, while hypomethylation of cyclin d2 was frequently observed in advanced stages of gc. in addition, hypomethylation of mage (melanoma antigen gene) and line-1 (long interspersed element-1) was associated with poor prognosis of gc. hypomethylation of genes could also be induced by h. pylori during gastric carcinogenesis, as reported for alu and satÎ±.

Conclusion

Overall, epigenetic modification in the form of hypomethylation could be used as a potential screening marker for early detection of gc, and a monitor for evaluating responses to therapeutic strategies.

Keywords

Gastric carcinoma, dna hypomethylation, epigenetic modification

Correlation between serum levels of anti-mullerian hormone (amh) and the other hormonal parameters in women with polycystic ovary syndrome.

Sareh Sangy,[1,*] Didehjahan maryam,[2] Parvaneh safa,[3] Rahmatollah dadvar,[4] Zeynab masom,[5]

1. Department of Biology, Faculty of Science, Islamic Azad University, Qom, Iran
2. Department of Biology, Faculty of Sciences, Shiraz University, Shiraz, Iran
3. Department of Midwifery, Faculty of Medicine, Qom Branch, Islamic Azad University, Qom, Iran.
4. department of psychology, baft branch, islamic azad university, baft, iran
5. Department of Midwifery, Faculty of Medicine, Qom Branch, Islamic Azad University, Qom, Iran

Abstract

Introduction

The anti-mullerian hormone /amh/ is a glycoprotein of the transforming growth factor-beta superfamily. has recently been proposed as a marker for the diagnosis of pcos.this study was made association between serum levels of anti-mullerian hormone (amh) and the other hormonal parameters in women with pcos.

Methods

This case-control study was perform on 80 patients who go to qom clinic.40 patients were diagnosed as the pcos group and 40 in normal women. amh and other data were recorded and analysed using the spss software version 18.

Results

According to this study, amh is significantly higher in pcos, mean amh level is higher significantly (7.8 versus 2.9 ng/ml) independent of other factors)p<0/05(.also, there was a significant association with the serum amh level with family history of ovarian failure and previous surgery(3.93 Â± 0.75 and 1.63 Â± 0.53, respectively), and the levels of lh and fsh and estradiol was no significant difference in each group, and their only difference was in amh levels.

Conclusion

There is a close relationship between the level of amh in the early follicular phase (day 3) and the amount of ovarian reserve. and the high amh level represents a high chance of fertility in these women.

Keywords

Anti-mullerian hormone, hormon, women, polycystic ovary syndrome

Crocin inhibits metastatic potential of highly metastatic breast cancer cell line through reducing matrix metalloproteinase 2, 9 gene expression

Hassan Dariushnejad,[1,*] Vajiheh ghorbanzadeh,[2]

1. Department of Medical Biotechnology, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran.
2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran.

Abstract

Introduction

Crocin is a pharmacologically active component of crocus sativus (saffron) and has been shown to inhibit cell proliferation, metastatic manner of cancer cells and induce cell apoptosis in various cancers. however, the effect and mechanisms of crocin on cancer metastasis are still enigmatic. cancer invasiveness and metastasis are associated with the expression of matrix metalloproteinases (mmps). in this study, highly metastatic breast cancer cell line (mdaâ€‘mbâ€‘231) were used to evaluate the anti-metastatic activity of crocin via mmp-2 and mmp-9 expression.

Methods

Cytotoxic effects of crocin on mda-mb-231 were determined by using mtt assay. wound healing assay and boyden chamber assay were performed for evaluation of crocin on migeration and invasion potential of mda-mb-231 cells. the influence of the crocin on the expression of mmp-2 and mmp-9 mrna was assessed by qpcr.

Results

Crocin showed a dose-dependent inhibitory effect on the viability, migration and invasion of mda-mb-231 cells. treatment of cells with different concentration of crocin for 48h exerted down-regulation of mmp-2 and mmp-9 mrnas expression.

Conclusion

The findings of this study shows that crocin inhibits mda mb 231 cell invasiveness via down-regulation of mmp-2 and mmp-9 expression.

Keywords

Crocin, metastasis, breast cancer, mmp

Crocin, synergistically enhances paclitaxel â€“mediated apoptosis in breast cancer cell line

Hassan Dariushnejad,[1,*] Vajiheh ghorbanzadeh,[2]

1. Department of Medical Biotechnology, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran.

Abstract

Introduction

Herbal-derived medicines have introduced as sources of novel drugs due to minimum systemic side effects. crocin is a pharmacologically active component of crocus sativus (saffron) has showed effective chemotherapeutic effects on different cancers. paclitaxel is a generally chemotherapeutic agent as the first line treatments for remedy of breast cancer but this agent shows toxicity adverse side effects including gastrointestinal toxicity, hypersensitivity, neurotoxicity and myelo suppression. combination therapy using different chemotherapeutic agents can be desirable option for overcoming this problem. here, we investigated the impact of combination therapy of crocin with paclitaxel in inhibition of proliferation and induction of apoptosis in t47d breast cancer cells.

Methods

The cytotoxic effects of crocin and paclitaxel, alone or in combination were assessed using mtt assay and combination index analysis calculated via chou-talalay method and compusyn software. the effects of treatments on the cell proliferation was determined by trypan blue assay. elisa cell death assay was used for measurement of apoptosis.

Results

Ic50 values of paclitaxel and crocin were 41.2 and 128.7 Âµm for t47d cells at 24 h, respectively. surprisingly, combination treatment significantly lowered the ic50 values in a synergic manner in t47d cell line. moreover, treatment with a mixture of two agents had more growth inhibition effect relative to the monotherapy. results of apoptosis assay showed that the cytotoxic effects are related to the enhancement of apoptosis.

Conclusion

Our study suggests that crocin synergistically enhances the cytotoxic effect of paclitaxel in breast cancer cell line and therefore may be useful to overcome chemoresistance and toxic effects of breast cancer patients.

Keywords

Breast cancer, crocin, paclitaxel, combination, apoptosis

Curcumin-entrapped muc-1 aptamer targeted dendrimer-gold hybrid nanostructure as a theranostic system for colon adenocarcinoma

Mahsa Shahriari,[1,*] Mona alibolandi,[2] Mohammad ramezani,[3] Khalil abnous,[4]

1. Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences,
2. Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences,
3. Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences,
4. Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences,

Abstract

Introduction

Gold nps have great potential in biomedical applications. pamam dendrimers are spherical, hyper branched macromolecules which can encapsulate therapeutic molecules while stabilizing metal nanoparticle such as gold nps. the aim of the current study was to investigate the theranostic capability of curcumin-loaded dendrimer gold hybrid structure.

Methods

Dendrimer-gold hybrid structure was synthesized by complexing aucl4âˆ’ ions with pegylated amine-terminated generation 5 poly (amidoamine) dendrimer. the resultant hybrid system was loaded with curcumin. the curcumin-loaded pegylated au dendrimer was further conjugated to muc-1 aptamer in order to target the colorectal adenocarcinoma in vitro and in vivo.

Results

Obtained results demonstrated that the targeted theranostic agent was accumulated in ht29 and c26 cells in vitro and showed higher cellular cytotoxicity in comparison with non-targeted system. on the other hand, in vivo experiment demonstrated the potential of targeted theranostic system in ct-scan tumor imaging as well as cancer therapy.

Conclusion

Findings from this study suggested that muc-1 targeted curcumin-loaded pegylated au dendrimers have good x-ray attenuation and is desirable probe for ct imaging while demonstrating high therapeutic index against colorectal cancer adenocarcinoma.

Keywords

Pamam, curcumin, colorectal cancer, theranostic, ct scan

Cyanobacteria natural products as sources for future directions in antibiotic drug discovery

Gisoo Sarvari,[1,*] Bahareh nowrozi,[2] Ehsan mohammadi,[3]

1. 1* Department of Pharmaceutical Chemistry, Faculty of Pharmaceutical Chemistry, Tehran Medical Sciences, Islamic Azad University, Tehran - Iran (IAUPS)
2. 2 Department of Biology, School of Basic Science, Science and Research Branch, Islamic Azad University, Tehran, Iran. ORCID: 0000-0001-6656-777X
3. Department of Molecular and Cellular Sciences,Faculty of Advanced Sciences and Technology,Pharmaceutical Sciences Branch,Islamic Azad University,IAUPS,Tehran,Iran

Abstract

Introduction

Cyanobacteria, an abundant source of natural products with a broad diversity of secondary metabolites, have emerged as a novel resource for the progression of synthetic analogues with enhanced pharmacological and pharmacokinetic properties. due to the antibiotic resistance growth the need for new medication is quite an important issue. the cyanobacterial compounds with promising antimicrobial, immunosuppressant, anti-carcinoma, antiviral and protease inhibition activity are a potent option for new therapeutics. screening of cyanobacteria for pharmaceutically active compounds has received ever increasing attention. however, limited knowledge is available on biosynthetic mechanisms, which are very beneficial in the drug discovery process and cultural production of the desired metabolites. therefore there is need to aware the researchers to exploit the cyanobacteria for bioactive metabolite production, their utilization and to know their interaction with other organisms. literature suggest that cyanobacteria comprising more than 150 genera and 2000 species. among these only few genera such as lyngbya, oscillatoria, nostoc, scytonema, hapalosiphon, microcystis, anabaena, phormidium, cylendrospermum and tolypothrix are well screened for metabolite production and possible utilization. cryptophycins, coibamide a, largazole and hassallidins are some examples of cyanobacterial bioactive compounds.

Methods

These secondary metabolites are produced through non-ribosomal peptide synthetase (nrps), polyketide synthase (pks) and mainly through mixed nrpsâ€“pks enzymatic systems. databases of the cyanobacterial compound entities have been studied under various data mining methods, virtual screening techniques and receptorâ€“ligand docking approaches.

Results

Therefore, with the development of genome sequence technology the biosynthetic gene clusters involved in the production of these metabolites have also been identified.

Conclusion

Overall, there is a promising outlook that the cyanobacterial secondary metabolites may be our future alternatives for a more developed medication in a more accelerated timeline.

Keywords

Cyanobacteria; natural products; antibiotic; drug discovery

Cymophenol (c6h3(ch3)(oh)c3h7) modifies neutrophil related inflammation in dermal injury

Majid Banimohammad,[1,*] Hamed shoorei,[2] Hooman ravaei,[3] Parsa khalafi,[4] Danial gholamin,[5] Abbas majdi seghinsara,[6]

1. Physiology Research Center, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.
2. Department of Anatomical Science, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran.
3. Young Researchers and Elite Club, Ardabil Branch, Islamic Azad University, Ardabil, Iran.
4. School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.
5. School of Pharmacy, Ardabil University of Medical Sciences, Ardabil, Iran
6. Department of Anatomical Science, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran.

Abstract

Introduction

2-methyl-5-isopropylphenol that also known as carvacrol or cymophenol, is a monoterpenoid phenol and a component of origanum vulgare (oregano) essential oil. studies have demonstrated that carvacrol have tissue protecting and inflammation suppressing effects. researchers have demonstrated that carvacrol could suppress cox-2 which is involved in prostaglandin biosynthesis of which has an important role in inflammation. it has also declared that it could inhibited prostaglandin synthesis. in the other hand, inflammation and inflammatory reactions are marked as an important issue in skin wound healing. neutrophil-related inflammation results in an increase of myeloperoxidase production. mpo as a lysosomal protein that is stored in azurophilic granules, release into the extracellular space during neutrophil degranulation, and produces hocl from h2o2 and clâˆ’. mpo oxidizes tyrosine to tyrosyl radical which is an oxidizing agent. all of these products are cytotoxic and may cause oxidative damage in host tissue. in this study we administrated cymophenol to investigate its effects on neutrophil-related inflammation.

Methods

30 sprauge-dawley rats were divided in three groups. sham group, just with skin cutting; control group, with skin cutting and elevation of skin; cymophenol group, with skin cutting, elevation of skin, and cymophenol administration with 50 mg/kg dose. all skin cutting sizes and procedures were according to mcfarlane method. one week after, myeloperoxidase was measured in skin tissue to find out neutrophil activity.

Results

In control group we observed significant mpo increase in comparison to sham group ($p<0.01$), but in the cymophenol group mpo activity was significantly decreased to 1.374Â±0.219 ($p<0.05$ vs. control group).

Conclusion

Our results show that cymophenol administration could decrease myeloperoxidase that could be considered as a marker for neutrophil-related inflammation and this issue represents that less oxidative stress occurs in host tissue. so it could be told that we would have decreased tissue damage and faster wound healing after skin injury. finally, we declare that cymophenol could be useful to suppress oxidative skin damage, but further studies are needed to clarify all aspects of this issue.

Keywords

Cymophenol, neutrophil, inflammation, wound healing

Cytochrome p450 (cyp450,2d6*a), n-acetyltransferase-2 (nat2*7, a) and multidrug resistance 1 (mdr1 3435 t) alleles collectively increase risk of ulcerative colitis

Farzane Lotfi,[1,*] Asad vaisi-raygani ,[2]

1. Kermanshah University of Medical Sciences
2. Kermanshah University of Medical Sciences

Abstract

Introduction

Discovering the association between genetic variations of metabolizing enzymes with idiopathic diseases such as ulcerative colitis (uc) may not only be an auxiliary agent in diagnosis, but also an effective pharmacotherapy for inflammatory bowel disease (ibd). the aim of present case-control study was to determine the association of cytochrome p450 2d6 (cyp2d6 *4), n- acteyltransferase-2 nat2*7 and multidrug resistance 1 (mdr1) 3435 c/t genotypes with uc susceptibility and tpmt enzyme activity.

Methods

Tpmt activity was measured by hplc and genotypes for the three mentioned polymorphisms were determined in 215 unrelated uc patients and 212 unrelated healthy controls by pcr-rflp in kurdish population from iran.

Results

Cyp2d6*4 a allele, nat2*7 a and mdr1 3435 c/t alleles act synergistically to increase the risk of uc by 3.49 times. the frequency of a allele of cyp2d6*4 was significantly higher in uc patients (12.6%) in compared to control subjects (8.5%, p=0.046) and significantly increased the risk of uc by 1.56 fold. the frequencies of nat2*7 genotypes and alleles were similar in both studied groups.

Conclusion

The most important outcome of this study for the first time demonstrated that the simultaneous presence of t mdr1, a cyp2d6*4 and a nat2*7 alleles robustly increases the risk of developing uc by 3.49 fold. current study suggests that cyp2d6*4 and mdr1 3435 c/t gene polymorphisms may be risk factor for uc susceptibility.

Keywords

Mdr, cytochrome p450, nat 2, tpmt, uc

Cytotoxic effect of prangos pabularia extract on hela cell line, a medicinal plant

Sakineh Salehi maranni,[1,*] saber zahri,[2] Seyed mehdi razavi,[3]

1. Medical science of islamic Azad University,Ardabil &Shahid Beheshti University of Medical Science
2. Mohageg Ardabili University

Abstract

Introduction

Cancer is regarded as a complex disease which is non-curable.ttraditional medicines have been applied for the treatment of cancers in the world. prangos pabulariadc.(apiaceae) is a perennial herb native to mountain slopes of the central and western asia countries. prangos species are wiedely used in folk medicine. anticancer activity of prangos pabularia extract against hela line was studied using cytotoxicity effect. many antitumor agents, have been reported to induce apoptotic cell death. this cell death plays a critical role in killing tumor cells in cancer therapy

Methods

In order to evaluate of cytotoxicity and antioxidant properties of the plant, dried powdered of roots of p.pabularia were soxhlet extracted successively with n-hexan, dichloromethane (dcm) and methanol. viability and cytotoxicity of hela cell line were measured by mtt assays. the antioxidant potential of the plant extracts was evaluated by dpph assay. additionally characteristic of cell death were using h&e morphological staining.

Results

The dcm extract showed a significant antioxidant effect with rc50 value of 0.08 mg/ml and our results showed that dcm extract displayed a significant cytotoxic activity against hela cell line in culture with a ic50 value of 0.526 mg/ml in 24h with mtt assay. additionally characteristic of aponecrotic cell death confirmed using h&e morphological staining

Conclusion

This study reveals biological effects and antitumor activity of prangos pabulariadc.(apiaceae) extract against hela line.

Keywords

Cytotoxicity, cell line, prangos pabularia, antioxidant

Cytotoxicity evaluation of stevioside on mcf7, hepg2 and ht29 cancerous cell lines

Hoda Abolhasani,[1,*] Shokoufeh mousavi,[2] Ahmad abolhasani,[3] Roqaieh ramynfar,[4]

1. Cellular and Molecular Research Centre and Medicine Faculty, Qom University of Medical Sciences, Qom, Iran.
2. Medicine Faculty, Qom University of Medical Sciences, Qom, Iran.
3. Department of Biotechnology, Faculty of Advanced Sciences and Technologies, University of Isfahan, Isfahan, Iran.
4. Medicine Faculty, Qom University of Medical Sciences, Qom, Iran.

Abstract

Introduction

Cancer is the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. globally, about 1 in 6 deaths is due to cancer. although great advancements have been made in the treatment and control of cancer progression, but cancer incidence is still increasing rapidly and significant deficiencies for improvement remain. stevioside is a diterpene glycoside found in the leaf of stevia rebaudiana, a traditional oriental medicinal herb, which has been shown to have various biological and ethno-medicinal activities including antitumor activity.

Methods

In this study, cytotoxic activity of stevioside was evaluated as an anticancer agent and was compared with cisplatin as a well-known anticancer drug. the cytotoxic effects of stevioside and cisplatin on mcf7 (breast), ht29 (colon) and hep g2 (liver) cell lines were evaluated by mtt assay at 48 hours at five concentrations. elisa reader was used at 570 nm wavelengths to determine the survival of cells. ic50 values were calculated by fitting the data in a sigmoidal dose-response curve by non-linear regression analysis using graphpad prism software (version 6.01) for each cell line.

Results

Based on the results of biological evaluations of this study, stevioside has growth inhibitory effects comparable to cisplatin on the 3 cancerous cell lines mcf7, hep g2 and ht29. although stevioside with ic50 of 0.226Â±0.05 Âµm has showed the best cytotoxicity effect comparable to cisplatin with ic50 of 0.226Â±0.05 Âµm on mcf7 cell line.

Conclusion

From the results, it can be concluded that stevioside has an intensive inhibitory activity on mcf7, hep g2 and ht29 cancerous cell lines with similar efficiency as cisplatin.

Keywords

Stevioside, mtt assay, mcf7, hep g2, ht29

Depression caused by male infertility

Kolsom Salehi,[1,*] Fatemeh kazeminavaei,[2] Mona jalili shani,[3] Reyhaneh gorji,[4]

1. islamic azad university babol
2. islamic azad university babol
3. islamic azad university babol
4. islamic azad university babol

Abstract

Introduction

Background and objective: infertility refers to the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. this study was carried out due to high importance of male infertility and the resulting psychological outcomes and the fact that depression itself can have an effect on male infertility. the present study was conducted aimed to investigate the psychological consequences caused by male infertility.

Methods

Search methodology: this study is a review study. necessary information on depression caused by male infertility was extracted databases of google scholar, magiran, pub med and sid using infertility keywords, including infertility, men, and depression. among 30 related articles published between 2007 and 2017, 15 articles that had the most relevance to the subject matter studied, were used to write this study.

Results

Results: infertility has significant effects on social, economic, and social dimensions of the individual. depression and anxiety are recognized as the most common psychological problems of infertility. since, in our culture parenting is considered as a turning point and an important event in couplesâ€™ life, therefore infertile men suffer from this failure. so, these processes (failure to meet cultural expectations) potentially have a relationship with feelings of loss and decreased self-esteem and stress in the infertile men.

Conclusion

Conclusion: according to the results of this study, in many infertile men, the infertility factor can lead to psychological factors, including depression.

Keywords

Key words: infertility, men, depression

Design and evaluation of multiplex pcr to identify of the most common pathogenic bacteria involved in septicemia.

Hossein Fazeli,[1,*] Arabestani mohammad reza,[2] Nazari farzaneh,[3]

Abstract

Introduction

Sepsis is a life-threatening condition caused by the uncontrolled, systemic, inflammatory response tobacterial, viral or fungal infections. rapid and accurate identification of sepsis and its causative organisms are necessary. the aim of this study was design and evaluation of multiplex pcr to identify of the most common pathogenic bacteria involved in septicemia.

Methods

This cross-sectional study was performed in isfahan university of medical science, isfahan, iran, genetic targets for primer designing included the16s rdna, rpob,gyrband x chromosome (as internal control). the sensitivity and specificity of the multiplex pcr are elevated by standard strains. one hundred and twenty-six samples collected from alzahr a hospital were tested by multiplex pcr.

Results

The multiplex pcr showed sensitivity ranging from 1 to 100 target gene copies per reaction (or 50-100 cfu/ml) depending on the bacterial species. of the 126 samples 39 samples were positive. a good correlation was found between the results obtain ned by the two methods. the results obtained by pcr were identical to those obtained by conventi onal methods in 26 out of 39 cases. of the remaining 13 samples, 8 (6.34%) samples were detected only by pcr and 5 (3.96%) samples were identified only by blood culture. staphylococcus aureus and escherichia coli were the most prevalent bacteria which isolated and identified in blood culture of hospitalized patients in the intensive care unit. the sensitivity and specificity of the multiplex pcr were 83.87% and 91.58% respectively.

Conclusion

The presented multiplex pcr permits a rapid and accurate detection of some pathogenic bacteria in blood samples which causes successful therapy in hospitalized patients. in addition to its use in blood samples, the multiplex assay may be value for the detection of these bacteria in other clinical samples.

Keywords

Conventional multiplex pcr, pathogenic bacteria, septicemia

Design and express m2e-ha chimeric protein to enhancing production of effective influenza vaccines

Niloufar Haji beigy,[1,*] Ardeshir hesampour,[2] Mohmmadreza shafaati,[3]

1. Islamic azad university-central branch
2. Islamic azad university-central branch
3. Islamic azad university- Hamedan branch

Abstract

Introduction

Influenza virus, which causes very important respiratory disease, belongs to orthomyxoviridae family. vaccination is intended to control the disease as an effective solution. the factor that makes influenza vaccines inefficient is antigenic drift. attention to antigenic shift and antigenic drift is essential to design an effective vaccine against influenza virus. to design efficient vaccine, conserved regions in viral proteins are targeted. in influenza virus, external matrix protein (m2e), hemagglutinin (ha) and nucleoprotein (na) are the most conserved proteins. in this research, the recombinant construct of m2e and ha genes were designed by using bioinformatics software for cloning in bacillus subtilis host.

Methods

: the ha and m2e genes of h1n1 were amplified and separated by cultivation in hela cell lines and rt-pcr. m2e and ha genes were cloned in t&a vector firstly and finally into pht43 plasmid following digestion by bamh1, xba1 and xma1. after the verification of cloning process by pcr and enzymatic digestion analysis, the accuracy of m2e and ha geneâ€™s orf in the t/a cloning vector were confirmed by sequencing .the chimeric construct pht43-m2e-ha was transformed into bacillus subtilis (wb600). expression of chimer protein m2e-ha was approved by sodiumdodecyl sulfate polyacrylamide gel electrophoresis (sds-page), bradford assay and western blot analysis.

Results

The results of clony pcr, restriction enzyme digestion and sequencing revealed that the construction of m2e-ha was correctly cloned in bacillus subtilis. in addition, antibodies animal test showed that the chimeric protein of m2e-ha stimulates the mice immune system properly.

Conclusion

Identification of antibodies against conserved epitopes of ha and m2e is an important step toward development of influenza vaccine, hence, m2e-ha chimeric protein prepared in this study could be an appropriate subunit vaccine candidate for preventing influenza virus infection.

Keywords

Chimeric protein, m2e gene, ha gene, subunit vaccine, influenza virus

Design and optimization of strip test in examining kras mutation in colorectal cancer

Elaheh Ferdosi shahandashti,[1,*] Elahe motevaseli,[2] Mohammad hossein modarressi,[3]

1. Department of Medical Biotechnology, Faculty of Medicine, Babol University of Medical Science, Amol, Iran.
2. Tehran University of Medical Sciences

Abstract

Introduction

Kras mutations are among the key events in the carcinogenesis process of colorectal cancer. some mutations in the kras gene in metastatic colorectal cancer patients cause the patients to not respond to the monoclonal antibodies of panitumumab and cetuximab. therefore, colorectal cancer patients should be monitored for mutations in the kras gene before using this monoclonal antibody and only those with colorectal cancer that do not have mutations in the kras gene respond to these drugs and prevent tumor progression. in this study, the design of strip assay based on the reverse dot blot was used to investigate mutations of the kras gene in colorectal cancer patients.

Methods

In this study, 10 biopsy samples from healthy subjects and 10 biopsy samples from patients with colorectal cancer referred to imam khomeini hospital in tehran and ayatollah rouhani hospital in babol were collected. to design the strip test, nylon and nitrocellulose membranes were first selected and then 12asp, 12ala, wild-type kras and hla-control probes and kras and hla gene primers were designed. after membrane and probes treatment, probes hybridization was performed by biotinylated pcr products, derived from a patient and healthy specimen. reverse engineering was also used to design primers and probes, for which ta cloning technique was used. in the final step, to evaluate the results, the concentration and time of using the alkaline phosphatase enzyme attached to streptavidin and the bcip-nbt substrate were optimized to create the lowest color of the field for better resolution of the bands.

Results

in this study, 12asp, 12ala, wild-type kras and hla-control probes were coded with the appropriate and treated membrane stripes to survey mutations in the kras gene. then, the results of hybridization with pcr-labeled product of patient and healthy samples were analyzed separately. as an enzyme and substrate control, instead of a probe, the biotinylated product of pcr and to control the correct hybridization, instead of the probe, the non- biotinylated product of pcr was encoded on the strips. as a result, after each test, these two controls were observed as purple bands showing the correctness of the test. to control of pcr, an hla-control probe was used which was observed in a purple band in all tests, both in healthy samples and in patient samples, which shows the correctness of the pcr. in the case of healthy and patient specimens with 12asp, 12ala mutations, the wild-type kras, 12asp, and 12ala probe bands, in addition to the controls

mentioned, were observed to be blue-purple violet. at all stages after optimization, favorable results were obtained.

Conclusion

The final result of this study was the design of a diagnostic kit for the study of mutation in colorectal cancer patients. the kit buffers, the appropriate membrane and 4 oligonucleotide probes were designed and optimized for temperature, time, concentration and ph, and favorable results were obtained. regarding different methods for kras gene analysis, the reverse dot blot method, which was designed in this study, has some advantages. this method has high sensitivity in detecting tumor cells and data analysis is easy to do, unlike other methods. hoping to acquire this knowledge, we can look at other cancer factors as well as various genetic diseases in the near future.

Keywords

Colorectal cancer, strip test, probe modification, kras

Design and synthesis a new derivative of 2,4-thiazolidinone and studying molecular docking and its effect on inhibiting acetylcholineesterase

Hannaneh Naeimi kararoudi,[1,*] Hossein ghafoori,[2] Asadollah mohammadi,[3]

1. Department of Biochemistry, Faculty of Sciences, University of Guilan
2. Department of Biochemistry, Faculty of Sciences, University of Guilan
3. Department of Chemistry, Faculty of Sciences, University of Guilan

Abstract

Introduction

Alzheimerâ€™s disease (ad) is a progressive, degenerative disorder of the brain and is the most common form of dementia among the elderly especially in industrialized countries. according to the cholinergic hypothesis, the decreased levels of acetylcholine in the brain areas dealing with learning, memory, behavior, and emotional responses are of critical importance in ad. the reduced levels of neurotransmitter acetylcholine are due to its rapid hydrolysis by an enzyme, acetylcholinesterase (ache). there have also been several reports showing that the enzyme ache plays a key role in the development of the senile plaques by accelerating amyloid-beta deposition. thus, ache inhibition has been documented as a critical target for the effective management of ad by an increase in the availability of acetylcholine in the brain regions and decrease in the deposition of amyloid beta. the current standard of care for mild to moderate ad, based on the so-called cholinergic hypothesis, includes treatment with ache inhibitors (acheis) to improve cognitive function. several classes of acheis such as donepezil, rivastigmine, and galantamine were developed to purposely treat ad, and currently constitute the only fda-approved therapeutic approach. one of the main objectives of organic and medicinal chemistry is the design, synthesis and production of molecules having value as human therapeutic agents. during the past decade, combinatorial chemistry has provided access to chemical libraries based on privileged structures, with heterocyclic structures receiving special attention as they belong to a class of compounds with proven utility in medicinal chemistry. there are numerous biologically active molecules with five membered rings, containing two hetero atoms. thiazolidinone is an important scaffold known to be associated with several biological activities. the 4-thiazolidinone scaffold is very versatile and has featured in a number of clinically used drugs. they have found uses as antitubercular, antimicrobial, anti-inflammatory and as antiviral agents, especially as anti-hiv agents. the aim of this study is to provide new compounds derived from 2,4-thiazolidinone to inhibit ache involved in ad.

Methods

Synthesis of the new compound of the reaction of 2,4-thiazolidinone and 2-hydroxybenzaldehyde was performed using a reflux column. approved the structure of the synthesized compound by using the ft-ir and nmr were investigated. the effect of the new compound on the inhibition of ache was investigated. frap test was used to study the antioxidant activity of the synthesis compound. also, using molecular docking, interaction between the synthesis compound and ache were studied.

Results

The structure of the new compound was approved by the ft-ir and nmr. the effect of the synthetic compound on the inhibition of ache activity in 25 to 250 Âµm concentrations was investigated and in a dose-dependent manner, 16 to 63% inhibitory activity was observed in enzyme activity. to evaluate the antioxidant activity, a concentration of 1 mm synthetic compound was used in different volumes and the results were all in the standard chart. investigation the interactions between synthetic compounds and ache by program autodock 4.2 indicates a good binding energy.

Conclusion

Studies conducted on the synthesized new compound indicate the proper interaction between the compound and the ache and also have a good potential for inhibiting ache activity. analyzing the antioxidant activity of the compound also shows its sensible reduction properties.

Keywords

Acetylcholinesterase, 2,4-thiazolidinone, molecular docking, frap test

Design and synthesis novel acetylcholinesterase inhibitors based on 2, 4-thiazolidindion and its molecular docking study

Hannaneh Naeimi kararoudi,[1,*] Hossein ghafoori,[2] Asadollah mohammadi,[3]

1. Department of Biochemistry, Faculty of Sciences, University of Guilan
2. Department of Biochemistry, Faculty of Sciences, University of Guilan
3. Department of Chemistry, Faculty of Sciences, University of Guilan

Abstract

Introduction

Alzheimer disease (ad) is a neurodegenerative and progressive disorder of the brain and is the most common age-related dementia that results in the progressive and irreversible cognitive impairment, decline in language, memory loss, decreased ability to learn, and a severe compromise in thinking ability, judgment, and decision making. the ad is characterized by the two most neuropathological hallmarks, the presence of senile plaques and the neurofibrillary tangles, which are the result of the accumulation of beta-amyloid (aÎ²) peptide according to the beta-amyloid hypothesis, the accumulation and deposition of beta-amyloid in different areas of the brain causing a cascade of reactions that causes nervous disorders. it has also been shown in many studies that the acetylcholinesterase enzyme is likely to play a very important role in the formation of senile plaques by binding to beta-amyloid and accelerating its sedimentation. thus, several classes of ache inhibitors such as galanthamine, donepezil, rivastigmine and tacrine are the main stay drugs for the clinical management of ad and currently constitute the only fda-approved therapeutic approach. synthetic chemicals play a major role to meet increasing industrial and medicinal demands in the developing world. recently thiazolidine derivatives have attracted attentions with their versatile properties and they have been one of the important research focuses. 4-thiazolidinones are the derivatives of thiazolidine, which belong to an important group of heterocyclic compounds. diverse biological activities such as antibacterial, pesticidal, antifungal, insecticidal, anticonvulsant, tuberculostatic, anti-inflammatory, antithyroidal, antiviral, shp-2 inhibitor and calcium antagonist, potentiation of pentobarbital-induced sleeping time, etc., have been found to be associated with thiazolidinone derivatives. the purpose of the present study synthesis of a new derivative of 2, 4-thiazolidinone to inhibit ache involved in ad.

Methods

A new derivative of 2, 4-thiazolidinone in the reaction with 4-methoxybenzaldehyde was synthesized by the reflux column. verification of the structure of the new compound was investigated by ft-ir and nmr. the effect of the synthetic compound on the inhibition of ache was investigated. interactions between synthetic compound and ache were investigated by molecular docking.

Results

The synthesized derivative of 2, 4-thiazolidinone was confirmed by ft-ir and nmr. the effect of the synthesized compound on the inhibition of ache activity in 25 to 250 Âµm concentrations was investigated. the percentage of inhibition was calculated as control and 26 to 57% inhibition was observed in enzyme activity. a molecular docking study using the autodock 4.2 program represents an optimal interaction between the synthesis compound and ache.

Conclusion

Molecular docking studies on the new compound derived from 2, 4-thiazolidinone ache inhibitor represent an effective link between the ligand and the protein. the new compound also significantly inhibits the activity of the ache.

Keywords

Acetylcholinesterase, 2, 4-thiazolidinone, molecular docking

Design and synthesis of fluorescent molecules conjugated gold nanoparticles as medical diagnostic agents

Seyedeh nazanin Hendi,[1] Neda attaran,[2,*] Azadeh asefnejad,[3]

1. Department of Biomedical Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Medical Nanotechnology, Applied Biophotonics Research Center, Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Department of Biomedical Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran.

Abstract

Introduction

Cancer is the second most common cause of death worldwide so identifying tumors and cancers in the early stages becomes extremely important as it has a direct effect on treating cancer. gold nanoparticles (gnps) can be considered as one of the most important nanomaterials and have been studied extensively due to their unique physical and chemical characteristics. different types of fluorescent markers have conventionally been used for imaging purposes. therefore, the combination of organic fluorophores and gold nanoparticles into a single compartment can be valuable for diagnostic and therapeutic applications

Methods

Gnps were functionalized with fluorescent molecules. the turkevich method has been used in this study to synthesize gnps due to the simplicity and ease of synthesis, controllable size, and stability of nanoparticles. to characterize these conjugated nanoparticles, the transmission electron microscopy (tem) images, uv-visible (uv-vis) absorption spectroscopic measurements, fourier transform infrared spectroscopy (ftir) analysis and the hydrodynamic size of the nanoparticles were specifically investigated in this study

Results

Uv-vis spectrometry was utilized to characterize the synthesized gnps. it is clear that the gnps display a characteristic surface plasmon absorption at 526 nm, showing the dispersion of gold nanoparticles. the size and morphology of the formed dispersed gnps were characterized using tem. it can be noted that the formed gnps have a spherical shape with mean diameter of ~14 nm. the hydrodynamic sizes of the gnps were measured to be 22.4 nm via dynamic light scattering (dls)

Conclusion

In this research, we designed and synthesized fluorescent molecules conjugated gold nanoparticles. an interesting result of this study showed that the designed conjugated gold nanoparticle can provide an efficient agent for medical diagnostic applications

Keywords

Fluorescent molecules, gold nanoparticles, medical applications

Design, cloning & expression of svsse chimeric gene, a fusion of vegf-a & erbb-2 subunits, for immuno-trap-therapy (itt) of cancer

Mojtaba Koohi leilan,[1] Mohammad mir-derikvand,[2,*]

1. Department of Life Science Engineering, Faculty of New Sciences and Technologies (FNST), University of Tehran, Tehran, Iran
2. Department of Life Science Engineering, Faculty of New Sciences and Technologies (FNST), University of Tehran, Tehran, Iran

Abstract

Introduction

Immuno-therapy is recently considered as an important method in the field of prevention and treatment of cancer. according to oncology studies, most tumor cells have three necrotic, hypoxic and well-oxygenated regions that the hypoxic area prevents immune cell influence and leads to a lack of immune system induction. therefore, cancer immuno-therapy is performed to kill the tumor using synthetic antigens (synthetic immune inducer against cancer) and antibodies. the use of antibody therapy due to its disadvantages, such as the resistance of cancer cells to antibody therapy and the high cost of production, is not an efficient and definitive method. while the direct use of antigens and immune system induction can partly resolve the problems associated with direct antibody therapy, it can be also used to develop the specific cancer vaccines for prevention. in order to make an efficient immune-therapy system, it should be selected an antigen that its malfunction causes the most inhibitory effect on the growth of tumor cells. among the cancer antigens, the family of tyrosine kinase (egfr) and vegf, which are respectively essential factor for metastasis and angiogenesis, can be a good candidate for cancer immuno-trap-therapy (itt). (immuno-trap-therapy: chemotaxis and absorption of immune cells into the entrapped tumor with the aim of identifying and inducing immune system reactions against tumor and cancer cells)

Methods

To design gene construct, after extracting the cdna and the amino acid sequence of the vegf and egfr factors from the gene bank database, the antigenic and joint allelic variants of each subsets of these factors were investigated. immunogenic subunits of vegf-a and erbb-2 variants were selected, and were fused as svsse chimeric gene using the linker (ggsg)7. the sequence of the heat stable ii peptide signal was selected and optimized to secrete this antigen for expression in e. coli hb101 bacteria (the main host for the future). this chimeric construct, svsse, was cloned in pet3a vector after codon optimization for e. coli and then transformed in e. coli expression host bl21-de3.

Results

The svsse gene sequence was confirmed by dna sequencing, double digest (nde1 / bamh1) and pcr. expression conditions of the chimeric gene were determined in the presence of iptg inducer in e. coli bl21-de3 bacteria. the total protein content was extracted using a simultaneous cell lysis and ultrasonic method.

ultimately, the expression of the svsse chimeric protein was confirmed using sds-page, his-tag dot blotting and his-tag western blotting.

Conclusion

In this study, in order to investigate the cancer immuno-trap-therapy hypothesis, immunogenic subunit of vegf-a and erbb-2 factors was designed as a chimeric gene and cloned in pet3a vector. the expression of this recombinant gene in e. coli bl21, as the primary bacterium, was indicated by sds-page and blotting techniques. in the future perspective, the recombinant vector will be transformed in the main secretory host (e. coli hb101) and the anticancer performance of svsse chimeric gene and live bacteria will be investigated in the in vivo assessments on rat.

Keywords

Gene cloning, vegf-a, erbb-2, svsse chimeric protein, immuno-trap-therapy (itt), cancer

Design, synthesis and evaluation biological effects of thiazolidinedione derivatives on human non-small-cell lung cancer a549 by using mtt assay

Sedighe Mirbagheri,[1,*] Fatemeh safari,[2] Asadollah mohammadi,[3] Mohammad nikpassand,[4] Hossein ghafoori,[5]

1. Department of Biology, Science and Research Branch, Islamic Azad university
2. Departmentof Biology, Faculty of Science, University of Guilan
3. Department of Chemistry, Faculty of Sciences, University of Guilan
4. Department of Chemistry, Rasht Branch, Islamic Azad University
5. Departmentof of biochemistry, Faculty of Science, University of Guilan

Abstract

Introduction

Cancer is one of the common causes of death in the world and treatment of the cancer is the most important challenge for researchers. the heat shock proteins (hsp) family is a group of molecular chaperones to assist protein folding, modification, and transportation. heat shock proteins are created by cells. while they can help the cells to protect cells some diseases including artery problems or cancer. hsp are named according to their weight. the range of molecular chaperones varies from 10 to over 100 kda. also, hsps are widely expressed in human cancers and play important roles in proliferation, invasion, metastasis, apoptosis of cancer cells. apoptosis is the important mechanism to control the cancer cells. it was found that hsps are highly expressed in cancer cells and thereby, hsps are supposed to play important roles to induce apoptosis in cancer cells. among hsps, we are interested to focus on hsp70 as a potential inducer of apoptosis. hsp70 protein contains highly conserved domain structures including nucleotide binding domain (nbd) which is atp binding site. herein, we designed and synthesised thiazolidinedione derivatives. thiazolidinedione derivatives may inhibit hsp70 protein by occupy the atp binding site in nbd domain. finally, we evaluated biological effects of thiazolidinedione derivatives on lung cancer cell line a549 by using mtt assay.

Methods

In this study, a new series of thiazolidinedione derivatives (mb1-6) were synthesized by reflux condenser. during synthesis, tlc was used to confirm the formation of compounds and their purity. the structures of the compounds were confirmed by ft-ir, c nmr, and h nmr. we investigate the effects of 6 samples of thiazolidinedione derivatives in different concentrations of 50Âµm to 1000Âµm with a three-time repeat count on the cells of the human non-small-cell lung cancer a549 cancer. dmso as negative control have been used to determine the accuracy of the work. mtt assay was used to measure the toxicity of the compounds.

Results

According to the obtained results, the compounds mb 1, mb3 and mb6 exhibited strong inhibitory activities with ic50 values of 0.5, 0.5, and 0.9 mm, respectively, compared to the positive control cisplatin (10 Âµg/ml).

Conclusion

Further studies are necessary for detailed. the results shown the metylen (ch2) of thiazolidinedione and formyl (-cho) group of our aldehyde are react with them and new thiazolidinedione derivative was synthesized. also derived compounds mb1, mb3 and mb6 significantly inhibit proliferation of aÎ²4 cells.

Keywords

Hsp70 protein, thiazolidinedione derivatives, cancer cell, mtt assay

Designing a synthetic cassette for molecular detection of coxiella burnetii

Afshin Samimi nemati,[1] Mehdi zeinoddini,[2,*] Mohamad javad dehghan esmatabadi,[3] Fatemeh sheikhi,[4]

1. Malek ashtar university of technology
2. Malek ashtar university of technology
3. Malek ashtar university of technology
4. Malek ashtar university of technology

Abstract

Introduction

Q fever is a zoonotic disease that caused by coxiella burnetii, a gram-negative and intracellular bacterium. today, traditional diagnosis of q fever in human and animals are based on serological methods that is time consuming and laborious. on the other hand, for detection of c.burnetii in the environment, in order to investigate possible routes of dissemination and transmission, serology method, cannot be applied. therefore, molecular detection is preferred because this assay is fast and reliable in most conditions.

Methods

This bacterium is belonging to level 3 biosafety, so we designed a synthetic cassette which, consist of three specific regions according to specific genes for detection of c.burnetti. this cassette including com1, icd & is1111 genes to develop a multiplex pcr assay to identification of q fever agent. this cassette can be used as a positive control for multiplex pcr assay.

Results

According to designing of synthetic cassette, data showed that 3 specific bands at 300bp, 140bp & 90bp could be observed in 2% agarose gel electrophoresis. development of this synthetic cassette as a positive control and multiplex pcr assay may be useful for identification of infected products.

Conclusion

Synthetic cassettes are useful tools for detection of microbial agents that, are need biosafety level 3 or more conditions. we can use these tools to prevent of transmission to laboratory personals.

Keywords

Coxiella burnetii, molecular detection, synthetic cassette,q fever, multiplex pcr

Designing a system for the diagnosis and classification of uterine cancer using a combination of graph cutting and color separation

Fatemeh Hajihoseiny,[1,*] Azam letafatfarashbandi,[2] Mohammad ghalandari,[3] Jasem jamali,[4]

1. Azad University of Kazeroun Branch
2. Azad University of Kazeroun Branch
3. Azad University of Kazeroun Branch
4. Azad University of Kazeroun Branch

Abstract

Introduction

Although auto-detection systems have improved, the histological examination of cervical biopsy by pathologists to detect cervical cancer maintains a clinical standard. however, due to the large volume of histologic data and the individuality of the histological examination of tissue samples and the lack of experience in evaluating samples, the results are significantly influenced by these factors. get it histologic images of the cervix, including the background, scaly tissue and structural tissue (stroma). an elemental pathologic component is a scaly tissue that contains important diagnostic information. scalable cladding tissue contains nuclei that display diagnostic information. the classification of cervical cancer is done using local and global methods for the segmentation and analysis of cervical tissue images. the global method defines the target area (roi), which is the same scalable texture. this method involves the fragmentation of the scaling tissue from the entire cervical histology image. the next process is a local method that is applied to a scaled tissue. the local method involves the segmentation and analysis of the cores and the contents of the scaffold cover. as a result, the nuclei are detected and the disease is graded. the overall purpose of this system is to propose a partitioning algorithm that identifies and separates the target area from the entire cervical histology picture to provide a computer-assisted diagnostic system for categorizing cervical cancer. the process in the proposed system includes a global approach, a local approach, and grading and classifying the disease. in the first step, the cervical histology image is processed using a global method to partition the cervical fissure. secondly, the cores are parsed and analyzed. finally, the image is graded and categorized. this process uses a combination of graph cutting and color separation.

Methods

This paper presents a computer aided diagnostic support system that helps pathologists in inspecting cervical biopsies. this paper investigates various components of an efficient computer aided diagnostic support system: image acquiring, preprocessing, segmentation, feature extraction, classification, disease grading and identification. the main goal of the proposed system is abnormality identification and determination of cancer grading in a systematic and repetition able situation. using combination of graph cut and color segmentation in computer aided diagnostic support system for cervical cancer classification is a novel research that uses sliding block algorithm for analyzing of nuclei. block moves in horizontal and vertical direction in order to cover squamous epithelium, and analyses the existence of nuclei wit

good details. as a result, this method provides better performance as compared to k-means clustering and gabor wavelet in terms of specificity and false positive.

Results

It can be seen that the method of cutting the graph, based on the quantitative measurements described in the next paragraph, makes a fine particle cladding texture. in order to measure the performance of the segmentation of the graphic cut, visual evaluation and quantitative measurements are used to evaluate the accuracy of the process. in figures, it can be seen that in comparison with hand-parting, the graph cutting method can partition the texture of the flute. in order to evaluate the partitioning process, hand segmentation has been used as a reference criterion. in the tables shows the results of segmentation for 475 cervical histology images in the form of a chart, which indicates the amount of error occurred in the segmentation of the graph cutting method.

Conclusion

In this paper, an automatic diagnostic system was designed and introduced by introducing the method of segmentation of the graphic section and the method of color classification and combining these two methods together. the function of this system was investigated on various images of cervical histology. it was found that this method is useful in the diagnosis and evaluation of cervical cancer and can help pathologists.

Keywords

Cervical cancer classification, computer-assisted diagnostic support, k-means clustering and graph a

Designing and making of plasmonic nanobiosensor with different concentration of mir-21

Mozhgan Barfi,[1] Masumeh azizi,[2,*] Azadeh azizi ,[3]

1. Shahrekord University of Medical Sciences, Shahrekord, Iran
2. Molecular Medicine Department, Biotechnology Research Center, Pasteur Institute of Iran, Tehran, Iran
3. Department of Bioscience and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran

Abstract

Introduction

Micrornas (mirnas or mirs) are non-coding nucleic sequences which participated in the control of pathological processes and can act as an oncogene or tumor suppressor. for example, mir-21 is an index biomarker that is frequently overexpressed in various human tumors and several cancer cell lines including glioblastoma, head and neck, lung and other cancers. the most common methods for checking alterations in the mirnas expression level are using micro-array chips and real time pcr.however, replacing these methods with simpler and less costly methods is very important for cancer diagnosis and treatment. nowadays, linker mediated self-assembly of gold nanoparticles (gnps) is emerging as an interesting strategy for monitoring the alterations in the mirnas expression level.

Methods

Herein, for the first time a plasmonic assembled nano-biosensor has been designed in order to investigate the mir-21 concentration based on enhancement the local surface plasmon resonance (lspr) property of gnps. for this, first gnps were conjugated with thiol-modified rna strands and then have been assembled via mir-21 as a linker. finally hybridization between complementary rna strands was investigated using monitoring the lspr alterations of gnps as a function of mir concentration (0-10 Î¼g/ml).

Results

The results showed that the growth rate of gnps assembly is dependent on the mir-21 concentration and upon the increment of mir concentration; amount of hybridization has been increased

Conclusion

In conclusion, gold nanoparticles self-assembled systems could be used as a new and ultrasensitive sensor for cancer diagnosis researches.

Keywords

Micrornas, local surface plasmon resonance (lspr), gold nanoparticles (gnps), mir-21

Detection of bacterial contamination of stethoscope used in 22 bahman hospital (2017)

Hossein Mokhtari,[1,*] Alireza rezaee,[2] Ù• shima jafarzadeh,[3]

1. Department of infectious diseases,Mashhad medical science branch,Islamic Azad University,Mashhad,Iran
2. Department of pathology,Mashhad medical science branch,Islamic Azad University,Mashhad,Iran
3. Department infectious diseases,Mashhad medical science University,Mashhad,Iran

Abstract

Introduction

Stethoscope, as a medical device used by all medical staff, has a substantial influence on transmission of hospital-acquired infection. this study investigates the microbial contamination of stethoscope used in the 22 bahman hospital, mashhad, iran in 2016.

Methods

A cross-sectional study has conducted from 78 medical stethoscopes used in 22 bahman hospital, mashhad, iran. sampling procedures from clinical departments, special clinics, and medical students (intern and stager) has performed by using a sterile cotton swabs via swabs (surface bell) and the diaphragm (optics) of the stethoscope. infected samples including blood agar, chocolate agar, eosin, and methylene blue plates, were together transferred to the microbiology laboratory at 22 bahman hospital to identify the microbe type and germs inside. antibiotic resistance was monitored at 37Â°c, for 24 hours, in muller hinton environment, and ultimately, both resistance and antibiotic sensitivity were defined based on microbe type.

Results

Of 78 analyzed stethoscopes, 51 (65.4%) were infected, and the highest levels of contamination is related to microorganisms including staphylococcus epidermidis (27.5%), serratia marcescens (25.5%), coryne bacterium (15.7%), and klebsiella oxytoca (13.7%).thebest antibiotics choice for treating staphylococcus epidermidis according to antibiogram is vancomycin and imipenem and the best antibiotics choice for serratia marcescens is imipenemØŒ gentamicinØŒ amikacin and ciprofloxacin.

Conclusion

The stethoscopes are contaminated, and unchecked usages of such devices could result in the spread of nosocomial infection. so, following antibiotics can be used for their experimental treatment vancomycin and imipenem.

Keywords

Stethoscope.microorganism.infection. stethoscope.microorganism.infection.

Detection of biomarker mirnas and their functions by co-expression network analysis in gastric cancer (gc)

Masoumeh Sepahvand,[1] Pouya salehipour,[2] Shadi mahdipour,[3] Sina majidian,[4,*]

1. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences
2. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences
3. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences
4. School of Electrical Engineering, Iran University of Sciences and Technology

Abstract

Introduction

Gastric cancer (gc) is the fourth most common cancer and the second leading cause of death among all cancers around the world. in 2008, a total of 989600 new cases of gastric cancer were discovered and as many as 738,000 died from gastric cancer. therefore, studies that explore the mechanisms of cellular and molecular gastric cancer development and the validation of novel biomarkers are critically required. many studies have shown that mirnas are associated with development and progression of gastric cancer and can act as diagnostic, prognostic and therapeutic biomarkers. thus, identification of differentially expressed mirnas (dems) may contribute to early diagnosis and prediction of survival in gc. by using several approaches including whole genome studies and co-expression analysis among mirnas, lncrnas, and mrnas we can recognize corresponding mirnas in gc. this finding of mirna and their target genes help us to identify the signaling pathways in which they are involved and provide a promising therapeutic outcome. this study was designed to achieve this goal by analyzing 351 samples of gc using tcga-stad data along with co-expression analysis of mirnas, lncrnas, and mrnas.

Methods

Transcriptome profiling data of 351 gc primary tumors and 32 primary normal samples, as well as transcriptome profiling data of 21 metastatic primary tumors and 351 non-metastatic primary tumors, were extracted from the tcga-stad project. differential expression analysis and co-expression network analysis among mrnas, mirnas, and lncrnas were performed to create network pathways that reveal active mirnas. in addition, experimental targets of these mirnas were determined by mirtarbase database. to find the functions of these mirnas in gc, nested network analysis of identified mrnas was performed using kegg and string databases to identify altered signaling pathways in gc.

Results

In this study, extracted data from the project related to samples of primary tumors and primary normal samples identified hsa-mir-15b-5p as a candidate biomarker in gc. this mirna was up-regulated in gc with a log2fc of -0.813 and a p-value of 1.156e-6. however, in another project of tcga-stad, including samples of metastatic primary tumors and non-metastatic primary tumors, there was no difference in the expression of hsa-mir-15b-5p between two groups. network analysis determined that mir-15b-5p was

associated with pi3k-akt signaling pathway (adjusted p-value: 5.60e-06) and with ras signaling pathway (adjusted p-value:1.20e-03) by altering the expression of insr, bcl2, ccnd1, ccne1, igf1r, fgf2, fgfr1, vegfa, and kdr genes.

Conclusion

Patients with gc have a poor prognosis and in spite of advances in gc therapy, the five-year survival rate is 5%-20%. therefore, identification of prognostic biomarkers is essential to improve clinical treatment and management of gc patients. over the past years, many types of research indicated the role of mirnas as diagnostic, prognostic and therapeutic biomarkers. it is believed that mirna alterations occur early in the cascade of the pre-neoplastic events. in this study, we aimed at finding a mirna as a biomarker in gc by network analysis we found that hsa-mir-15b-5p is a potential biomarker in this type of cancer. as for mir-15b-5p, a great number of target genes are associated with signaling pathways; insr, bcl2, ccnd1, ccne1, igf1r, fgf2, fgfr1, vegfa genes in ras signaling and pi3k-akt pathway whose expression is deregulated in gc. since these pathways are tightly regulated and controlled, any alteration in the genes that are involved in these pathways would further affect cell signaling and lead to the initiation or progression of cancer. mir-15b-5p is up-regulated in primary tumors compared to primary normal samples. this finding confirmed the result of a previous study on mir-15b in gc. however, the expression of mir-15b-5p in metastatic primary tumors compared to non-metastatic primary tumors demonstrated no difference. therefore, it is suggested that mir-15b-5p can affect tumorigenesis, but it has no effect on metastasis. identification of a single mirna in blood is not ideal for diagnosis of gc because of tumor heterogeneity. thus, analysis of a combination of plasma mirnas may help improve their diagnostic performance for gc.

Keywords

Mirna, gastric cancer , network analysis, biomarker

Detection of cell free dna in plasma of patients affected with colorectal cancer

Sahra Kabiri,[1,*] Sahrakabiri,[2]

1. Digestive Disease Research Center, Tehran University of Medical Sciences, Tehran, Iran; Molecular Medicine Department, Pasteur Institute of Iran, Tehran, Iran. Electronic address: lteimoori@pasteur.ac.ir
2. Department of bilology,centeral tehran branch,Islamic Azad University,Tehran,Islamic Republic of Iran

Abstract

Introduction

Colorectal cancer is the third most prevalent cancer in the world. globally it has been estimated that about 1.4 million new cases of colorectal cancer are diagnosed every year. colorectal cancer is a multifactorial disease that arise due to genetics as well as epigenetic alternation in a number of oncogenes, tumor suppressor genes, mismatch repair genes, as well as cycle regulating genes in signaling pathway. these genes regulate the proliferation of cells in mucosa. small amounts of free dna circulate in the body fluids of healthy and diseased people while increased concentrations of dna can be detected in the body fluids of cancerous patients

Methods

It is review article

Results

These genetic changes in cell free dnas are seen as mutations in tumor suppressor genes or oncogenes or chromosomal abreactions. also epigenetic changes can be seen in dna as methylation, histone modification or rna changes. alterations in the rna profile can be seen as different profile of mirna, exososomes or long non coding rnas. these changes in patients are different from normal healthy people.

Conclusion

These changes in patients are different from normal healthy people. they can be considered as biomarkers for diagnosing different types of cancer or choosing the best plan of therapies.

Keywords

Colorectal cancer,cell free dna, epigenetic alretnation

Detection of colorectal cancer using gene expression profile and artificial neural network

Fateme Asadollahzadeh shamkhal,[1,*] Hamidreza kobravi,[2]

1. 1Department of Electrical Engineering, Faculty of Engineering, Ferdowsi University Of Mashhad, Iran,
2. 2Research Center of Biomedical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran

Abstract

Introduction

The findings indicate that early detection of colorectal cancer and, consequently, appropriate therapeutic can be effective in reducing the morbidity of the cancer, since colorectal cancer, if detected early, is one of the most curable cancers. on the other hand, research has shown that neural networks increase the accuracy of colon cancer classification compared to other clinical pathology and statistical methods. for this reason, in the research, the method to classify the gene expression profiling data in colorectal cancer using the artificial neural network has been investigated.

Methods

The data of the colon and rectum gene expression profile in colorectal cancer patients and healthy subjects were used as input to artificial neural network (mlp). the used data include the data of 20 genes for 22 samples, that 11 are colorectal cancer tissues and 11 are normal colon tissues. the best result was obtained when the 10 hidden layers were in the neural network. the network trained ten epochs and the average was calculated from the results of these ten times of training. figure 1. shows this network. also, the gene expression profiling data got from cged (cancer gene expression database). this database has 1536 for colorectal cancer and we selected and investigated 20 genes randomly.

Results

Gene expression profiling data were given as inputs to the artificial neural network. the accuracy of classifying of the cancer data from healthy subjects was obtained using the mlp neural network, 94.77 Â± 4.1764.

Conclusion

Mlp and information of gene expression profiling data, can classify and distinguish the genetic pattern of healthy subjects and colorectal cancer patients with high precision. considering that optimal cancer treatment requires accurate and timely diagnosis using a combination of histopathologic and clinical approaches, the proposed strategy can be used to increase the accuracy of the diagnosis of different types of cancer. in addition, making changes in the gene expression profile can play an important role in early detection of colorectal cancer.

Keywords

Artificial neural network, multilayer perceptron (mlp), colorectal cancer (crc), cancer detection, g

Detection of vibrio.cholerae using localized surface plasmonic resonance (lspr)

Ghazale Faridfar,[1,*] Mehdi zeinoddini,[2] Saeid akbarzadehkolahi,[3] Azade azizi,[4]

1. Islamic Azad University, Tehran, Iran.
2. Malek Ashtar University of Technology, Tehran, Iran.
3. Islamic Azad University, Tehran, Iran.
4. Malek Ashtar University of Technology, Tehran, Iran.

Abstract

Introduction

vibrio cholerae is one of the most important intestinal and waterborne pathogens that have high prevalence in world. traditional methods for v.cholerae detection are time consuming and laborious with low sensitivity. herein, a localized surface plasmon resonance (lspr) nanobioprobe has been developed based on specific immunological interactions between gold nanoparticles (gnps) conjugated with antibody and v.cholerae in order for the rapid detection.

Methods

In this research, plasmonic gnps were conjugated to antibodies and the conjugation confirmed using uv/vis spectrophotometer and dynamic light scattering (dls). after that, the sensitivity of the nanobioprobe has been investigated in the presence of different concentration of v.cholerae via measuring the lspr band shifts of gnps. also lspr sensitivity of nanobioprobe was compared with the elisa method.

Results

The data was showed; the lspr biosensor reduced the v.cholerae detection time from 2 or 3 days to less than 1 h compared with traditional methods.

Conclusion

In conclusion, this nano-biosensor detection can be used like a simple diagnostic test in clinical laboratories for identification of v. cholerae.

Keywords

nanobiosensor, vibrio.cholerae o1,detection, localized surface plasmonic resonance.

Determination of gut microbiota pattern in cvd patient in comparision with healthy control in irainian population

Seyedeh fatemeh Sadati khalili,[1] Maryam taj abadi ebrahimi,[2,*] Seyed davar siadat,[3]

1. The Islamic Azad University, Central Branch
2. The Islamic Azad University, Central Branch
3. Mycobacteriology and Pulmonary Research Department, Pasteur Institute of Iran

Abstract

Introduction

Cardio vascular diseas (cvd) is the third most common cause of death in most countries. atherosclerosis (at) ,is defined as increased thickness of artery endothelium due to fat accumulation, is major cause of cvd. at has various pathology including genetic and environmental factors. it has been demonstrated that gut microbiota as environmental factor has significant role in induction and development of at. the gut microbiota is microbial community colonizes the human gastro intestinal track. gut microbiota composition consist of various microorganism including bacteria, protozoa, fungi, archea and virus. gut microbiota pattern has determinative role on health and disease state in the host. in this regard, relative abundance of important microbiota members (a. muciniphila, lactobacillu and prevotellaceae) were determined in cvd patient and control in irainian population for the first time.

Methods

15 cvd patients and 15 healthy subject recruited from november 10, 2016 to august 28, 2018 in tehran. lipid profiles (cholesterol, triglyceride, ldl, hdl, vldl) and acute phase protein (crp) were measured by biochemical tests and saa were measured by elisa kit (ab100635 â€“ serum amyloid a (saa) human elisa kit) respectively. in order to determine the relative abundance of a. muciniphila and lactobacillus and prevotellaceae, stool samples were collected. following dna extraction from samples by dna-extraction qiaampÂ® dna stool mini kit (50), quantitative pcr was conducted based on 16s rdna universal primers. the bacterial abundance was calculated based on standard curve derived from escherichia coli standard strain. finally, the frequency of these bacteria calculated. data of biochemical test and qpcr were analyzed by spss software and independent sample t test and data analysis of crp test was performed using mann-whitney test.

Results

Our data demonstrated that cholesterol, triglyceride, crp and saa of cvd group was higher compared with contrrol group. ldl and hdl of control group was higher compared with cvd group.), no significant change obserserved in vldl test. although we we reported abundance change of a. muciniphila (p=0.248) and prevotellaceae (p=0.183) in cvd group compared with control group but this result is not significant. the relative abundance of lactobacillus was significantly decreased (p=.032) in cvd group compared with control group.

Conclusion

In conclution cvd patient has significantly different relative abundance of lactobacillus compared with control group. according to anti-inflamatory properties of lactobacillus our result is parallel with the lipid profile and acute phase protein (crp and saa). since reduction of lactobacillus relative abundance is parallel with lipid profile and acute phase protein (crp and saa), this could be explained anti-inflamatory properties of lactobacillus in gut microbiota host interaction. determination of important of gut microbiota in cvd patient could be promissing in control and treatment of at at a certain population.

Keywords

Microbiota, cardiovascular disease, lipid profile, crp, saa

Determination of leishmanial infection in visceral leishmaniasis reservoir hosts using pcr and based on its-rdna gene in endemic areas of north khorasan province.

Roozbeh Taslimian,[1,*] Parviz parvizi,[2] Narmin najafzadeh,[3] Bahar shemshadi,[4]

1. Molecular Systematic Laboratory, Parasitology Department, Pasteur Institute Iran.
2. Molecular Systematic Laboratory, Parasitology Department, Pasteur Institute Iran.
3. Molecular Systematic Laboratory, Parasitology Department, Pasteur Institute Iran.
4. Department of patobiology , Science and Research branch, Islamic Azad University, Tehran, Iran.

Abstract

Introduction

Visceral leishmaniasis (kala-azar) is one of the most important, neglected zoonotic parasitic diseases in iran which most commonly occurs in children under the age of 10 years. dogs are known as the main reservoir hosts and leishmania infantum is the main causative agent of this disease in iran. considering that the reservoirs are generally asymptomatic and iran is endemic foci of vl, it is essential to firmly determine the infection in reservoirs. pcr is a sensitive and specific diagnostic method for detecting parasites, and its-rdna gene is more commonly used to identify leishmania parasite than other genes.

Methods

Conjunctiva and snout swabs along with blood samples from canines were conducted from different regions of north khorasan province. pcr was performed targeting its-rdna gene to determine the contamination.

Results

5 of 37 dogs were leishmania positive during summer of 2018. after sequencing leishmania infantum was firmly identified as the causative agent of visceral leishmaniasis in northern khorasan province.

Conclusion

Studies indicated spleen and bone marrow holds the highest amount of parasites. conjunctiva, oral mucosa and blood samples contain significantly high amounts of leishmania infections and since sampling is less invasive its more suitable method for live samples. its-rdna gene due to its low intracellular polymorphism and readable is a suitable gene for leishmanial detection.

Keywords

Leishmaia infantum, reservoirs, pcr, iran,

Determination of sodiuom , lactate and nitric oxide in serum of patient with different degrees of burn

Homeyra Fadaei,[1,*] Amirhossein esmaeili,[2]

1. 1-Department of Medical Science, Babol Branch, Islamic Azad University, Babol, Iran
2. 1- Department of Medical Science, Babol Branch, Islamic Azad University, Babol, Iran

Abstract

Introduction

Burn is one of the accidents that threaten about 10 percent of events in the world and causes mortality, physical, mental, economic and disability problems. therefore, our purpose in this study was to examine the relationship between different degrees of burn with serum sodium lactate and nitric oxide levels.

Methods

In this study, 80 samples (50 patient samples +30 control samples) were taken to zare hospital in sari. sodium levels in the samples were analyzed using xd684 electrolyte analyzer, lactate levels using a photometric method and based on the amount of nadh produced by exposure to ldh enzymes as well as nitric oxide levels of the samples using a grease reactioner and is based on chlorometric method . in terms of the results, the data were analyzed using spss_22 software and the mean values of the comparison using the independent t-test program were analyzed and the results were considered significant with p <0.05.

Results

The results of this study showed that the level of sodium (meq / l) in the case group was 136/76Â± 2/27, compared to the control group, 140/63 Â± 3/22, which showed a decrease , (p <0.001) is meaningful too. also, lactate level (mg / dl) in the case group was 21/26 Â± 6/38, compared to the control group, 12/17 Â± 3/16 this increase was also significant (p <0.001). the results of our research on nitric oxide (Î¼mol/l)in the case group showed a 69/14 Â± 28/9 compared to the control group of 43/43 Â± 14/93, which also increased with p <0.001.

Conclusion

The results of our study showed that the burn severity with the serum sodium lactate and nitric oxide levels increased the burn percentage with a significant decrease in sodium level (p = 0.009, r2 = 0.1331, y = -0.0389x + 137.97) while increasing the burn percentage with a significant increase in serum level of lactate (p = 0.000 , r2 = 0.6364 , y = 0.2391x + 13.80) and also increased serum nitric oxide levels (p = 0.000, r2 = 0.438 , y = 0.8985x + 41.30).

Keywords

Burn percentage, sodium, lactate, nitric oxide

Development and characterization of a nanoemulsion formulation for transdermal delivery of itraconazole

Saba Mehrandish,[1,*] Shahla mirzaeei,[2]

1. Student Research Committee School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran
2. Pharmaceutical Sciences Research Center, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract

Introduction

Itraconazole (itz) is an effective antifungal drug for various types of dermal fungal infections. recent advances in nanotechnology have led to the development of nano-scale drugs and delivery systems to improve drug therapeutic effectiveness. since few drugs are effective after their topical application, due to the barrier function of the skin, colloidal systems have being widely explored as carriers to improve drug skin permeation. therefore nanoemulsion formulation of itz for transdermal drug delivery was developed and evaluated in the present investigation.

Methods

Different o/w nanoemulsion formulations of itz were prepared by sonication method using tweenÂ® 20 and spanÂ® 80 with different tween : span ratios (5:5, 6:4, 7:3, 8:2, 9:1) as surfactants, pg as co-surfactant, dmso as oil phase and water. thermodynamically stable nanoemulsions were characterized for morphology and droplet size. the in situ skin permeation studies were performed on franz diffusion cell using rat skin as permeation membrane. the in situ skin permeation profile of optimized formulation was compared with dry powder of itz.

Results

The results obtained in the present work show that itz nanoemulsion containing tweenÂ® 20, spanÂ® 80 with 9:1 ratio, pg, dmso and water, is a suitable carrier system for incorporation of itz and satisfies the best attributes for transdermal application with good particle size in the nano range; also significant increase in permeability parameters was observed in nanoemulsion formulations as compared to dry powder of itz. prepared nanoemulsion formulations are stable and safe for the transdermal delivery.

Conclusion

These results suggested that nanoemulsions can be used as potential vehicles for improved transdermal delivery of itz.however further, in vivo investigations are required to evaluate improved antifungal efficacy of itz.

Keywords

Itraconazole, nanoemulsion, transdermal delivery, antifungal drug

Development and validation of heminested rt-pcr and qrt-pcr techniques for detection of rabies virus genomes for the first time in iran

Azadeh Rasooli,[1] Fereshteh amiri,[2] Zohreh fadajan,[3] Iman salahshourifar,[4] Rouzbeh bashar,[5] Maryam fazeli,[6,*]

1. Department of Biochemistry, Faculty of Sciences, Payame Noor University, Tehran, Iran
2. Department of Biology, College of Basic Science, Tehran Science and Research Branch, Islamic Azad University, Tehran, Ir
3. Department of Biology, College of Basic Science, Tehran Science and Research Branch, Islamic Azad University, Tehran, Ir
4. Department of Biology, College of Basic Science, Tehran Science and Research Branch, Islamic Azad University, Tehran, Ir
5. WHO Collaborating Center for Reference and Research on Rabies, Pasteur Institute of Iran, Tehran, Iran
6. WHO Collaborating Center for Reference and Research on Rabies, Pasteur Institute of Iran, Tehran, Iran

Abstract

Introduction

Rabies virus (rv) is one of the most dangerous zoonotic disease and major public health problem in most of the world, especially underdeveloped countries. most carnivorous, domesticated animals and bats can be infected with the virus. they can transmit it to other mammals. rabies is preventable by proper vaccination, even shortly after exposure. today, it seems a fast, sensitive and reliable rabies diagnostic method is required, which might reduce the financial burden of inappropriate diagnosis as well as physiological stress on patients because of the extremely high fatality rate of the disease. the aim of this study was to develop and validate two molecular techniques, heminested rt-pcr and qrt-pcr assays, for comprehensive detection of iran circulating rabies virus genomes in the suspected rabid brain and saliva samples.

Methods

In this study, we tried to develop qrt-pcr as a fast, sensitive, and specific method for rapid detection of rabies virus in brain and saliva samples. also, the sensitivity and specificity of the method was determined compared to heminested rt-pcr test and direct fluorescent antibody (dfa) and mit (mouse inoculation test).

Results

A combination of primers based on rna-dependent rna polymerase (l) gene of the pasteur virus fixed strain (pv) (accession number. m13215) was used for developing the qrt-pcr assay. primers and probe designed were blasted using the ncbi primer-blast (http://www.ncbi.nlm.nih.gov/tools/primer-blast/) with other iran circulating virus genomes that were available in public databases (genbank). the clinical sensitivities of

qrt-pcr and heminested rt-pcr methods were calculated 97.14% and 94.3%, respectively; while, the clinical specificities of qrt-pcr and heminested rt-pcr methods were calculated 93.75% and 88.24%, respectively. also, the analytical sensitivities of qrt-pcr and heminested rt-pcr methods were about 5Ã—102 and 5Ã—103 ffu/ml, respectively.

Conclusion

In this study, qrt-pcr and heminested rt-pcr assays as two diagnostic molecular methods with high sensitivity and specificity were developed for detection of rabies virus genome. therefore, these rapid, accurate, and cost-effective detection methods may perhaps be the investigative tools which can be valid for detection of target viral genome for use in the research and diagnosis field.

Keywords

Rabies virus; molecular diagnosis; reverse transcriptase polymerase chain reaction; real-time polyme

Development of antimicrobial-eluting sutures on wound healing process management

Maliheh Yaghoobi,[1,*]

Abstract

Introduction

Surgical site infections occur when pathogenic organisms proliferate in surgical wounds and prevent wound healing. these infections cause separation of the wound edges and increase the risk of abscess in deeper wound tissues. sutures can be a source of surgical wound contamination due to bacterial adherence and colonization. antibacterial sutures are developed with the aim to reduce the risk of surgical site infections by minimizing the risk of colonization of the suture by bacteria commonly associated with such infections. the aim of this study was to present comprehensive information about antimicrobial sutures structure, their performance in fast wound healing, and conventional antimicrobial agents have been used in their compositions.

Methods

Polymer sutures with natural or synthetic textile materials in monofilament, multifilament, twisted, and braided form, which are widely used in wound closure, are discussed in this study. the sutures based on origin, absorbability, and structures were classified and described. suture properties and fabrication techniques have been studied. the different antimicrobial agents were introduced and the different fabrication methods for adding antimicrobial agents in the structure of sutures were reviewed.

Results

The functionality and efficacy of antimicrobial sutures that manufactured via electrospinning was stated and compared with other fabrication methods. the effect of suture structure, absorbability and composition of antimicrobial sutures on surgical site infection was discussed to present for controlling the antimicrobial agents release. in addition, the effect of antibiotics and other bioactive molecules were studied and compared with antibacterial agents in fast wound healing.

Conclusion

The risk of surgical site infection is a constant challenge in wound closure with surgical sutures. the using of antibiotics or other therapeutic agents in the suture structure has become an attractive and interesting research in wound healing. wet electrospinning provides a suitable method for the development of antimicrobial sutures for surgical site infection and are capable of sustained antimicrobial agent release; however, tensile strength must be improved prior to clinical use. in addition, development and design of antimicrobial peptides are very much needed for medical treatment of infection/ disease caused by resistant microorganisms in surgical site infections.

Keywords

Antimicrobial sutures,conventional antimicrobial agents, fabrication method

Development of ex vivo adult retinal explant organotypic tissue culture system for anti-angiogenic drug evaluation

Hamid Latifi-navid,[1] Zahra-soheila soheili,[2,*] Mehdi sadeghi,[3] Shahram samiei,[4] Ehsan ranaei pirmardan,[5] Hoda shams najafabadi,[6]

1. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran
2. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran
3. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran; School of Biological Sciences, Institute for Research in Fundamental Sciences, Tehran, Iran.
4. Blood Transfusion Research Centre High Institute for Research and Education in Transfusion, Medicine, Tehran, Iran
5. Department of Molecular Genetics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran
6. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran

Abstract

Introduction

Reliable disease models are essential for investigations on mechanisms and therapies. retinal explant culture systems can maintain the architecture and cellular connections within the tissue in vitro. it makes an intermediate model system between in vitro cell cultures and in vivo animal models. furthermore it is flexible enough for complicated experimental procedures and can be used efficiently to evaluate the effect of different anti-angiogenic factors. we developed a method for establishment of retinal tissue from adult rats to study the effect of anti-angiogenic drugs sufficiency.

Methods

Eyes from adult rats were enucleated and the neural retina was isolated. tissue was cut as yielding four retinal explants per animal. the resulted explants were cultured at a fluid/air interface on membranes. formation of endothelial sprouts was induced with 75 ng/ml of vegf. after 7 days of incubation with vegf, retina fragments were fixed within the culture insert by replacing the culture medium with 0.5 ml cold methanol followed by 20 min incubation at 4â—¦ c. then, samples were washed 2 times with pbs (5 min each) and incubated for overnight in blocking solution (10 mg bsa+ 3Âµl triton- up to 1 ml pbs). next, samples were washed 3 times with pbs/triton (20 min each) and then were incubated overnight at 4â—¦ c with the fitc-conjugated endothelial marker bandeiraea simplicifolia bs-i isolectin b4 (40 Âµg mlâˆ’1) followed by 2h incubation in dark. manipulated samples were washed 2 times with pbs (5 min each).

Results

The results of staining revealed sprouting from the retinal explant.

Conclusion

In conclusion, this method represented a new ex vivo model of retinal neovascularization efficient for the rapid screening of novel anti-angiogenic therapeutics.

Keywords

Retinal explant anti-angiogenic vegf

Development, optimization and evaluation of polymeric electrospun nanofiber : as delivery of drugs for management for eye infection and inflammation.

Donya Barfar,[1,*] Shahla mirzaeei,[2]

1. Student Research Committee, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran
2. Nano Drug Delivery Research Center, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract

Introduction

Ophthalmic antibiotics are used to treat ocular infections including blepharitis, conjunctivitis, keratitis and several others. there are ophthalmic antibiotics available from a variety of drug classes including aminoglycosides, macrolides, polypeptides, quinolones and sulfonamides.1 in addition, many are available as combination products with other antibiotics or corticosteroids. blepharitis is a chronic inflammatory condition of the eyelids, often presenting with the symptoms of eye irritation and redness. overgrowth of normal bacterial flora plays a role in the pathophysiology of blepharitis.the goal of this study is to create a biodegradable nanofibre that can easily be seen and able to deliver the therapeutic concentrations of gentamicin and methylpradenizolone to treat infection and inflammation of the eye.

Methods

Poly e-caprolactone (pcl) nanofibers containing gentamycin methylpradenizolone were successfully electrospunand evaluated for infection and inflammation of the eye. pcl , gentamicin and methylpradenizolonein mixtures of dimethylformamide:aceton with ratios of 1:1 v/v were prepared, and the nanofibers were produced by electrospinning technique. scanning electron microscopy (sem) was used to investigate the morphology and average diameter of the electrospun nanofibers.

Results

Nanofibers had a smooth and bead-less morphology with the diameter ranging from 175 to 320 nm. dsc results indicated dispersion of gentamicin and methylpradenizolonein in the pcl nanofibers and showed a decrease in crystallinity of pcl nanofibers by adding gentamicin and methylpradenizolonein. in vitro drug release studies in phosphate buffer solution (ph 7.4) showed that the drug release rate was affected by the solvents ratio and the drug concentration. sustained drug release was prolonged to 15 days.

Conclusion

The prolonged drug release, together with the proven biocompatibility, antibacterial and anti inflammation mechanical properties of drug-loaded core shell nanofibers, makes them a promising candidate for use as a drug delivery system to treat infection and inflammation of the eye.

Keywords

Nanofibers , antibiotics , electrospun , infection , inflammation , pcl

Diagnosis and determination of chemotherapy in an in vitro environment

Amirhossein Alimohammadian,[1,*] Negin maleki,[2] Faezeh sarvar,[3] Afsaneh bazgir,[4] Zahra pakzad,[5]

1. Member of the brilliant talent club of young and elite scholars
2. Member of the brilliant talent of young and elite peoples youth club of Ardabil Islamic Azad University, Iran
3. Department of Immunology
4. Department of Genetics
5. Department of Genetics

Abstract

Introduction

One of the ways to treat cancer is chemotherapy. chemotherapy drugs are basically based on inhibiting the cell cycle, inhibiting metastatic signaling inhibition. chemotherapy drugs are always prescribed by the physician's individual experiences and observations, and the time passed in malignant tumors is irreparable. also, the dosage of lung cancer drugs has been documented through flupple tubes, which is similar to that.

Methods

The loading of the drug onto the cancerous cell and the tissue samples in a laboratory environment on supplemented racks containing the cancerous cells that were dissected, and after cell proliferation and treatments on the cells, the readings are performed through elisa reader and using the amount of information absorption is obtained, such as the amount of inhibition of cancerous cells.

Results

With this method it is possible to diagnose the effect of the drug. this method makes the chemotherapy personalization of each patient based on its genetic and immunological characteristics and monitoring the stages of treatment, predicting and controlling the possible complications and prescribing appropriate drugs and, most importantly, avoiding waste of time for the continuation of treatment.

Conclusion

Converting tissue to the cell for testing or directly using it and performing a live test using spectrophotometric method. the type of effective drug also reports the dosage to the physician.

Keywords

Chemotherapy-tissue biopsy-elisa

Diagnosis of primary liver cancer using ct scan and mri

Niloofar Mirzaei,[1,*] Mohammad hossein jamshidi,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Liver imaging is commonly undertaken in patients with cancer history because, after lymph nodes, the liver is the most frequently involved organ by metastases. liver metastases most often arise from primary tumors in colon, breast, lung, pancreas and stomach. several imaging modalities are now available for detection and characterisation of focal liver lesions. the development of high-speed helical computed tomography (ct) and organ-specific scanning protocols has markedly improved preoperative ct staging of liver tumors. three-dimensional reconstruction and arterial and venous imaging without invasive arterial angiography can be accomplished with currently available equipment and software programs.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

For hepatocellular carcinoma (hcc), the helical ct detection rate for small tumors (40% to 60%) is less than that for hepatic metastases, owing to the difficulty of detecting small tumors in cirrhotic livers and particularly of distinguishing hcc from macroregenerative nodules. further improvements in morphologic ct imaging over the next 5 years will include rapid data acquisition during a single breath-hold, rapid scan sections with thinner individual sections, multidetector systems, and multiplanar 3- dimensional reconstructions and volume rendering with even more detailed image resolution. magnetic resonance (mr) imaging is more sensitive than helical ct in the detection of early hcc and in distinguishing between hcc and macro regenerative nodules. the development of liver-specific mr imaging contrast agents has further improved the diagnostic accuracy in both primary and metastatic liver malignancies, and such agents can also help establish the probability of a benign versus a malignant liver tumor. the goal of liver imaging in oncologic patients includes liver tumor detection and characterisation. patients with extra-hepatic malignancy undergo survey examinations to exclude the presence of hepatic and extrahepatic metastases and to evaluate the extent of local involvement.this metastasis survey should be done with contrast-enhanced ct, mri being reserved for those patients unable to receive intravenous contrast or with a fatty

liver. patients with hepatic metastases being considered for metastasectomy undergo a staging examination usually with contrast-enhanced mri using tissue-specific contrast agents.

Conclusion

Finally, preoperative mapping of the hepatic artery, portal vein and the hepatic vein anatomy is often undertaken before surgery in patients with hepatic malignancy. vascular anatomy imaging can be done with ct angiography or mr angiography, and generally requires a separate examination.

Keywords

Primary liver cancer, diagnosis, imaging.

Diagnostic criteria of polycystic ovary syndrome in adolescents: a review article

Fatemeh Moradi,[1] Behnaz enjezab,[2,*] Akram ghadiri-anari,[3]

1. Student Research Committee, Shahid Sadoughi University of Medical Science
2. Research Center for Nursing and Midwifery Care ,Nursing and Midwifery School, Department of Midwifery, Shahid Sadoughi University of Medical Science
3. Diabetes Research Center, Shahid Sadoughi University of Medical Sciences

Abstract

Introduction

Polycystic ovary syndrome is one of the most common hormonal disorders affecting adolescents and adult women. the definition of pcos is still controversial, especially during adolescence. while the prevalence of pcos is given as approximately 7%, it is not easy to estimate the prevalence in adolescents due to the diversity among the experts in this field about the diagnostic criteria and the fact that many symptoms and signs of pcos may overlap with normal puberty. the prevalence of pcos increases rapidly from 12 to 14 years of age, peaks between 15 and 24. pcos is characterized by menstrual irregularity, hyperandrogenism, polycystic ovarian morphology and is also associated with insulin resistance, obesity, and components of the metabolic syndrome. morbidly obese adolescents often have multiple comorbidities. the childhood obesity rate is alarmingly high and identification of pcos and metabolic syndrome as cardiovascular risk factors in childhood should be considered as 77% of overweight children remain overweight as adults. the current epidemic of childhood obesity may increase the severity of symptoms of pcos and underscores the importance of its early and accurate diagnosis. early diagnosis and treatment of pcos is essential to preventing adult disease. the aim of this study was review of diagnostic criteria of polycystic ovary syndrome in adolescents.

Methods

From 52 initial obtained articles, 35 articles were reviewed from 2010 to 2018 with the keywords of polycystic ovary syndrome, adolescence, childhood obesity, from resources: pubmed, google scholar, science direct and springer.

Results

In the majority of studies, kind of method was descriptive- correlational study and review articles. all papers had examined different diagnostic criteria among adolescents with pcos, that according to, it has been proposed that at least four of the following five criteria are needed to define adolescent pcos: ï*f*˜ oligomenorrhea or amenorrhea 2 years after menarche;(in some studies consecutive menstrual intervals >90 days even in the first year after menstrual onset; and lack of menses by 15 years or 2â€“3 years after breast budding) ï*f*˜ clinical hyperandrogenism: persistent acne unresponsive to topical therapy or moderate to severe hirsutism; ï*f*˜ biologic hyperandrogenism: persistent elevation of serum total and/or free testosterone level or increased lh: fsh ratio at the time of menarche; hyperandrogenaemia is thought

to be more reliable diagnostic criteria for the diagnosis of adolescent pcos after ruling out other causes of hyperandrogenaemia such as late-onset adrenal hyperplasia and cushingâ€™s syndrome. ïƒ˜ insulin resistance/hyperinsulinemia: acanthosis nigricans, abdominal obesity or glucose intolerance; ïƒ˜ polycystic ovaries on ultrasound: enlarged ovaries, peripheral microcysts or increased stroma. (some studies believe that ovarian appearance and volume may vary during adolescence and transabdominal ultrasound may be technically limited in overweight and obese individuals.) although the majority of studies have shown that anti-mullerian hormone may be a useful adjunct in the diagnosis of pcos in adolescents, some studies suggested that amh is not an ideal diagnostic marker due to its higher levels in adolescents and young adultâ€™s patients with pcos and its routine use in clinical practice cannot at present be recommended. furthermore, itâ€™s not a good marker for cardiovascular risk factors in adolescence. some suggest that even using the strictest criteria, the diagnosis of pcos may not valid in adolescents younger than 18 years.

Conclusion

Until now, there is no validated diagnostic criteria for pcos in adolescents. adolescents with incomplete criteria for a ï¬• rm diagnosis of pcos should be followed up carefully and may be diagnosed at a later time. as the incidence of obesity is increasing both in childhood and adolescence, clinicians should focus on weight loss through healthy diet, regular exercise and yoga as an important treatment goal in overweight adolescents and to prevent obesity and its complications in next generations, they should train healthy lifestyle to young adults and new parents.

Keywords

Polycystic ovary syndrome, adolescence, childhood obesity, diagnostic criteria

Differential regulation of proapoptotic bcl-2 family genes in human glioblastoma cell line in response to cisplatin treatment

Mahdieh sadat Taghavi,[1,*] Reza mahdian,[2] Azim akbarzadeh,[3]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Biotechnology Research Center, Molecular Medicine Department, Pasteur Institute of Iran, Tehran, Iran
3. Pilot Biotechnology Department, Pasteur Institute of Iran, Tehran, Iran

Abstract

Introduction

Malignant gliomas are the most common primary malignancies in the brain. in an adult population, this type of tumor accounts for about 1% of all cancers, with more than 2% of deaths being attributed to malignant gliomas. cis-diamminedichloroplatinum ii (cisplatin) is one of the most effective chemotherapeutic agents used against different human cancers including malignant gliomas genes. cisplatin affects many dna-dependent cellular functions leading to dna damage and apoptosis-mediated cell death. however, its mechanism of apoptosis induction is not fully understood and may involve regulation of expression of multiple genes. bak, bax and bad are proapoptotic members of the bcl2 family that play key role in the regulation of apoptosis. in the present study, we investigated the expression of bak, bax and bad genes in u87mg cells treated with cisplatin.

Methods

U87mg was treated with various concentrations of cisplatin (3.125, 6.25, 12.5, 25, 50, and 100 Î¼m/ml) for 48 hours. control experiments were carried out using the complete growth culture medium. cell viability was assessed using mtt assay and ic50 was determined. the u87mg glioma cell line was treated with ic50 dose of cisplatin for 48 hours. rna was extracted and cdna was synthesized. gene expression study was performed on bak, bax and bad as targets and tbp as internal control gene using very sensitive quantitative real-time pcr. the gene expression ratios was calculated using the formula 2-Î”Î”ct.

Results

Different concentrations of cisplatin at 48 hours had a cytotoxic effect on glioblastoma cell lines ic50 of cisplatin after 48 hours was 19.66 Î¼g/ml for u87mg. melting curve analysis, and gel electrophoresis confirmed the specific amplification of fragments of interest. the relative gene expressions between two samples (treated and untreated) were calculated as 1.02, 1.09 and 0.71 for bak, bax and bad.

Conclusion

Gene expression studies can determine expression profiling for bcl2 family genes and their effects on apoptosis pathways in different cell lines after cisplatin treatment. our results showed that cisplatin treatment induced different regulation of bak, bax and bad genes, in u87mg cell line.

Keywords

Bcl2 family, cisplatin, , glioma, real-time pcr

Differentiation of crohn disease and ulcerative colitis using intestinal wall thickness of the colon by using endoscopic ultrasonography

Ali Niksirat,[1,*] Nader roushan,[2] Nasser ebrahimi daryani,[3]

1. Internist, Tehran University of Medical Sciences
2. Department of internal medicine, division of Gastroenterology, Imam Khomeini Hospital, Tehran University of Medical Scie
3. Department of internal medicine, division of Gastroenterology, Tehran University of Medical Sciences

Abstract

Introduction

The differentiation between ulcerative colitis (uc) and crohnâ€™s disease (cd) is an important issue for choosing the appropriate treatment. endoscopic ultrasonography (eus) has been used to distinguish different layers of the gastrointestinal wall. we performed this study to evaluate the accuracy of eus in differentiating uc from cd in colon

Methods

This is a prospective, single blinded diagnostic accuracy study, on 70 patients (30 uc, 30 cd and 10 healthy controls). after obtaining informed consent, patients underwent a complete work up and were referred to an endosonographist who was blind to the diagnosis. thickness of mucosa, submucosa and total wall (twt) of mid sigmoid colon were measured

Results

Our study revealed sensitivity of 100% and specificity of 92.3% for eus to differentiate uc and cd comparing to standard diagnostic tests. mean mucosal thickness in patients with uc was significantly greater than patients with cd, while, mean sub-mucosal thickness was significantly greater in patients with cd ($p<0.001$). the sensitivity and specificity of mean mucosal thickness for differentiating uc form cd and controls were 92.3% and 88.6% with cut-off point of 1.1 mm ($p<0.001$). moreover, sensitivity and specificity of mean submucosal thickness for differentiating cd from uc and controls were 100% and 86.1% with cut-off point of 1.08 mm ($p<001$)

Conclusion

Eus can be used as an efficient modality with acceptable accuracy to differentiate crohnâ€™s disease and ulcerative colitis. it helps especially in patients with indeterminate colitis to correctly select medical and surgical treatments

Keywords

Endoscopic ultrasonography, intestinal wall thickness, crohnâ€™s disease, ulcerative colitis

Digital pcr: a technology review

Halimeh Rezaei ,[1,*] Sheyda khalilian,[2]

1. Division of Genetics, Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran, IR Iran
2. Division of Genetics, Department of Biology, Faculty of Science, University of Isfahan, Isfahan, Iran, IR Iran

Abstract

Introduction

Any permanent alteration of the nucleotide sequences in the genome is considered as a gene mutation. gene mutations are closely related to the occurrence and progression of many disorders; therefore the mutation identification is a significant part of genetic screening of the disorders. several methods have been developed to detect mutations such as real-time quantitative pcr. in recent years, digital pcr (dpcr), as the third generation of pcr, has been developed for the absolute quantification of target nucleic acids. the advent of dpcr, elevates the detection of gene mutations, especially in cancer-associated genes. this technology has been utilized in the detection of tumor markers in cell-free dna (cfdna) samples from patients with different types of cancer and in this way has a significant role in basic research and clinical applications. in this review we try to summarize the dpcr applications in the detection of gene mutations related to human diseases.

Methods

The search was done in electronic databases such as pubmed, elsevier, and scopus to introduce the most recent studies.

Results

In the dpcr, the sample is divided in to different independent partitions and amplified target sequences are detected by fluorescence. the presence of fluorescence allows determining the concentration of the target in the sample. dpcr is highly used in detecting pathogen mutations, analysis of gene expression, assessment of genome editing effects, screening cancer biomarkers,â€¦ and it is necessary to state that the gene mutation analysis is an important aspect for all these fields.

Conclusion

Although dpcr is a novel technology that performs a key role in clinical applications, it has some limitations such as the large sample volume and highly allele-specific probes. the higher accuracy and sensitivity of dpcr in compare with qpcr, indicates a great advantage in the detection of rare mutations. altogether, the advent technology of dpcr can help to promote the development of personalized cancer

treatment, gene-modifying techniques, mitochondrial disease management and hopefully in near future, it can be applied in disease-specific tailored treatments and adopted as a routine clinical assay.

Keywords

Digital pcr, dpcr, gene mutation, real-time pcr, genome editing

Discovery of anti-breast cancer agents in essential oils

Aboozar Khajeh,[1,*]

1. Department of chemical engineering, Birjand University of technology, Birjand, Iran

Abstract

Introduction

Breast cancer is the most commonly diagnosed cancer among women and the leading cause of cancer death (14% of all cancer-related deaths) around the world. recent in vivo and in vitro studies have been demonstrated that several natural products including essential oils have significant breast anticancer activity. however several studies have been done to understanding the breast anticancer properties of essential oils, the anticancer activity of the various phytochemicals found in them is unknown. further laboratory research and clinical trials are needed to elucidate the effects of various essential oil constituents on breast cancer. due to large budget and time needed for these investigations, through virtual screening of essential oil compounds, discovery of new anticancer agents can be done in faster and more efficient way.

Methods

The present work has been developed a new qsar model for the efficient search of new anti-breast cancer agents in natural product against mcf7 cell line. the data set for developing the model consists of a diverse set of compounds and their corresponding descriptors, including 149 active (ic50 <= 0.001 Âµm) anticancer compounds and 96 inactive compounds. this data set is randomly divided into two splits, a training set of 176 compounds and a test set of 69 compounds. the training sets are used to build the qsar model, whereas the test set is used to evaluate the prediction ability of the model. the developed qsar model can be used for discovery of new anti-breast cancer agents in essential oils.

Results

The gfa method was used to select the most important molecular descriptors (five descriptors) based on the training set and develop the optimal linear qsar model. the developed model exhibited accuracy higher than 88% in both training and prediction sets, and it can be used as tools for virtual screening of anti-breast cancer compounds. the virtual screening of essential oil compounds located within the applicability domain of model can be indicated potent anti-breast cancer agent (ic50 <= 0.001 Âµm) against mcf7 cell line.

Conclusion

In this work a quantitative structureâ€“activity relationship (qsar) model was developed for detecting the new anti-breast cancer compounds against mcf7 cell line. the high accuracy of developed model for classification of train and test set, indicates it can be used for discovery of new anti-breast cancer

compounds. the results of this work can be improved speed, simplicity and budget consuming in discovery and development of anticancer.

Keywords

Breast cancer, qsar, essential oil, virtual screening;

Disease caused by the use of cosmetics, their treatment and combine them with nanotechnology

Sogand Mirzaaghayi,[1,*] Mohammad hadian jazi,[2] Ronak zandi,[3] Roxana zandi,[4] Elham sheikhi,[5]

1. Islamic Azad University Tehran Medical Branch
2. Student Research Committee, Islamic Azad University Tehran Medical Branch
3. Islamic Azad University Tehran Medical Branch
4. Islamic Azad University Tehran Medical Branch
5. Department of Clinical Biomedical Engineering, Tehran Medical Sciences Branch, Islamic Azad University

Abstract

Introduction

As far as we know, these days, over 70 years-old women in the western countries and over 14 years-old teenagers in our country spend a lot of time for making up. unfortunately, cosmetics have the highest volume of consumption in our country; although, dermatologist warning about cosmetics disadvantages but these days, non-standard products present through channels and internet advertisement to people.

Methods

Alcohol is one of the chemical materials uses in cosmetics that it caused skin itching and irritating, for this reason, we should be aware of the toxicity of the cosmetics ingredients. the alcohols mentioned above are fatty and they are considered to be moisturizing. they are desiccant and the products containing these alcohols shouldnâ€™t be used for hair but on the other hand some alcohols known as menthol, have cooling properties and they can be useful and amplifier for normal scalp but also they can irritate sensitive scalp and make the situation worse. other materials use in cosmetic products are acids. salicylic acid uses for scurfy scalp in cosmetic products but it shouldnâ€™t be used more than once a week yet because it may cause inflammation instead of peeling. powders are one of the cosmetics that are commonly using and eye shadow and blusher are the types of powders. powders are almost dry so they are not useful for dry skins but they can still reduce environmental impact like temperature changes, solar radiation and sweaty areas due to dryness. but the point is that we shouldnâ€™t ignore the disadvantages of hygienic, medicinal and pharmaceutical products on skin sensitization. one of the effects of cosmetics is the formation of facial waves (acne) although different skins reactions vary but it is not possible to say which products we should use but generally it had advised not to use greasy cosmetics because these kinds of products close the skin pores and they can lead to blackhead. experts recommend that it is better to try cosmetics products on the hands before using them. mascara, lipstick, nail-varnishes and covering creams are the popular and very-used types of cosmetics but these kinds of products still have some disadvantages that we should know. mascara can cause scratches in the cornea or even eye infections so make sure to clear your make-up before sleeping. liquid lipstick absorb uv radiations so it is better to use lip-gloss with spf30. lipstick is the kind of cosmetics that even creditable brands have lead and using them in long-term can lead to behavioral disorders, iq reduction and chronic anemia. shampoos and gels have

allergenic sulfate ether and they can delay wound healing and also cause cataract. also nail-varnishes can lead to yellowish nails and they have phthalate that it can effects on liver and kidney. nail-varnishes with 74% endocrine disrupting composition are at the top of the table. mascaras can be a good place for growing bacteria so avoid sharing them with others.

Results

The most important indispositions of long-term using cosmetics are cancers, early skin aging, acne and infected diseases. one of the harmful materials in cosmetics is paraben but we should know other than these materials, benzoyl phenol in the nail-varnishes and rinse gels, also butyl paraben in shampoos, sunscreen creams and lipsticks or ethyl paraben in body lotions are carcinogen. one of the other possibilities of using cosmetics is perion virus transfer and mad cow disease. some cosmetics have collagen and gelatin, these kinds of materials can effect on consistency of skin but the problem is that collagen is a livestock product.

Conclusion

A recommendation for those who use cosmetics: observing temperance in using creditable cosmetics brands. also it is better to use iranian cosmetic with supervision of the ministry of health. nanotechnology considered as a new industrial revolution in the modern world. one of the largest applications of nanotechnology is their use in sunscreens which has no harm to skin and health of human because the size of titanium dioxide particles are standard so it canâ€™t cross over the horny layer of the skin. positive penetration of titanium dioxide nanoparticles, encourages specialists to use other nanoparticles in this topic.

Keywords

Cosmetics product,nanotechnology

Distribution and characterization of dominant serovars of listeria monocytogenes strains isolated from woman with spontaneous abortion in tehran,iran

Maryam Rezaei,[1,*] Nadia kazemipour,[2] Jalil vandyousefi ,[3] Farokh rokhbakhsh zamin,[4] Gholamreza irajian,[5]

1. Department of Microbiology Kerman branch Islamic Azad University Kerman, Iran
2. Department of Microbiology Kerman branch Islamic Azad University Kerman, Iran
3. Proffesor of Microbiology Shila Medical Diagnostic Laboratory Tehran, Iran
5. Department of Microbiology Iran University of Medical Science Tehran, Iran

Abstract

Introduction

Listeria monocytogenes a gram positive, non- sporulating , facultative, intracellular, a pathogenic bacterium that cause morbidity and mortality in human and livestock. it is a significant food-borne pathogen due its widespread distribution in nature, its ability to survive in a wide range of environmental condition, and its ability to grow at refrigeration temperature. listeria monocytogenes has been found in %10 normal health people usually in the gut. all the 13 serovars of listeria monocytogenes are reported to cause human listeriosis , but serovars 1/2a , 4b and 2c are in implicated with most cases. pregnant women are particularly prone to infection, the placental provides protective niche for the growth of listeria monocytogenes, thereby resulting in spontaneous abortion , stillbirth neonatal infection, severe necrotizing hepatitis, placental necrosis and increased risk of post implantation loss . latent listeriosis in pregnant women leads habitual abortion. in this study, all isolates from spontaneous abortions after confirmation with biochemical, api system were serotyped with a commercially available monoclonal antisera kit according to the manufacturerâ€™s instruction. thepresent study described to detect dominant serovars (1/2a, 4b) in pathogenic listeria monocytogenes isolated from women with spontaneous abortion in tehran,iran

Methods

a total of 258 samples comprising placental bits (n=118), vaginal swabs (n=87) and blood (n=53), were collected from 123 patients with spontaneous abortion listeria monocytogenes isolated from 28 samples that confirmation of these isolates was based on biochemical tests, palcam agar with 5% sheep blood, camp test , pi-plc assay and api system, followed by invivo pathogenicity test and multiplex pcr to detect dominant serovars.

Results

In this study 28(18.8%) listeria monocytogenes with various serovars from 123 patients including 118(47.5%) placental bits, 54(20.5%) patients blood and 87(33.7%) vaginal swabs were isolated. the presence of listeria monocytogenes in placental bits and blood , in this study, indicated the most and the least outbreaks in all clinical sampling, it was completely confirmed with the studies of listeria

monocytogenes isolates from vaginal secretion 35(14.5%) and in placental bits 53(7.5%) by pournajaf ,a, etal.(2016). [37] in this study from samples of placental bits , blood and vaginal secretion , belong to two patients in their second trimester of the pregnancy with averaged age of 28.5 listeria monocytogenes was isolation and all confirmation and pathogenicity tests invivo condition demonstrated the virulence of isolated species. listeria monocytogenes was isolated from placental bits belong to 37 years old patients with spontaneous abortion in the early trimester of pregnancy , with biochemical, serological and molecular confirmation experiments. listeria monocytogenes was also obtained from vaginal secretion as well as placental bits belong to three patients with the average age of 30 years old. meanwhile from 123 patients it only was isolated from placental bits. (17.7%) it is indicated that listeria monocytogenes has a desire to placental bits. therefore, in listeria monocytogenes from spontaneous or habitual abortions, in human or animal, the growing bacteria spot should be found in placental bits. in serological tests with monoclonal antibodies provided from (denka-japan company), in order to determine the dominant serovars of the isolated listeria monocytogenes in this research , according to the produces company,s instructions, from 28(18.8%) listeria monocytogenes cases obtained from 21(17.7%) placental bit , 2(3.77%) blood cases and 5(5.7%) vaginal secretions , serovars 1/2a and 4b were diagnosed dominant .it is for the first time in iran that serovars 1/2a and 4b are reported as dominant serovars which are isolated from spontaneous abortions , which fourteen 2a serovars 14(50%) are with the most of the cases in comparison, with 4b serovars 10(37.5%) .

Conclusion

The results indicated a presence of listeria monocytogenes in cases of spontaneous abortion was 46.6%. it seems 1/2a and 4b serovars have important role as essential dominant serotypes to cause spontaneous abortion. the results show the api system and multiplex pcr methods are sensitive and faster than culture and biochemical tests to detect listeria monocytogenes serovars from clinical samples.

Keywords

Dominant serovars, listeria monocytogenes, spontaneous abortion

Distribution of cchf vector ticks in different region of iran from 1990 to 2017

Simin Nayebi moghaddam,[1,*] Nona moradpour,[2] Hassan mashhadi,[3]

1. Department of Biology, Faculty of Science, Islamic Azad University of Mashhad, Iran
2. ph.D of parasitology, Faculty of Science, Islamic Azad University of Mashhad,Iran
3. Department of Biology, Faculty of Science, Islamic Azad University of Mashhad,Iran

Abstract

Introduction

Crimean-congo hemorrhagic fever (cchf) is a tick-born virus with the risk of death. ticks are blood-sucking arthropods. it exists all around the world and known as obligate parasites of the vertebrates. ticks from the hyalomma genus are the major vectors of cchf virus. domestic animals (goats, sheep, etc.) are the common hosts for adult ticks. this paper reviews tick vectors of cchf virus in iran, focusing on the epidemiological status of ticks in different provinces of iran during 1999 to 2017.

Methods

This study was in form of retrospective cross-sectional and the data includes demographic characteristics such as tick types.

Results

The highest affected patients (77.81%) were infected in the first half of the year. the most rate of infection was observed in provinces of sistan & baluchistan, khorasan razavi and fars, respectively. in the provinces of khorasan, sistan and baluchestan, fars, hormozgan, yazd, isfahan, semnan, golestan, tehran, qom, khuzestan, lorestan, ilam, kermanshah, zanjan, ardabil," hyalomma" and "rhipicephalus" tick species are the most prevalent species. also in the provinces of hamedan, mazandaran, "haemaphysalis", and in the province of east azarbaijan, "dermacentor" species also have a high prevalence.

Conclusion

Considering the fact that cchf is a work-related illness and there is no specific antiviral therapy available thus far, necessity of training to better understand the disease, the way of the disease transmission and controlling methods as well as prevention is inevitable. awareness campaigns regarding the risk factors and control measures can aid in reducing the spread of this disease to a greater extent, particularly in urban area. as a result, training periods for people with high-risk occupations for cchf and use of acaroids to control tick population in endemic areas can be purposed as feasible remedies.

Keywords

Vector tick, cchf, iran

Distribution of the cm-dil-labeled human umbilical cord vein mesenchymal stem cells migrated to the cyclophosphamide-injured ovaries in c57bl/6 mice

Ladan Jalalie,[1,*] Mohammad jafar rezaie,[2] Ali jalili,[3] Mohammad ali rezaee,[4]

1. Cellular and Molecular Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran.
2. Cellular and Molecular Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran.
4. Zoonoses Research center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj,

Abstract

Introduction

back ground: mesenchymal stem cells (mscs) can be used to treat premature ovarian failure (pof).different methods have been used to detect mscs in tissues. the aim of this study was to investigate the quantitative distribution of cm-dii-labeled human umbilical cord vein mscs (hucv-mscs) in the ovarian tissues of the cyclophosphamide (ctx)-induced pof in the mice.

Methods

Methods: 40 adult female c57bl/6 mice were divided into four groups: 1- mice receiving pbs as control (ctrl) group. 2- mice receiving hucv-mscs intravenously as ctrl + hucv-mscs group. 3- mice receiving ctx intraperitoneally (ip) as ctx group. 4- mice receiving cm-dii-labeled hucv-mscs after ctx injection as ctx + hucv-mscs group. histological changes and cm-dii-labeled hucv-mscs distribution was analyzed in the ovarian tissues. also, quantitative real-time pcr (qpcr) was performed to detect human cytochrome b (cytb) dna in the ovarian tissues of the mice.

Results

Results: the mean number of the fluorescent hucv-mscs was 20 Â± 2.5 (57.1%) in the medulla, 11.3 Â± 2.8 (32.2%) in the cortex and 5.5 Â± 1 (15%) in the germinal epithelium of the ovarian tissue. moreover, human cytb dna was detected in the mice ovaries of the ctx + hucv-mscs group but was not detected in the other groups.

Conclusion

Conclusion: our findings suggest that the distribution of the transplanted hucv-mscs in different parts of the ovarian tissue was not equal and it was greater in the medulla than the cortex and germinal epithelium.

Keywords

Premature ovarian failure; human umbilical cord vein mesenchymal stem cell; distribution; homing; tr

Dna methylation analysis of pro-inflammatory il1r1 gene in patients affected with type 2 diabetes

Naeimeh Roshanzamir,[1,*] Vahideh hassan-zadeh,[2] Taravat ghanee,[3]

1. Tehran university
2. Tehran university
3. Tehran university

Abstract

Introduction

Type 2 diabetes (t2d) is a metabolic disorder characterized by insulin resistance resulting in hyperglycemia and pancreatic Î²-cell failure to produce suï¬ƒcient amount of insulin. t2d is the result of interaction between epigenetic factors and hereditary component. methylation of dna is one of the important regulatory epigenetic mechanisms of gene transcription.obesity induces a state of chronic low-grade inflammation, which is reflected by an increased production of pro-inflammatory cytokines .il-1Î² binding to interleukin 1 receptor type 1 (il1r1), via activation of nuclear factor-Îºb (nf-Îºb), induces the expression of various inï¬‚ammatory cytokines and chemokines,thus leading to the attraction of immune cells to the islets.chronic subclinical inflammation, mediated by cytokines, may be associated with insulin resistance and the development of t2d

Methods

Eighteen t2d patients and 18 healthy controls entered in this case-control study. pbmcs were isolated from whole blood with pbs and lympholyte-h . rnx-plus guanidine-based solution and trizol protocol were used for dna extraction. dna was treated with proteinase k and digested with restriction enzymes. denatured dna incubated for 4-16hrs at 50Â°c with bisulfite.. pcr products of bisuliï¬• te-treated dna were sequenced to determine the methylation level of il1r1 gene promoter and statistical analysis was performed using "prism7"

Results

The results of this study showed, increased promoter methylation levels of il1r1-cpg3 gene were identiï¬• ed in t2d patients compared with healthy controls(p value â‰¤0.005). in addition, hemoglobin a1c (a1c) levels were positively correlated with il-1r1 promoter methylation and fasting plasma glucose (fpg) levels

Conclusion

The observed changes in il-1r1 promoter methylation levels in pbmcs may contribute to the development of inï¬‚ammatory processes involved in the pathogenesis of t2d. hypermethylation of cpg3 at il1r1 in individuals with hyperglycemia may indicate an attempt to reduce the pro-inï¬‚ammatory eï¬€ects of il-

1Î² via auto-stimulation. although, the role of innate immune cells in diet- and obesity induced inflammation associated with the disease has been extensively studied, less is known about the alterations and contribution of the adaptive immune cells to the pathogenesis of t2d.

Keywords

Methylation , diabetes type 2, inflammation

Dna nanorobot: a novel approach for cancer therapy

Zohreh Bahadori,[1,*] Ali-akbar shaebani,[2] Zahra hosseini-khah,[3] Jahangir sabzevari,[4]

1. Dept. & Center for Biotechnology Research, Semnan university of Medical sciences, Semnan, Iran.
2. Dept. & Center for Biotechnology Research, Semnan university of Medical sciences, Semnan, Iran.
3. Department of Molecular Medicine, School of Advanced Technologies in Medicine, Tehran University of Medical Science, Tehran, Iran
4. Department of Microbiology and Microbial Biotechnology, School of Biological sciences and Technology, Beheshti University, Tehran, Iran

Abstract

Introduction

Traditional treatments of cancer kill both healthy and tumor cells and cause hair loss, fatigue, nausea, depression, etc. dna nanorobot is an emerging field of nanotechnology which is a controllable machine at the molecule or nanoscale. so it moves inside the human body and affects specifically. dna origami nanorobots are potential intelligent drug delivery systems that are able to respond to molecular triggers. the aim of this review is briefly describing the architecture of the nanorobots and their role in the treatment of solid tumors.

Methods

This is a review essay.

Results

Dna origami can be formed by folding a long ssdna, called a scaffold strand, aided by multiple short dna oligonucleotides, which are called staple strands. this nanorobotic system can transport molecular payloads to cells, sense cell surface inputs for conditional activation, and also can reconfigure its structure for payload delivery. there are in vitro and in vivo studies which have tested the effect of nanorobots on tumor-associated endothelial cells and have shown that this device activates coagulation at the tumor site. the nanorobots induce intravascular thrombosis, resulting in tumor necrosis and tumor growth inhibition without immunologically harmful reactions.

Conclusion

Recent data have shown that dna nanorobots represent a promising approach for precise drug delivery in cancer therapy which target and destroy the cancer cells without touching the healthy ones.

Keywords

Dna nanorobots, cancer therapy, origami, nanotechnology

Dnmt gene expression by oleoropin in cancer prevention

Amirhossein Alimohammadian,[1] Negar pedram,[2,*] Negin maleki,[3] Safieh jahantighavval,[4] Hashem rostamian,[5] Farzaneh pirsavabi,[6]

1. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
2. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
3. Department of Genetic, Tehran branch, Islamic Azad University, Tehran, Iran
4. Department of Biochemistry
5. Department of clinical laboratory, Ardabil branch, Islamic Azad University, Ardabil, Iran
6. Department of Genetics

Abstract

Introduction

When a cell becomes cancerous, the dna methylation pattern may change substantially, the change in the dna methylation pattern may be decreased (hypomotylation) or incremental (hypermethylation).

Methods

In breast cancer cells, the most important marker for the motility of the ca15-3 promoter is the presence of cancer and hepatitis. in this study, different concentrations of nano-aluorupine on the expression of the gene expression in dnmt were investigated using time real time pcr. the results showed that the relative expression of dnmt1 gene was significantly reduced by the action of 30ppm nano-aluoporin in breast cancer cell line

Results

Obviously, by reducing the expression of the mt gene, the possibility of methylation is reduced and the expression of inactive genes may be reactivated again.

Conclusion

Cytosine methylation in the cpg islets in the promoturgeon region is an important mechanism for regulating the expression of genes, and this regulation can play a role in the developmental and evolutionary stages and can produce cytokines of nk and th1 stimulants, such as gamma ifn, which causes cell cytotoxicity the immune system.

Keywords

Oleoropin- cancer- methylation

Does curcumin or metformin attenuate oxidative stress and diabetic nephropathy in rats?

Yaser Mohassel ,[1,*] Hosein mohammadi,[2] Sonia salari,[3]

1. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran
2. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran
3. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran

Abstract

Introduction

Since the importance of oxidative stress in the development of diabetic nephropathy (dn) has previously been established, the therapeutic effects of various natural antioxidant agents or synthetic drugs have so far been investigated.the aim of this study was to investigate the beneficial effects of curcumin (a natural polyphenol) and metformin (a common therapeutic medicine for type2 diabetes) on oxidative status in kidney of type1 diabetic rats.

Methods

Methods: in this experimental study 60 male wistar rats were divided into 10groups. type1 diabetes was induced by streptozotocin. rats received chow diet and treated with either normal saline in control (n) and diabetic control (d) groups or different doses of metformin (300 or 500 mg/kg body weight) or curcumin (50 or 150 mg/kg body weight) in n+met300, n+met500, n+cur50, n+cur150, d+met300, d+met500, d+cur50, and d+cur150 groups. urinary creatinine, urea, and protein were measured. total antioxidant capacity (tac), total oxidant status (tos), malondialdehyde (mda), and the activity of superoxide dismutase (sod), glutathione peroxidase (gpx), and catalase were assessed in kidney tissues.

Results

Both metformin and curcumin showed significant effects on urinary creatinine, urea, and protein levels (p value for all was <0.001). unlike metformin, curcumin completely restored tac and tos (p<0.001), and mda (p=0.012) in kidney tissues and significantly recovered the activities of sod (p=0.003), gpx (p<0.001), and catalase (p=0.011).

Conclusion

Curcumin was found more effective than metformin in attenuating oxidative status in diabetic nephropathy.

Keywords

Curcumin , diabetic nephropathies , metformin, oxidative stress.

Down-regulation of circulating mir-107 and mir-21 after prostatectomy in pca

Pezhman Fard-esfahani,[1,*] Parastoo bayat,[2] Fatemeh asadi,[3]

1. Pasteur Institute of Iran
2. Pasteur Institute of Iran
3. Pasteur Institute of Iran

Abstract

Introduction

Micrornas are small non-coding rnas which can play an important role in cancer formation. mir-107 and mir-21 is repeatedly up-regulated in prostatic cancer (pca) cell lines and tissue samples. the aim of this study was to assess whether circulating mir-107 and mir-21 in pca patients can be used as post-operative biomarkers for monitoring remained cancerous tissue.

Methods

Venous blood serum samples were collected from 36 non-cancerous volunteers and 36 pca patients, pre- and post-operationally. serum levels of mir-107 and mir-21 were estimated by quantitative reverse transcription polymerase chain reaction (qrt-pcr).

Results

Mir-107 and mir-21 were both significantly down-regulated in postoperative serum samples compared to preoperative serum samples. we found also that mir-107 and mir-21 were up-regulated in pca patient samples compared to non-cancerous controls.

Conclusion

The serum mir-107 and mir-21 down-regulation in postoperative serum from pca patients suggests that the source of these circulating mirnas is tumour tissue; and serum level of mir-107 and mir-21 could be used as biomarkers for postoperative monitoring of pca tissue remnants.

Keywords

Prostat cancer, circulating microrna, mir-107, mir-21

Down-regulatory effects of green coffee on pseudomonas aeruginosa lasi/lasr quorum-sensing system

Sepideh Benvari,[1,*] Hossein jamalifar,[2]

1. Department of Microbiology, Faculty of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran
2. Department of Drug and Food Control, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

The lasi/lasr quorum sensing (qs) system plays an important role in pseudomonas aeruginosa pathogenicity and mechanism of aggression. inhibition of the qs system in p. aeruginosa can be a novel strategy for discovery of antimicrobials. green coffee extract (gce) is a good source of chlorogenic acid, a polyphenolic natural compound reported to possess antibacterial activity. the aim of this study is to evaluate the effect of gce on lasi/lasr expression in p. aeruginosa.

Methods

A total of 5 p. aeruginosa strains which were resistant to most of the commonly used antibiotics, were included. susceptibility to gce investigated through minimum inhibitory concentration (mic) and minimum bactericidal concentration (mbc). multiplex pcr was performed to detect lasi and lasr genes and the expression levels were quantified using real-time pcr method.

Results

The mic and mbc values for gce ranged from 64 to 128 Âµg/ml. based on the result of multiplex pcr, lasi and lasr genes were detected in all strains. in the presence of gce, real-time pcr revealed a 2-fold and 1.5-fold decrease in the expression of lasi and lasr, respectively.

Conclusion

The data from this study support the notion that gce has a promising in vitro antibacterial effect against p. aeruginosa.

Keywords

Green coffee, pseudomonas aeruginosa, quorum sensing

Drug resistance mechanisms and novel therapeutic strategies for anti-vegf therapy in patients with glioblastoma

Farzan Mozaffarian,[1,*] Mohammad amin dehghani,[2] Mahsa kaviani,[3] Fatemeh dehghani ,[4]

1. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Anti-vegf-a therapy is one of the standard postoperative treatments for recurrent glioblastoma (gbm). however, the temporary benefical effects of this strategy are unable to improve the overall survival of the patient. among which, bevacizumab as a humanized monoclonal anti-vegf-a antibody exhibited positively potent activities against gbm, including lowering tumor growth and prolonging progression-free survival (pfs). bevacizumab-resistance glioblastoma cells producing vegfr2 undermined autocrine vegf-c/vegfr2 signaling in glioblastoma.

Methods

The search procedure in english regarding the study subject was fulfilled on pubmed database using the keywords of gbm; vegf; anti-vegf; bevacizumab; drug resistance and gbm treatment.

Results

The histological features of gbms showed a high rate of vascular proliferation mediated by vegf, highlighting the necessity of finding novel targeted anti-angiogenic therapies, such as the monoclonal anti-vegf-a antibody bevacizumab, to reduce tumor angiogenesis, especially in several phase ii trials. the sustained vegfr2 activation and tumor growth may occur by vegf-c, whose inhibition can effectively control the tumor in comparison with the treatment with bevacizumab. however, the applied problem of antiangiogenic drugs in treating the cancer is the drug resistance, which mainly can be reportedly attributed to intrinsic non-responsiveness and adaptive resistance in which the resistance emerges following the initial tumour responds because of being upregulation of other angiogenic routes.

Conclusion

The vascularization is decreased along with the gsc population because the anti-vegf-a anti-angiogenic antibody bevacizumab targets the gbm perivascular niche. however, there are controversy reports on the effectiveness of anti-vegf approaches to treat the gbm, suggesting further research to seek alternative pro-angiogenic pathways, mechanisms of resistance, combination strategies, and biomarkers to predict therapeutic response.

Keywords

Gbm; anti-vegf; bevacizumab; drug resistance; gbm treatment.

Dysregulation of mir-21 as a possible prognostic marker in aggressive breast cancer

Andia Seyedi moghaddam,[1] Mahdieh salimi,[2,*] Hossein mozdarani ,[3] Najmeh ranji,[4] Parisa azimi nejadan,[5]

1. Department of Molecular Genetics,Rasht Azad University, Rasht, Iran
2. Department of Medical Genetics, Institute of Medical Biotechnology, National Institute of Genetic Engineering and Biotechnology (NIGEB), Tehran, Iran
3. Department of Medical Genetics, Tarbiat Modares University, Tehran, Iran
4. Department of Molecular Genetics, Rasht Azad University, Rasht, Iran
5. Department of General Surgery, Iran University of Medical Science, Tehran,Iran

Abstract

Introduction

Breast cancer is the most common cancer and leading cause of cancer death in women worldwide, accounting for 25.1% of all cancers. this cancer is strongly in asia, africa and south america is growing. micrornas (mirnas), a class of small (19â€“25 nt in length) single-stranded rnas, which regulates cell growth, development and differentiation. some mirnas are also classified as tumor suppressors and oncogenes. the gene of human microrna-21 is located on plus strand of chromosome 17q23.2 overlapping with a protein coding gene tmem49. the mir-21 is an oncogenic mirna associated with cancer. according to the recent current population reports, several target genes of mir-21 have been identified in humans including pten (phosphatase and tensin homolog deleted on chromosome 10). pten is a tumor suppressor gene, has identified the important role in cell cycle regulation and apoptosis through inhibiting the phosphatidylinositol 3-kinase/akt signaling pathway by removing the phosphate in d3-phosphate group of phosphoinositide-3, 4, 5-triphosphate (pip3). in breast cancer, the alteration of pten expression has been reported to correlate with aggressive breast cancer phenotype.

Methods

The level of mir-21 expression in breast tumours were compared with normal control using comparative real-time rt-pcr method.

Results

The data show, the expression of mir-21 in breast tumors is significantly higher than normal tissues which is related to the stage of tumors and the status of tumor hormonal receptors.

Conclusion

We can conclude that up regulation of mir-21 may be considered as a possible prognostic marker which is detectable in tissue via inhibition of pten. confirmation of this phenomenon may be promising in breast cancer management.

Keywords

Breast cancer, mir-21, biomarker, prognosis

Dysregulation of mir-485-3p expression in advanced stage colorectal cancer tissues ; a pilot study on 10 iranian patients

Khadijeh Taherdangkoo,[1,*] Seyed reza kazemi nezhad,[2] Mohammad reza hajjari,[3]

1. Department of Genetics, Faculty of Science, Shahid Chamran University of Ahvaz
2. Department of Genetics, Faculty of Science, Shahid Chamran University of Ahvaz
3. Department of Genetics, Faculty of Science, Shahid Chamran University of Ahvaz

Abstract

Introduction

Colorectal cancer (crc) , is the third most common cancer type and the leading cause of cancer death worldwide. currently , researches on micrornas and their roles in cancer progression gain remarkable attention . micrornas (mirnas) , are a family of small and highly conserved ncrnas with 20-25 nucleotides in length, could regulate genes expressions by binding to 3ËŠ-untranslated regions (3ËŠutr) of target mrnas and participate in many biological processes including cell proliferation, differentiation and apoptosis. moreover, emerging evidences has demonstrated that abnormal expression of mirnas was involved in cancer progression so they could be recognized as oncogenes or tumor suppressors. mir-485-3p , is located at 101055419-101055491[+] genomic region on the chromosome 14. also , it could function in mitochondrial respiratory, migration , invasion and metastasis. in this study , we clarified that mir-485-3p expression was downregulated significantly in advanced stage colorectal cancer tissues compared to matched non-cancerous ones.

Methods

In this study, 10 paires of advanced stage crc fresh tissues samples and their adjacent normal ones were obtained from iran national tumor bank , kept frozen in liquid nitrogen and stored in -80 centigrade until rna extraction . total rna was extracted by using rnx-plus solution .cdna was synthetized by takara kit and the expression of mir-485-3p in tumor and adjacent normal tissues were determined by real-time pcr.

Results

The results of our study showed that the expression of mir-485-3p was decreased notably in cancer tissues compared to matched normal tissues.

Conclusion

Collectively, this study revealed that mir-485-3p was extensively downregulated in advanced stage tumor tissues compared to matched adjacent normal ones and can act as a tumor-suppressor gene in advanced stage colorectal cancer. besides, mir-485-3p can consider as a therapeutic and putative biomarker in colorectal cancer.

Keywords

Colorectal cancer ; mirna; biomarker

Dystrophin gene analysis in iranian duchenne and becker muscular dystrophy patients; discovery of 18 novel mutations

Mohammadkazem Bakhshandeh,[1,*] Ali ahani,[2] Atiyeh majidi,[3]

1. Assistant Professor, Farhikhtegan Hospital, Islamic Azad Tehran Medical University
2. Mendel medical genetic laboratory, Tehran, Iran
3. Doctor Of Medicine, Tehran University of Medical Sciences(TUMS), Tehran, Iran.

Abstract

Introduction

Dystrophinopathy including duchenne muscular dystrophy (dmd) and becker muscular dystrophy (bmd), is the most prevalent type of muscular dystrophy. we evaluate the phenotype and genotypic features of patients suffering from dystrophinopathy in our country.

Methods

From january 2015 to april 2018, all male patients, and one female, which are suspected to becker/duchenne muscular dystrophy were enrolled in this study. subjects had referred for genetic analysis by multiplex ligation-dependent probe amplification(mlpa) method followed by next generation targeted sequencing.

Results

Totally, 155 suspected patients have been evaluated. the age range of the cases were from 23 months to 45.5 years. mlpa diagnosed 109 subjects, 56% deletion and 5.16% deletion. in 62% of cases, dmd gene deletion clustered in the distal hotspot and only 12% showed deletions in the proximal hotspot. overall, 30 patients (27%) had single exon deletion or duplication; exon 50 was the most involved region (9.12%) . based on clinical phenotype there was no significant difference between patients with single / multiple exon deletion/duplication ($p>0.05$). findings of the current study are in consistent with other reported cases in other ethnic populations. also, next generation sequencing was performed for 35 subjects and 18 novel mutations along with 17 previously known pathogenic variants were detected.

Conclusion

There was no significant correlation between severity of disease and location of the mutations. ($p>0.05$)findings of the current study are in consistent with other reported cases in other ethnic populations.

Keywords

Duchenne muscular dystrophy (dmd), becker muscular dystrophy (bmd), multiplex ligation-dependent pro

Ectopic expression of mirna-26a and mirna-503 in patients with lung cancer

Nona Shahriarirad,[1] Hora jalali tehrani,[2,*]

1. Department of Biotechnology,Faculty of Advanced Sience and Technology, Tehran Medical Siences, Islamic Azad University , Tehran, Iran
2. Department of Biotechnology,Faculty of Advanced Sience and Technology, Tehran Medical Siences, Islamic Azad University , Tehran, Iran

Abstract

Introduction

Micrornas (mirnas) play key roles in regulating genes of the apoptosis that regulation of apoptosis is broken in cancers. tremendous efforts have been made to develop cancer biomarkers by detecting circulating extracellular mirnas directly released from tumors. lung cancer is a primary cause of cancer-related death. the aim of this study was to examine the expression mirna-503 and 26a in the lung cancer patients in comparison to health controls

Methods

We analyzed expression of 2 mirnas (mirs-26a and 503) in pbmcs of a training set of 40 individuals with non-small cell lung cancer (nsclc). this cross-sectional study was performed on 40 health controls as well as. expression of mir503, and 26a were evaluated using real-time pcr technique.

Results

Expression of mirna26a was significantly increased in non-small cell lung cancer patients comparison to health controls.

Conclusion

Lung cancer can ectopic expression mirna26a and it may be concluded that increased expression of mirnas

Keywords

Lung cancer, mir-26a, mir-503

Effect crud extract of red onion on microbial properties of beef

Hasan Shaker babashkandi,[1] Ahmad mirzaiefard,[2,*]

2. ardabil

Abstract

Introduction

Onion is a type of glandular fleshy underground plant of tulip family with scientific name allium cepa. onion has air part and food root. the food root part has been used in this research. onion has properties of flavoring, antimicrobial, and antioxidant. the smell and flavor of onion relates to its environmental combination and genetic. the antimicrobial feature of onion has been studied in this research the aim of which is to study the effects of different concentrations of onion extract on the whole number of live microbes found in meat, total number of forms, the number of staphylococcus aureus, the number of fungus (mold and yeast), sensory evaluation in samples meat produced in different time markets.

Methods

The raw extract of onion obtained with 1%, 2%, 3% concentrations in this research has been studied in 0%, 24, 48, 72 hrs. time intervals and the number of microbial after dilution of color colonies along with created edges have been recorded.

Results

Data analysis with significant ($p<0/05$) was also done by spss software. and the results of microbial tests showed that significant difference was found with daily increase of onion extract and the number of microbial in presence of onion extract declined compared to the meat but this difference was not observed from third day forward. also no mold was observed both in treatments group and witness group and the number of yeast was insignificant. the average of formation sensory features in times of 0 and 24 hrs had been excellent, but obtained good and bad after 48 hrs. thus, it can be concluded that onion extract in removing meat bacterial, especially on staphylococcus aureus and total forms and overall numbers had been influential and determining certain concentration in controlling the best concentration 2% and 1% with the time interval 0 to 24 hrs, and had no significant influence on molds.

Conclusion

The results of this research helps produce food with least microorganism and best quality in areas where meat food is distributed and besides the satisfaction of consumers, this contributes the prevention of zyunur diseases which is one of the main causes of diseases in humans.

Keywords

Onion roots, red meat bacteria, the role of onions in meat, sensory sensation of meat.

Effect of 5â€²â€• azaâ€• 2â€²â€• deoxycytidine in comparison with and in combination to trichostatin a on dnmt1 and estrogen receptor alpha gene expression, cell growth inhibition, and apoptosis induction

Najmeh Sadeghi,[1,*] Fraidoon kavoosi,[2]

1. Department of physiology, faculty of medicine, Jahrom University of Medical Sciences, Jahrom, Iran
2. . Research center for non-communicable diseases, Jahrom University of medical sciences, Jahrom, Iran

Abstract

Introduction

Epigenetic regulation of gene expression is a reversible process, the term â€˜epigeneticsâ€™ is the study of alterations caused by modifications, which occur during cell proliferation without any change in chromatin structure. these alterations include histone modifications, dna methylation, and rna interference (rnai) regulations. in human cells, dna methylation occurs on cytosines by dna methyltransferases (dnmts). dnmt activity induces dna hypermethylation resulting in chromatin compaction and gene silencing [1]. three dnmt enzymes have been identified, dnmt1, dnmt3a, and dnmt3b. dnmt3a and dnmt3b are responsible for establishing de novo methylation patterns, which are then maintained by dnmt1 [2]. in addition to dna methylation, histone acetylation plays a major role in chromatin structure and gene transcription, this process is often associated with a more â€˜openâ€™ chromatin conformation and gene reactivation. acetylation of histone is regulated by the competing activities of two enzymatic families including the histone acetyltransferases (hacs) and the histone deacetylases (hdacs) [3]. hdacs activities result in histone deacetylation and chromatin compaction. acetylation of histone achieved by hacs which decreases the affinity of the histone to dnd strand resulting in an open chromatin structure and gene expression. dna demethylating agents can inhibit dnmts by which inhibit dna hypermethylation leads to reactivation of gene expression [4]. furthermore, histone deacetylase inhibitors can inhibit hdacs activity and reactivate gene expression. previously we reported that dna demethylating agent genistein (ge) and histone deacetylase inhibitors trichostatin a (tsa) can inhibit dnmt1 activity and reactivate estrogen receptor alpha (erÎ±) in hepatocellular carcinoma (hcc) which stimulated us to design the current article. the aim of this study was to evaluate the effect of dnmt inhibitor, 5â€²â€• azaâ€• 2â€²â€• deoxycytidine (5â€• azac) in comparison with and in combination to trichostatin a (tsa) on down-regulation of dnmt1, up-regulation of erÎ±, cell growth inhibition, and apoptosis induction in human hcc plc/prf/5 cell lin

Methods

: human hcc plc/prf/5 cell were purchased from the national cell bank of iranâ€˜pasteur institute and treated with tsa (1, 2.5, 5, 10, and 25 Î¼m) and 5â€• azac (1, 2.5, 5, 10 and 25 Âµm) except control groups to determine cell viability and ic50 assy. after 24 and 48 h, the cell viability was measured using mtt assay. to determine whether tsa and 5â€• azac could down-regulate dnmt1 and up-regulate erÎ±, real-time quantitative reverse transcription polymerase (qrt-pcr) was performed. in this regard, the cells were cultured and treated with tsa (2.5 Î¼m) and 5â€• azac (2.5), based on ic5o values, for 24 and 48. after

treatment, the expression of the genes was obtained by qrt-pcr. finally, the apoptosis was determined by flow cytometry assy

Results

Both agents indicated a significant inhibitory effects on plc/prf/5 cell growth at different time periods (p <0.004). the 5â€• azac indicated significant effect on down-regulation of dnmt1 and tsa up-regulated erÎ± significantly. the effect of tsa in combination to 5â€• azac on apoptosis was stronger than each agent alone (p<0.001).

Conclusion

: our result demonstrated that 5â€• azac and tsa can down-regulate dnmt1 and up-regulate erÎ± respectively. the modification of the gene expression resulted in significant cell growth inhibition and apoptosis induction.

Keywords

Trichostatin a, 5â€²â€• azaâ€• 2â€²â€• deoxycytidine, tumor suppressor genes, hepatocellular carcinoma

Effect of a novel copper (ii) complex on the induction of apoptosis in human hepatocellular carcinoma cells

Mehdi Mahmoodi,[1] Soudeh khanamani falahati-pour,[2] Mohammad reza hajizadeh,[3] Fatemeh mohammadizadeh,[4] Mohammad reza mirzaei,[5] Mehdi mahmoodi,[6,*]

1. Rafsanjan University of Medical Sciences
2. Rafsanjan University of Medical Sciences
3. Rafsanjan University of Medical Sciences
4. Rafsanjan University of Medical Sciences
5. Rafsanjan University of Medical Sciences
6. Afzalipoor Faculty of Medicine

Abstract

Introduction

Copper is an essential element for cell growth. many drugs, used in clinical practice, have metal-chelating ability and display cytotoxicity. in vitro copper complexes generally show an enhanced anti-proliferative activity.

Methods

In the present study, we aimed to identify the anti-proliferative potential of [cu(l)(2imi)] complex as a novel cu complex against hepg2 cells as an in vitro model of human hepatocellular carcinoma and normal mouse fibroblast l929 cells using mtt assay.

Results

Cytotoxicity induced by [cu(l)(2imi)] complex was time dependent manner. also, there was a positive correlation between cytotoxicity and an increase in cu complex concentration. for hepg2 cells, the cell viability percentage was 50% at 58 Î¼g/ml after 24 h treatment, whereas in the same concentration and conditions, the viability percentage was surprisingly higher (about 100%) for l929 cells. also, after 48 h treatment, the viability percentage of hepg2 cells at 55 Î¼g/ml concentration was 50% in contrast with 89.3% for l929 cells in the same conditions. flow cytometry findings suggest that [cu(l)(2imi)] complex is capable of decreasing cancer cell viability through apoptosis and did not efficiently activate the necrosis process.

Conclusion

Finally, we found that [cu(l)(2imi)] complex possess the potential for development as an anti-cancer drug for human hepatocellular carcinoma.

Keywords

Apoptosis, [cu(l)(2imi)] complex, cytotoxicity, hepatocellular carcinoma, mouse fibroblast l929 cell

Effect of autophagy inhibitors on treating the patients with hepatocellular carcinoma

Mahgol Moaref dezfouli,[1,*] Mohammad amin dehghani,[2] Fatemeh dehghani,[3]

1. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Autophagy is a recent therapeutic target in liver oncology, particularly in the treatment of metastatic hepatocellular carcinoma (hcc), in which acceptance of alternative compounds is of great interest to clinical trials. there exist various commercially pharmaceutical blockers for autophagy process at different stages, importantly the hcc inhibitors such as chloroquine (cq) and hydroxychloroquine (hcq).

Methods

The search strategy was implemented on pubmed database in english using the keywords of hepatocellular carcinoma (hcc); autophagy inhibitors; chloroquine; hydroxychloroquine; and treatment.

Results

Autophagy inhibition is under consideration in numerous clinical trials on cancer using hcc alone or in combination with other agents, and some reported promising findings, but limited studies are available on hcc in this regard. the cq present in hypoxic and low nutrient microenvironmental niche has been recently shown to be able to sensitize hcc cancer stem cells to cell death. although it is still ambiguous the clinical application of these autophagy inhibitors, they are considered a strong therapeutic strategy to manage the hcc therapy resistance.

Conclusion

: despite being an area with many unanswered questions, recent discoveries in hcc biology and the autophagic pathway have increased our understanding on the implications and importance of trying to manipulate autophagy during hcc treatment. attained findings regarding the biology of hcc and the routes of autophagy raised the knowledge about the consequences and significance of manipulating autophagy during hcc therapy in spite of many unknowns in this context. it is essential to know on the role of autophagy in the hcc for finding promising approaches in the treatment of this cancer.

Keywords

Hepatocellular carcinoma (hcc); autophagy inhibitors; chloroquine; hydroxychloroquine; and treatme

Effect of curcumin and nano phytosome of curcumin on memory impairment induced by ketamine in animal model

Khadijeh Maboudi,[1] Akbar hajizadeh moghaddam,[2,*] Sedigheh khanjani,[3]

Abstract

Introduction

The anaesthetic ketamine is used to treat various chronic pain syndromes. the side effects of ketamine noted in clinical studies. ketamine induced synaptic and long-term spatial memory impairment. other studies showed preventive effect of curcumin in inhibiting brain inflammation and memory dysfunction. curcumin in high dosage can improve memory. despite of this wide range of therapeutic activity, curcumin like other flavonoids has a major limitations in bioavailability and absorption. our research investigates the protective effects of curcumin and nano phytosome of curcumin on memory impairment induced by ketamine.

Methods

In this study, animals were divided into 7 groups: control, disease, positive control and 2 treatment groups, which received curcumin and curcumin nano phytosome in a dose of 15 mg / kg for 15 days. the control and patient groups receive distilled water by gavage method. mice in all group expect control and positive control, were injected with ketamine (30 mg/kg; i.p.) for 14days. curcumin and curcumin nano phytosome in a (15 mg/kg) was gavagely administered after ketamine administration. finally, memory and learning was investigated by novel object test.

Results

Our results indicated that ketamine treatment (30mg/kg, for 14 days) induced memory dysfunction in the novel object test. the discrimination index in the disease group significantly ($p < 0.01$) decreased compared with the control group. also treatment with curcumin and nano phytosome of curcumin increases in this index ($p < 0.5$).

Conclusion

Overall findings suggest the beneficial effect of nano phytosome curcumin on the prevention memory dysfunction induced by ketamine in mice.

Keywords

Ketamine, memory, curcumin, nano phytosome

Effect of curcumin based electrospun nanofibrous scaffolds on proliferation and stemness preservation of adipose derived stem cells

Samira Mashayekhi,[1] Mohammad pourhassan-moghaddam,[2,*] Maryam ghobeh,[3]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.
2. Department of Medical Biotechnology, Tabriz University of Medical Sciences, Tabriz ,Iran
3. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.

Abstract

Introduction

An ideal biomaterial in regenerative medicine should be able to regulate the stem cell proliferation without the loss of its pluripotency. curcumin (cur) is a naturally occurring ï¬,avone with a wide spectrum of biological functions including anti-inï¬,ammatory and anti-oxidant properties. the present study describes the inï¬,uence of cur-loaded nanoï¬• brous mats on the regulation of proliferation and stemness preservation of adipose-derived stem cells (adscs).

Methods

For this purpose, cur-loaded poly (e-caprolactone)/poly (ethylene glycol) (pcl/peg) nanoï¬• brous mats were produced via electrospinning process and the successful fabrication of these bioactive mats was conï¬• rmed by ï¬• eld emission scanning electron microscopy (fe-sem) and fourier transform infrared spectroscopy. adscs were seeded on the nanoï¬• bers and their morphology, viability, and stemness expression were analyzed using fe-sem, mtt, and qpcr assays after 2 weeks of incubation, respectively.

Results

The results display that adscs exhibit better adhesion and signiï¬• cantly increased viability on the chr loaded pcl/peg nanoï¬• brous mats in relative to the pcl/peg nanoï¬• bers and tissue culture polystyrene. the greater viability of adscs on cur based nanoï¬• bers was further conï¬• rmed by higher expression levels of stemness markers sox-2, nanog, oct-4, and rex-1.

Conclusion

These ï¬• ndings demonstrate that cur-loaded pcl/peg electrospun nanoï¬• brous mats can be applied to improve cell adhesion and proliferation while concurrently preserving the stemness of adscs, thus representing a hopeful potential for application in stem cell therapy strategies.

Keywords

Curcumin, electrospun nanoï¬• bers, stem cells, pluripotency

Effect of curcumin on apoptosis and cell growth inhibition of human hepatocellular carcinoma wch-17 cell line

Fraidoon Kavoosi,[1,*]

1. Research center for non-communicable diseases, Jahrom University of medical sciences, Jahrom, Iran
2. Research center for non-communicable diseases, Jahrom University of medical sciences, Jahrom, Iran

Abstract

Introduction

Objective and aim: hepatocellular carcinoma (hcc) is the most common cancer of the liver and the 5th commonest malignancy. herbal medicines have an important role to prevent cancer. curcumin is the herbal and dietary spice turmeric with diverse pharmacologic effects including antiproliferative, antiangiogenic and anti-cancer properties. the aim of the present study was to analyze the effect of curcumin on cell growth and apoptosis in the hcc wch-17 cell line.

Methods

Materials and methods: the cells were seeded in 96-well plate at a density of 2 Ã— 105 cells/well and treated with various concentrations of curcumin. after 24 and 48 h of treatment, mtt and flow cytometry assay were used to evaluate the proliferative and apoptotic effect of the agent.

Results

Results: curcumin inhibited the cell growth and induced apoptosis significantly with a time- and dose-dependent manner ($p<0.001$). the growth of cells decreased to 80, 54, 42, 34 and 30% of the control level after 24h and 72, 50, 38, 30 and 25 % after 48 h with 10, 25, 50, 75 and 100 Î¼m of curcumin respectively ($p < 0.001$). the ratio of the apoptotic cells were significantly increased in a time-dependent manner ($p<0.001$). maximal apoptosis was observed after 72 h.

Conclusion

Conclusion: it was concluded that curcumin is a potent agent able to inhibit the cell growth and induce apoptosis in hcc cells.

Keywords

Keywords: curcumin, proliferation, apoptosis, hepatocellular carcinoma

Effect of cytotoxicity of ethanolic extract of ganoderma lucidum on hela cancer cell line

Masume Safarisukhtekolaii,[1,*] Dr. roya bisheh kalahi,[2] Dr. farkhondeh nemati,[3]

1. Master degree in Biology, Plant Physiology
2. Assistant Professor of Biology, Plant Physiology
3. Assistant Professor of Biology, Animal Physiology

Abstract

Introduction

In this study, the effect of ganoderma lucidum ethanolic extract on hela cancer cell line was investigated. ganoderma has biologically active substances, such as various sterols, proteins, polysaccharides, tertphenoids and melanin, whose polysaccharides and tertphenoids play an important role in anti-cancer activity

Methods

Cells were cultured from pasteur institute of cellular bank of iran and conditioned with rpmi containing 10% fbs and penicillin, streptomycin was cultured in a flask. cells were transferred to 10,000 cells to 96 plates. then, cells were dissolved in rpmi with different concentrations of 10, 5,2.5, 1.25,0.625, 0.312,0.156, 0.078, 0.038 mg / ml, respectively. were placed. the cytotoxicity was evaluated using mtt after 24, 48, 72 hours.

Results

According to the results ,it was determined that the highest growth inhibitory effect of hela cancer cells after 72 hours and at concentrations of 0.312 and 0.382 mg / ml was triggered. also, the lowest inhibitory effect was observed after 48 hours at concentrations of 5 and 2.5 mg / ml. in general, the results of this study showed that ganoderma fungus extract decreases the growth of cancer cells, and the best effect has been observed in low concentrations and in 72-hour incubation.

Conclusion

overall, the results of this study showed that by increasing the concentration of inhibitory percent, the growth of cancer cells decreased, but at a concentration of 10 mg / ml, the growth inhibitory growth of hela cells compared to other concentrations it happened and more cells disappeared. of course, further research is needed, and an investigation should be made to isolate the active ingredients of the plant, to determine the structure and mechanism of its anti-cancer effect in the future

Keywords

Cytotoxicity, ganoderma lucidum, hela cell line.

Effect of endotoxin on melanoma tumor growth and tlr4 expression

Nasim Dana,[1,*] Golnaz vaseghi,[2] Shaghayegh haghjooy javanmard ,[3]

1. Applied Physiology Research Center, Cardiovascular research institute, Isfahan University of Medical Sciences, Isfahan, Iran.
2. Isfahan Cardiovascular research center, Department of Pharmacology, Cardiovascular research institute, Isfahan University of Medical Sciences, Isfahan, Iran.
3. Applied Physiology Research Center, Cardiovascular research institute, Isfahan University of Medical Sciences, Isfahan, Iran.

Abstract

Introduction

Lipopolysaccharide (lps) is an endotoxin derived from the outer membrane of gram-negative bacteria. toll-like receptor 4 (tlr4) is the signaling receptor for lps. while tlr4 activation can promote antitumor immunity, it can also result in increased tumor growth and immunosuppression. the aim was to investigate the effect of lps on melanoma tumor growth and tlr4 expression.

Methods

C57bl/6 mice were divided into 2 groups(n=7): control, lps. in lps group before subcutaneous injection of b16f10 melanoma cells, the cells were treated with lps (5Âµg/ml) for 24 hours. in control, group mice were injected with untreated cells. mice were sacrificed ten days after that palpable tumor developed. tumor volume was measured with vernier calipers. the expression of tlr4 mrna in tumor tissue was evaluated by qrt-pcr.tlr-4 protein expression was determined by immunohistochemistry(ihc) assay.

Results

A significant increase of tlr4 mrna expression was observed in the lps group and tlr-4 protein expression was significantly increased compared with the control group. treatment of cells with lps before injection led to a significant increase in tumor volume compared to the mice that received untreated cells.

Conclusion

These findings indicated that tlr4 may participate in the progression of melanoma and provide a new therapeutic target.

Keywords

Melanoma, lipopolysaccharide, toll-like receptor 4

Effect of ethanolic extract of maize kale on polycystic ovary syndrome induced by letrozole in adult female rats

Shima Monavarian,[1,*] Mohammad shakiba,[2]

1. Islamic azad university of science and research,Shohadaye hesarak Blvd,Daneshgah square,Shahid Satari freewayØŒTehran,Iran
2. Islamic azad university of science and research,Shohadaye hesarak Blvd,Daneshgah square,Shahid Satari freewayØŒTehran,Iran

Abstract

Introduction

Polycystic ovary syndrome (pcos) is one of the most common causes of infertility and one of the most common endocrine disorders that occurs in a high percentage of women.

Methods

In this experimental study, 48 female wistar rats were used and divided into 8 groups of 6 included: healthy control group: animals under controlled conditions with water and food, pcos control group: animals induced polysaccharide syndrome by letrozole induction, healthy experimental groups received 50, 100 and 200 ml of alcoholic extract of corn silks. received letrozole, after inducing polycystic ovarian syndrome, about 50, 100 and 200 ml of alcoholic extract of corn silks. at the end of the treatment period, serum parameters of lh, fsh, testosterone, and estradiol were evaluated. the ovarian tissues were also separated and stained with hematoxylin and follicular counting

Results

Compared to pcos control group, serum estradiol and testosterone levels in pcos group under treatment at a concentration of 200 mg/kg of a hydroalcoholic extract of corn silks decreased significantly. compared to the pcos group, there was a significant increase in the number of corpus luteum and follicular cysts, and applying doses of 50, 100 and 200 ml of alcoholic extract of corn silks significantly reduced the number of corpus luteum and follicular cysts ($p < 0.05$)

Conclusion

Alcoholic extract of corn silks has been effective in improving serum estradiol and testosterone level and increasing the corpus luteum and decreasing follicular cyst in pcos.

Keywords

Polycystic ovary syndrome, corn silks, letrozole, female wistar mice.

Effect of hyaluronic acid produced with recombinant streptococcus zooepidemicus created by wild type on osteoarthritis

Alireza Zakeri,[1,*]

1. Department of Biology Science, , Shahid Rajaee Teacher Training University, Tehran, Iran

Abstract

Introduction

Hyaluronic acid (ha) is responsible for the viscoelastic properties of synovial fluid which inhibits the loss of proteoglycans from the matrix of joint cartilage. it is reported that the intra-articular injections of ha can compensate for osteoarthritis (oa) inflammation induced loss of lubrication in joints. this would relieve oa associated symptoms by alleviating pain and irritation. herein, we aim to evaluate the oa treating properties of a novel ha source.

Methods

We have a native wild strains of streptococcus zooepdemicus and by genetic manipulation have created a recombinant strain. genetic manipulation wild strain of bacteria causing the production of hyaluronic acid with other properties and clear that the rheological properties, the molecular weight of ha and its concentration are factors which could determine the intra- articular viability of the moleculer. a novel source of ha was produced by recombinant bacterial strain , injected into the joints of inducted oa model rats. then, developing a novel scoring scheme which the percentage based cartilage degeneration score (cds) reports are replaced by an actual micrometer based scaling concept, the extent of the treatment success was assessed.

Results

It is indicated that the novel ha introduced in this study is of oa treatment potential equal to a commercial counterpart

Conclusion

Since the bacterial strain of the employed ha is engineered for high concentration ha fermentation, this ha could be contemplated as a novel cost effective oa treatment source. moreover, the devised quantitative method of assessing the extent of oa cartilage damage could be employed in similar studies.

Keywords

Osteoarthritis, hyaluronic acid, cartilage degeneration, recombinant streptococcus zooepidemicus

Effect of idarubicin/trastuzumab combinatorial therapy on her2-positive breast cancer cell lines

Aminollah Pourshohod,[1,*] Mostafa jamalan,[2] Majid zeinali,[3] Moslem afrakhte,[4]

1. Department of Biochemistry, Cellular and Molecular Research Center, Ahvaz Jundishapur University of medical science, Medical School, Ahvaz, Iran
2. Abadan School of Medical Sciences, Abadan, Iran
3. Biotechnology Research Center, Research Institute of Petroleum Industry (RIPI), Tehran, Iran
4. Department of Biochemistry, Cellular and Molecular Research Center, Ahvaz Jundishapur University of medical science, Medical School, Ahvaz, Iran

Abstract

Introduction

Human epidermal growth factor receptor (her) family is a four-member group of transmembrane receptors consisting of her1, her2, her3, and her4. among them, her2 does not have any known ligand and its over-expression is associated with various kinds of malignancies. over-expression of her2 receptor on the surface of many human tumor cells such as breast, head and neck, gastric, ovarian, bladder, endometrial, pancreatic and non-small-cell lung cancer has been demonstrated. chemotherapy and immunotherapy (blockage of her2 dimerization using monoclonal antibodies) are two main treatment approaches in the cancer therapy. idarubicin and trastuzumab are two anti-tumor drugs that are used in cancer therapy. anti-proliferative activity of idarubicin (an inhibitor of topoisomerase ii), alone or in combination with other chemotherapeutic drugs, against cancer cells has been extensively studied and mechanism of toxicity has been completely known. solubility of idarubicin in lipid compounds is considerably more compared to its counterparts, and therefore can be absorbed more effectively by cells. trastuzumab is the first humanized monoclonal antibody (mab) against the her2 receptor that approved by fda for administration in patients with her2-overexpressing breast cancer. trastuzumab as a single therapeutic agent could exert anti-tumor activity in human, but its efficiency could also be improved by combination with other chemotherapeutic drugs. in the current study, the combined effect of idarubicin and trastuzumab on the viability of her2 positive cancer cells was investigated.

Methods

Sk-br-3 and mcf-7 cell lines were seeded at approximately 5Ã—103 cells wellâˆ’1 in complete dmem high glucose medium into flat-bottom 96-well plates (nunc, rosklide, denmark) and then incubated overnight at 37Â°c, 5% co2. cells were exposed for 72 h to various concentrations of idarubicin (0.5-10 ng mlâˆ’1), trastuzumab (1-1000 ng mlâˆ’1) and idarubicin/trastuzumab (1-1000 ng mlâˆ’1 of trastuzumab and 5 ng ml-1 of idarubicin). after incubation time, cell viability was determined by mtt assay for mitochondrial function. her2 expression levels of sk-br-3 and mcf-7 cell lines were assessed by western blotting.

Results

According to the obtained results, idarubicin at concentrations higher than 5 ng/ml could significantly decreased viability of sk-br-3 and mcf-7 cell lines in a dose dependent manner. idarubicin at 5 ng/ml diminished viability of mcf-7 and sk-br-3 cells to 82.1 and 79.55% in comparison to the control group, and so this concentration was selected for combinatorial therapy of indicated malignant cell lines. sk-br-3 as a her2-overexpressing cell line and mcf-7 as a cell line with normal expression of her2 were treated by trastuzumab. while trastuzumab at 100 ng/ml could significantly diminished viability of sk-br-3 cells to 81.8% compared to untreated control group but no anti-proliferative effect was seen against mcf-7 cell line. at this concentration of trastuzumab, addition of idarubicin decreased viability of sk-br-3 and mcf-7 cells to 67.67% and 77.12% compared to untreated control. this effect was also seen at higher concentrations of trastuzumab.

Conclusion

: our obtained results showed that treatment of malignant cells by trastuzumab and idarubicin simultaneously and at optimized concentrations could be a beneficial route of combinatorial therapy for more specific treatment of her2-overexpressing cell lines. more in vivo and in vitro assessment seems to be required for introducing this kind of cancer therapy as a new clinical treatment protocol.

Keywords

Combinatorial therapy, idarubicin/trastuzumab, her2

Effect of insulin on the proteins and apoptosis of hippocampus in male rats with diabetes mellitus type i

Roghayeh Abbasalipourkabir,[1,*] Giti kalantarian,[2] Nasrin ziamajidi,[3]

1. Hamadan University of Medical Sciences
2. Hamadan University of Medical Sciences
3. Hamadan University of Medical Sciences

Abstract

Introduction

Insulin and insulin-like growth factor (igf) can prevent apoptosis in oligodendrocytes. the purpose of this study was to evaluate the effect of subcutaneous injection of insulin on the expression of igf gene and its proteins as well as of the apoptosis in hippocampus of streptozotocin-induced diabetic rats

Methods

An in vivo study was performed by subcutaneous injection of trade insulin in streptozotocin-induced diabetic rats. the duration of study was ten weeks and the diabetic rats was treated for two last weeks of the study. body weight, fasting blood glucose (fbs), expression of igf-i and igf-i genes and level of these proteins using real-time pcr and immunohistochemically (ihc) analysis were studied at the end of the experiment. hippocampal apoptosis was determined by tunnel assay.

Results

The results of the present study showed the apoptotic effects of hyperglycemia in rat hippocampus. in addition, the in vivo results showed the efficacy of commercial insulin in compensated weight loss, fbs and protein levels of igf-1 and igf-2.

Conclusion

Although, the traditional insulin therapy could reduce apoptotic cells in the hippocampus, more studies could be considered to evaluate apoptotic signaling pathway. furthermore, behavioral study associated with memory and learning beside oxidative evaluation in hippocampus can reveal more details in future experiment.

Keywords

InsulinØŒ hippocampusØŒ diabetes mellitus

Effect of mesenchymal stem cells and chicken embryo extract on flap viability and mast cells in rat skin flap

Farzaneh Chehelcheraghi,[1,*] Mohammadbayat,[2] Sufan chien,[3]

1. Anatomical Sciences Department, School of Medicine, Lorestan University Medical of Sciences, Khoramabad, IR Iran,
2. Cellular and Molecular Biology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Price Institute of Surgical Research, University of Louisville, and Noveratech LLC of Louisville, Louisville, Kentucky,

Abstract

Introduction

we investigated the effect of bone marrow mesenchymal stem cells (bmmscs) and chicken embryo extract (cee), alone and in combination, on tissue viability of skin flaps, and mast cells (mcs), in an experimental random skin flap (rsf) rat model

Methods

A30 mmÃ—80 mm rsf was made on the dorsumofeachofthefortyrats,whichwerethendividedintofourgroups.onegroupdidnotreceiveanytreatment and served as the control, the second group received bmmscs, the third group received cee+bmmscs, and the fourth group received cee. for bmmsc treatment, 6Ã—109 bmmscs were injected into twelve separate injection sites of each flap. seven days after rsf surgery, the remaining viable part of each flap was measured and examined to determine the number of blood vessels, mcs, and degranulated mcs.

Results

:the cee, cee+ bmmsc,andbmmscgroupsdisplayedsignificantlyhigherlevelsofflapviability(anovatest:p=0.000;lsd testforallgroups:p=0.000),andagreaternumberofvessels(anovatest: p=0.000;lsdtest: p=0.000,0.002, and 0.012, respectively), compared with the control group. the flap viability was poorer in the bmmsc group thanintheceeandcee+bmmscgroups.thebmmscgroupalsohadagreaternumberofdegranulatedand total mcs, compared with the cee and cee+bmmsc groups.

Conclusion

we observed biostimulatory effects of bmmscs, cee, and cee + bmmscs on flap viability and vessel numbers, compared to the control group. mcs produced in response to bmmsc treatment have an inhibitory effect on the rsfs survival in an ischemic tissue model.

Keywords

Ischemia-reperfusion injury; random skin flap; mast cell; bone marrow mesenchymal stem cell; chicken

Effect of nano phytosome curcumin on anxiety disorders in the animal model of schizophrenia

Khadijeh Maboudi,[1] Akbar hajizadeh moghaddam,[2,*] Farhad valizadehgan,[3]

1. Department of Biology, Faculty of basic science, University of Mazandaran
2. Department of Biology, Faculty of basic science, University of Mazandaran

Abstract

Introduction

: in the progressive phase of schizophrenia, anxiety is observed. curcumin is a polyphenol with antioxidant properties. however, bioavailability of curcumin is an important limiting factor for its antioxidant activities. delivery systems, such as nano phytosome, can increase the rate of propagation and the capacity to cross fat. therefore, our aim in this study is to investigate the effect of nano phytosome curcumin on anxiety disorders in the animal model of schizophrenia.

Methods

In this study, 49 mice were used. animals were divided into 7 groups: control, positive control, disease, and 2 treatment groups, which received 15 mg / kg curcumin and nano phytosom curcumin for 15 days. for induction of schizophrenia model, 30 mg / kg ketamine is intrapreitoneally injected for 14 days to all groups except the control and positive control group. finally, the anxiety like behavior was examined by open field test.

Results

The time spent in the center in the disease group significantly decreased ($p < 0.01$) compare with the control group. treatment with nano phytosome curcumin increases in this index ($p < 0.5$) vs. disease group. regarding the results of vertical movement activity in the disease group ($p < 0.01$), decreased compare with the control group. however, in the nano phytosom group, there is an increase in vertical movement activity vs. disease group $p < 0.5$.

Conclusion

our results showed that nano phytosom curcumin probably is suitable natural combination for the treatment of schizophrenia. nano phytosomal formulation of curcumin showed promising potential for treatment schizophrenia in low dosage.

Keywords

Schizophrenia, anxiety, curcumin, nano phytosome

Effect of organic curcumin and thymoquinone on treatment of rheumatoid arthritis

Javad Yaghmoorian khojini,[1,*] Yaser sharaj sharifi,[3]

1. BsC in Cellular and molecular biology-Department of Biology-Faculty of Sciences-University of Isfahan
3. MsC in Agricultural Biotechnology-sari agricultural & natural resources University

Abstract

Introduction

The term arthritis is derived from the greek words -artho- and -itis- meaning joint and inflammationØŒ respectively. rheumatoid arthritis (ra)ØŒ which is detected by painØŒ swelling and joint damageØŒ is one of the most common chronic inflammatory diseases of the joints. approximately 1% of the world s population suffers from this diseaseØŒ and more than 3.000.000 new cases are detected every year. ra not only causes a disability that affects physical activity and mobilityØŒ but also causes premature deathØŒ in additionØŒ ra patients have a much shorter life expectancy than the general population. thereforeØŒ developing a more effective treatment strategy for ra with a focus on the prevention and treatment of diseaseØŒ complications and related disorders is necessary. curcumin (cm) is a hydrophobic polyphenol extracted from a turmeric plant. cm has various therapeutic activities against many chronic diseases such as cancerØŒ type ii diabetesØŒ multiple sclerosisØŒ alzheimer s disease and atherosclerosis. the molecular mechanisms for these therapeutic effects consist of not only the suppression of cell proliferation and metastasis but also down-regulation of various factorsØŒ such as nuclear factor kappa b (nf-Îºb)ØŒ interleukin (il)-1Î²ØŒ tumor necrosis factor (tnf)-Î±ØŒ hypoxia-inducible factor-1Î±ØŒ and activator protein. thymoquinoneØŒ the predominant component of n. sativa oilØŒ has a wide range of beneficial effects. nigella sativa l. (ranunculaceae) (n. sativa) is an annual herbaceous plant that is native to southeastern asia and cultivated in europe and north africa. n. sativa grains are commonly known as black cuminØŒ and as spices and condiment are consumed. in traditional medicineØŒ n. sativa is used to treat many diseases including asthmaØŒ hypertensionØŒ diabetesØŒ inflammationØŒ coughØŒ bronchitisØŒ headacheØŒ eczemaØŒ feverØŒ dizziness and influenza. recent reports from studies in various countries have shown that n. sativa is commonly used by cancer patients as a supplement (ds) in complementary and alternative medicine (cam) with chemotherapy. the extract of n. sativa seedsØŒ fixed oil and essential oil showed a wide range of favorable biological activityØŒ most notably antioxidantØŒ anti-inflammatoryØŒ antibacterialØŒ hepatoprotectiveØŒ anti-mutagenic and antitumor activities.

Methods

Many studies have been carried out in recent years on the pharmacological effects of curcumin & thymoquinone that has uncovered their biological activity.

Results

Brahim tekeoglu et al. (2007) explored the anti-inflammatory effects of thymoquinone on arthritis in rat models. they stated that thymoquinoneØŒ confirmed clinically and radiologicallyØŒ suppressed adjuvant-induced arthritis in rats. tamer et al. (2012) studied the effectiveness of nigella sativa oil in ra patients. they indicated that supplementation with nigella sativa during dmard therapy in ra may be considered an affordable potential adjuvant biological therapy. hadi et al. (2014) evaluated effects of nigella sativa oil extract on inflammatory cytokine response and oxidative stress status in patients with rheumatoid arthritis: a randomizedØŒ double-blindØŒ placebo-controlled clinical trial. they concluded that nigella sativa could improve inflammation and reduce oxidative stress in patients with ra. it is suggested that nigella sativa may be a beneficial adjunct therapy in this population of patients. zhaoling zheng et al. (2015) reported that cm is an effective ant arthritic agentØŒ and current n formulation appears to be a promising system that turns ra s treatment with cm from iv to oral administration.

Conclusion

This study demonstrated that thymoquinone & curcumin could improve inflammation and reduce oxidative stress in patients with ra and suggested that supplementation with these biological compounds may be a beneficial adjunctive therapy in this population of patients. we believe that our results will contribute to the clinical application of nigella sativa in management of patients with ra.

Keywords

Curcumin-thymoquinone-rheumatoid arthritis

Effect of quercetin on the number of blastomeres, zona pellucida thickness, and hatching rate of mouse embryos exposed to actinomycin d: an experimental study

Sara sadat Javadinia,[1,*] Sam zarbakhsh,[2]

1. Research Center of Nervous System Stem Cells, Department of Anatomy, Faculty of Medicine, Semnan University of Medical Sciences
2. Research Center of Nervous System Stem Cells, Department of Anatomy, Faculty of Medicine, Semnan University of Medical Sciences

Abstract

Introduction

Quercetin is a flavonoid with the ability to improve the growth of embryos in vitro, and actinomycin d is an inducer of apoptosis in embryonic cells. the aim was to evaluate the effect of quercetin on the number of viable and apoptotic cells, the zona pellucida (zp) thickness and the hatching rate of preimplantation embryos exposed to actinomycin d in mice.

Methods

two-cell embryos were randomly divided into four groups (control, quercetin, actinomycin d, and quercetin + actinomycin d group). blastocysts percentage, hatched blastocysts, and zp thickness of blastocysts was measured. the number of blastomeres was counted by hoechst and propidium iodide staining and the apoptotic cells number was counted by tunel assay.

Results

The results showed that the use of quercetin significantly improved the growth of embryos compared to the control group (p=0.037). moreover, quercetin reduced the destructive effects of actinomycin d on the growth of embryos significantly (p=0.026).

Conclusion

quercetin may protect the embryos against actinomycin d so that increases the number of viable cells and decreases the number of apoptotic cells, which can help the expansion of the blastocysts, thinning of the zp thickness and increasing the hatching rate in mouse embryos.

Keywords

Quercetin, embryonic development, zona pellucida, apoptosis, blastocyst innercell mass.

Effect of quercetin on the zona pellucida thickness, hatching rate of blastocysts and the number of viable and apoptotic cells of mouse embryos exposed to hydrogen peroxide: an experimental study

Sara sadat Javadinia,[1,*] Sam zarbakhsh,[2]

1. Research Center of Nervous System Stem Cells, Department of Anatomy, Faculty of Medicine, Semnan University of Medical Sciences

Abstract

Introduction

Quercetin is one of the six subclasses of flavonoids which is abundant in fruits and vegetables and has high antioxidant activity. hydrogen peroxide (h2o2) is one of the reactive oxygen species it can induce apoptosis in embryonic cells. the aim was to evaluate the effect of quercetin on the embryonic quality parameters such as zona pellucida (zp) thickness, the hatching rate and the number of viable and apoptotic cells of preimplantation embryos exposed to h2o2 in mice.

Methods

Two-cell embryos in the culture medium were randomly divided into four groups (control, quercetin, h2o2, and quercetin + h2o2 group). blastocysts percentage, hatched blastocysts, and zp thickness of blastocysts was measured. the number of blastomeres was calculated by hoechst and propidium iodide staining and the apoptotic cells number was counted by tunel assay.

Results

The results indicated that the use of quercetin dramatically improved the percentage of hatched blastocysts and the number of viable cells and the thickness of zp was thinner compared to the control and h2o2 groups. moreover, quercetin significantly reduced the destructive effects of h2o2 and the number of apoptotic cells ($p<0.05$).

Conclusion

Quercetin may protect the embryos against h2o2 in culture medium and improve the embryonic quality parameters by thinning of the zp thickness, increasing the number of viable cells and hatching rate and decreasing the number of apoptotic cells so it can help the development of the blastocysts.

Keywords

Quercetin , hydrogen peroxide, embryo culture, zona pellucida , apoptosis

Effect of recombinant insulin-like growth factor 2 (igf-ii) injected into the hippocampus on memory impairment and igf-ii gene expression following hippocampal intracerebral hemorrhage in rats

Mahsa Abedi,[1,*] Farzaneh vafaee,[2] Asadollah zarifkar,[3] Masoumeh emamghoreishi,[4] Mohammad reza namavar,[5]

1. Tehran medical sciences, Islamic azad University, Tehran, Iran
2. Department of Neuroscience, School of Advanced Medical Sciences and Technologies, Shiraz University of Medical Sciences
3. Department of Physiology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
4. Department of Pharmacology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
5. Department of Anatomical Sciences, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Insulin-like growth factor 2 (igf-ii) is a growth factor and an anti-inï¬ammatory cytokine that has also pivotal activity on memory. the aim of this study was to investigate the effect of recombinant igf-ii on memory impairment due to intracerebral hemorrhage (ich). hence, avoidance and investigation memory, locomotor activity, neurological deficit score and the level of igf-ii gene expression were evaluated.

Methods

To induce ich, 100 Î¼l of autologous blood was injected into the left hippocampus of male sprague-dawley rats. recombinant igf-ii was injected into damaged hippocampus 30 min after induction of ich. then, over two weeks, the neurological deficit score (nds) and locomotor activity and also passive avoidance and novel object recognition test (nor) were evaluated. finally, the level of igf-ii gene expression evaluated by rt-pcr technique.

Results

Our results indicated that recombinant igf-ii injection significantly increased step-through latency (stl) ($p<0.001$) and total time spent in dark box ($p<0.01$), but no significant difference was seen with novel object exploration time and neurological deficit score. locomotor activity did not significantly change in any group. the level of igf-ii gene expression following igf-ii injection significantly reduced ($p<0.05$).

Conclusion

The results of this study show that recombinant igf-ii injection can improve avoidance memory but not investigation memory. igf-ii was not effective on locomotor activity. it seems that the reduction of the level of igf-ii gene expression is not related with memory improvement.

Keywords

Intracerebral hemorrhage; igf-ii; learning and memory; hippocampus; rats

Effect of silibinin on hippo signaling pathway in breast cancer

Amir hosein Nikoukar,[1,*] Nasrin motamed,[2] Inas nabhani,[3]

1. University of Tehran
2. University of Tehran
3. University of Tehran

Abstract

Introduction

In spite of the fact that medical and pharmacological industries have been vastly developed daily, cancer is still the second cause of death worldwide, and it is due to the genomic complexities of cancer. finding the new molecular and cellular processes promoting cancer formation and development, may lead to achieve better strategies in cancer prevention, finding new treatments with lower side effects, and improve the prognosis of patients. hippo signaling pathway is one of the many cellular processes, first discovered in drosophila melanogaster in genetic screening, has an intense role in controlling organ size that deregulate in variety of human malignancies. the core of this pathway includes a kinase cascade that negatively controls the activities of two transcription co-activators yap1/taz, that upregulate in tumorigenesis. hence targeting the components of this pathway can be useful in improving new methods of target therapy and moving further in individualized medicine. one of the major difficulties in cancer treatments is that patients suffering from side effects of conventional therapies, therefore substituent better methods for reducing these effects could be worthy. one of these methods is the traditional use of phytochemicals which have been used in medical practices with fewer side effects. silibinin, the major active constituent of silymarin, a standardized extract of the milk thistle, is a member of phytochemicals that traditionally use in hepatic diseases, and recently proven that could be useful in cancer prevention and treatment. the objective of this study was to investigate and compare the silibinin effect on cell viability of different breast cancer cell lines, and function of hippo signaling pathway under the treatment by silibinin.

Methods

Cell culture breast cancer cell lines mda-mb-231, mda-mb-453, mcf-7, and t47d were cultured in rpmi1640 medium supplemented with 10% fetal bovine serum (fbs) at 37Â°c in 5% co2 under 90% humidity. cell viability to evaluate the cell viability under different concentration of silibinin, mtt assay was applied. mentioned cell lines were cultured in 96-well plate (12000 cells per/well for mcf-7, 10000 cells per/well for mda-mb-453, 6000 per/well for t47d, and 4500 per /well for mda-mb-231). next day, different concentrations of silibinin (0, 50, 75, 100, 150 and 200 Âµm) were supplemented to the media for 24, 48 and 72 hours. rna extraction and real-time pcr cells cultured in t25 flasks. after reaching to the appropriate confluency, the media replaced with different concentrations of silibinin (50, 75 and 100 Âµm for mda-mb-231 and mda-mb-453; 75, 100 and 150 for mcf-7 and t47d, according to mtt assay results) for 48h. total rna was extracted from the treated cells, using rnx plus kit (cinnacolon). for cdna synthesis, master mix kit (pishgam biotech) was used. to assess the alternations of yap1, taz (wwtr1),

survivin (birc5), and puma (bbc3) transcriptions under the silibinin treatments, the real-time pcr was performed. immunocytochemistry according to regulatory role of hippo signaling pathway on yap1/taz protein levels, the immunocytochemistry was applied. after 48h treatment of cells with appropriate concentration of silibinin (75Âµm for mda-mb-231; 100Âµm for mcf-7 and mda-mb-453 and 150 Âµm for t47d according to mtt assay results) immunostaining was performed for each cell line before and after treatment by primary antibodies for yap1/taz. then, samples were visualized by florescent microscope and the protein levels of yap1/taz were evaluated by image j software.

Results

According to mtt assay results, we observed silibinin reduced the cell viability of all cell lines in time and dose dependent manner. after that cells treated with appropriate concentrations of silibinin for 48h. the real-time pcr results showed that silibinin significantly reduced mrna levels of yap1, taz and survivin while significantly increased mrna level of puma in all cell lines. the results from icc showed that silibinin significantly reduced yap1/taz protein levels in all cell lines.

Conclusion

As the other studies, we observed that silibinin has inhibitory effect on breast cancer cell lines. considering the remarkable role of hippo signaling pathway in controlling organs size and its important role in cancer inhibition, and according to effective roles of silibinin in cancer prevention and treatment, in this study we evaluate the effects of silibinin on hippo signaling pathway and demonstrated that silibinin can influences the functions of hippo signaling pathway.

Keywords

Hippo pathway, silibinin, breast cancer

Effect of simultaneous use of benzodiazepines and tramadol on human serum metabolome profile

Ziba Akbari,[1,*] Mohammad arjmand,[2] Zeinab madani,[3] Ali fathi,[4]

1. Department of Biochemistry. Pasteur Institute of Iran.
2. Department of Biochemistry. Pasteur Institute of Iran.
3. Dept. of Biochemistry, Payam Noor University of Tehran
4. Dept. of Biochemistry, Payam Noor University of Tehran

Abstract

Introduction

Benzodiazepines are considered as a class of psychoactive drugs. they have sedative, hypnotic, anxiolytic and muscle relaxant properties.tramadol is a highly addictive opioid drug that is routinely prescribed for moderate to severe pain after surgery.tramadol and benzodiazepine are severely abuse among the youngers. however, simultaneous abuse of benzodiazepines and tramadol will be resulted to sever drug toxicity and death. metabolomics is the systematic study of chemical fingerprints resulting from cytotoxic and pathogenic reactions of cells and nuclear magnetic resonance (nmr) spectroscopy is one of the metabolomics tools which is used for drug toxicity.in this project we were going to study the metabolic profile of patients with simultaneous abuse of benzodiazepines and tramadol and the metabolic fingerprint changes were found by the help of h1nmr.

Methods

A total of 20 poisoned patients serum, and 20 normal serums were collected. h1nmr spectroscopy was done according to the cpmg protocol by help of 400 mhz brucker. raw data were analyzed using prometab code and partial least squares-discriminant analysis (pls-da). the altered metabolites and biochemical pathways were identified in the metaboanalyst 4.0 database(www.metaboanalyst.ca).

Results

Our results showed the sharp separation of two groups by pls-da method.the top of 20 compounds chemical shift ranked by variable importance were identified by pls-da. the colored boxes show the relative concentrations of the corresponding metabolite in each group under study and finally the significant altered metabolic pathways in two group were identified by pathway analysis.

Conclusion

In this metabolomics study, the metabolic profile and fingerprint alterations were determined.our results showed that the most altered metabolites and biochemical pathways were in: cystathionine, hydrogen sulfide and cysteine metabolites of sulfur metabolism, cystathionine and taurine metabolites in nitrogen metabolism, and also, methyl-histidine, histidinol, histamine metabolites of histidine metabolism and

cystathionine, sarcosine and cysteine metabolites in glycine and serine metabolism. however, more research is need to prove our findings.

Keywords

Benzodiazepines, tramadol, metabolomics, h1nmr.

Effect of sodium butyrate in comparison with trichostatin a on p21waf1/cip1 gene expression in colon carcinoma.

Masumeh Sanaei,[1,*] Masumeh sanaei ,[2]

1. Research center for non-communicable diseases, Jahrom University of medical sciences, Jahrom, Iran
2. Research center for non-communicable diseases, Jahrom University of medical sciences, Jahrom, Iran

Abstract

Introduction

Acetylation of histone is a fundamental molecular mechanism of transcriptional regulation which affects gene expression epigenetically. histone acetylation open the chromatin structure resulting in increased transcription. this acetylation is regulated by two opposing classes of enzymes including histone acetyltransferases (hac) and histone deacetylases (hdacs), the balance between these enzymes determines the acetylation level of histone. hdac activity leads to histone deaceylation and chromatin compaction resulting in gene silenced. histone deacetylation of tumor suppressor genes leads to tumorigenesis [1]. histone deacetylase inhibitors are the compounds that inhibit hdac activity structurally classified into five families, including short-chain fatty acids (e.g., butyrates), hydroxamic acids (e.g., trichostatin a), cyclic tetrapeptides containing a 2-amino-8-oxo-9,10-epoxy-decanoyl (aoe) moiety (e.g., trapoxin a), cyclic peptides (e.g., apicidin) and benzamides (e.g., ms-27-275). hdacis inhibit cell growth and induce apoptosis in various cancers [2]. previously, we evaluated the effect of several histone deacetylase inhibitors on various cell lines of hepatocellular cancer and colon cancer which encourage us to design this research. the aim of this study was to evaluate the effect of sodium butyrate in comparison with trichostatin a (tsa) on p21waf1/cip1 expression in colon carcinoma.

Methods

Materials and methods: sw1116 cells were cultured with a density of 5 Ã— 10 5 cells per well and allowed to adhere for 24 h and subsequently treated with sodium butyrate and trichostatin a. after 24, 48, of the treatment, mtt assay and real-time quantitative rt-pcr were achieved to determine cell viability and gene expression respectively.

Results

Results: our findings suggest that sodium butyrate and tsa can significantly inhibit cell growth and restore p21waf1/cip1 gene reactivation. reduction of cell viability by 50% (ic50) required 5 mmol/l sodium butyrate and 1 Âµmol/l tsa for 24 h. using quantitative rt-pcr, sodium butyrate and tsa indicated significant increased p21 at different time periods (24, 48, and 72 h). the relative expression of p21waf1/cip1 in the groups treated with sodium butyrate were 1.4, 1.9, and 2.4 ($p < 0.005$) and in the groups treated with tsa were 1.7, 2.3, and 3.1 ($p < 0.001$) in different time periods respectively.

Conclusion

Conclusion: histone deacetylase inhibitors can increase histone acetylation resulting in reactivation of p21waf1 gene expression in human colon cancer sw1116 cell line.

Keywords

Keywords: sodium butyrate, trichostatin a, p21waf1/cip1, colon cancer

Effect of soluble uric acid on the gene expression of inflammatory markers and also the viability of human peripheral blood mononuclear cells.

Reyhane Ebrahimi,[1,*] Alireza bahiraee,[2] Solaleh emamgholipour,[3]

1. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
2. Department of Medical Genetics, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
3. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Overproduction of uric acid as the final compound of purines catabolism, can play emerging roles in human diseases. here, we aimed to explore the effects of soluble uric acid induction on the activation of basic proliferative pathways using 3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (mtt) assay and also the gene expression of inflammatory markers in human peripheral blood mononuclear cells (pbmcs).

Methods

The proliferation rate of pbmcs separated from 10 ml heparinized peripheral blood samples obtained from 4 healthy adult volunteers, were measured using mtt assay. pbmcs were seeded in rpmi 1640 supplement with 5% (v/v) fetal bovine serum and 100â€‰iu/ml penicillin. uric acid was solved with the prewarmed media (37â€‰Â°c), and then passed through sterile 0.20-Î¼m filters. thus, the mtt assay was performed with various concentrations of soluble uric acid (0, 3, 5, 6, 10, 12, 18 and 20 mg/dl) on the pbmcs after 24 hours incubation. all results were stated as percentage alterations in absorbance compared with pbmcs incubated with plain culture medium. next, we treated pbmcs with different concentration of soluble uric acid (0, 5, 12 and 20 mg/dl) for 24 hours and total rna was isolated using geneall rna extraction kit. therefore, cdna was synthesized by the quantitect reverse transcription kit. to investigate the gene expression of interleukin (il)-6, il-1Î² and tnf-Î± as inflammatory markers, real-time pcr were performed.

Results

This study showed that soluble uric acid (0-20 mg/dl) induced a concentration-dependent proliferative effect in pbmcs from healthy people after cells incubation for 24 hours which was performed by using mtt colorimetric assay ($p < 0.001$). moreover, to investigate the role of uric acid on inflammatory pathways, pbmcs were exposed to soluble uric acid at different concentrations or were left untreated for 24 hours. different concentration of soluble uric acid did not induce detectable expression of il-6, il-1Î², and tnf-Î± mrnas even at the highest concentration (20 mg/dl) after 24 hours incubation.

Conclusion

The results showed that the soluble uric acid can rise the proliferation of pbmcs in a concentration-dependent manner which can be inversely associated with disease severity. although, different concentrations of soluble uric acid did not change the gene expression of inflammatory markers, which may suggest the possible contribution of other causes among hyperuricemia in activating inflammatory pathways.

Keywords

Uric acid, mtt assay, pbmc, interleukin

Effect of transcutaneous electrical nerve stimulation on patient satisfaction after episiotomy

seyedeh soma Zakariaee,[1,*] Roonak shahoei ,[2] Leila hashemi nosab ,[3] Soma bahmani,[4]

1. Msc Midwifery Student, Faculty of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran.
2. Associated Professor, Faculty of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran.
3. Lecturer, Faculty of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran.
4. Msc Midwifery Student, Faculty of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran.

Abstract

Introduction

Episiotomy is the most common operation in obstetrics and evaluation of patient satisfaction from health care and medical care, is essential for improving the quality of hospital services. the aim of this study was to evaluated satisfaction of participant after using tens for relief pain.

Methods

This randomized clinical trial was performed on 80 primiparous women referred to sanandaj besat hospital in 1397. participant were randomly divided into two groups: intervention (tens-on) and control group (tens-off). tens electrodes were located near the episiotomy site in the genitofemoral and pudendal nerves. satisfaction of participants was evaluated with questionnaire. fisher test and pearson correlation were used for data analyzing.

Results

In tens group, all of participant (100%) reported that they found tens comfortable and they would use it again. regarding the satisfaction with the use of tens, 50% (20) of the participants in the intervention group were very satisfied and 40% (16) were satisfied, while in the control group 20% (8) of the participants were satisfied.

Conclusion

Result of this study showed that, use of the tens for relief pain after episiotomy, is with high satisfaction of participant and tens is an comfortable method for pain relief post-episiotomy.

Keywords

Tens, episiotomy, satisfaction, postpartum

Effect of trifolium cherleri extract on clinical specimens of ciprofloxacin-resistant staphylococcus aureus strain contain norb gene

Sana Mirzazadeh,[1] Hassan noorbazargan,[2] Fatemeh ashrafi,[3,*]

1. Department of Biology, North Tehran Branch, Islamic Azad University, Tehran, Iran
2. Department of Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Department of Biology, North Tehran Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Staphylococcus aureus is one of the five common causes of infectious diseases, especially nosocomial infections infections. unfortunately, this bacterium is resistant to antibiotics, especially ciprofloxacin. one of the mechanisms of resistance of this bacterium to the ciprofloxacin antibiotic is the existence of an efflux pump. in this study, the existence of norb efflux pump gene, its gene expression and active efflux activity in iranian ciprofloxacin resistance s. aureus isolates.

Methods

In this experimental study, a total of 250 clinical samples were collected from different hospitals in tehranâ€“iran. s. aureus isolates were identified and antibiotic resistance profile, detection norb gene and its gene expression using pcr and in addition to, efflux pump activity was determined by mic test.

Results

Totally, 50 s. aureus isolates were recovered and the results of antibiotic susceptibility tests show that 34 out of 50 s. aureus isolates (68%) were resistant to methicillin and from the 34 mrsa, 12 isolates (24%) were resistant and none of the samples were resistant to vancomycin. moreover, all of the ciprofloxacin resistant strains harbored the norb gene and have active efflux pump. the results showed that different strains had a range of mics 31.25-500 Âµg/ml.

Conclusion

The results of this study showed correlation between ciprofloxacin resistance and norb efflux activity and its gene expression in ciprofloxacin resistance isolates.

Keywords

Staphylococcus aureus, ciprofloxacin resistance, efflux pump, norb

Effect of tumor necrosis factor receptor-2 in reduction of arthritis severity in balb/c mice

Shahla Korani,[1,*]

Abstract

Introduction

Rheumatoid arthritis (ra) is one of the most common forms of inflammatory arthritis, causing suffering, disability and even premature death. many of the past and current therapies offer little more than symptomatic relief. the most common treatments for rheumatoid arthritis include nonsteroidal anti-inflammatory drugs (nsaids), corticosteroids, disease modifying antirheumatic drugs (dmards), and some biological agents. tumour necrosis factor (tnf) is a pro-inflammatory cytokine that signals through two distinct receptors, tnfr1 and tnfr2. tnfr is involved in the pathogenesis of various inflammatory. blocking tnf, in turn, has been showed to be highly effective in treating autoimmune diseases. the aim of this study is to investigate the protective effect of the tnfr2 on collagen-induced arthritis in mice.

Methods

Collagen-induced arthritis)cia(was induced in mice by immunization with bovine typeii collagen(ii).after boosted on day21,mice were treated with tnfr2and mtx(1mg/kg)for twelve consecutive days. the clinical scores and joint histopathology were evaluated.

Results

Administration of tnfr2 significantly protected ankle bone and cartilage from being eroded versus disease mice. pathological examination showed that tnfr2 effectively reduced inflammation severity in cia.

Conclusion

In this present study, it is demonstrated that administration of tnfr2 has potential and therapeutic effect on cia. the data suggests that tnfr2 could have a role in improved management of ra patients.

Keywords

Collagen-induced arthritis, rheumatoid arthritis, tumour necrosis factor, tnfr2

Effect of valproic acid on proliferation and apoptosis of colon cancer ht 29 cell line

Fraidoon Kavoosi,[1,*]

2. Research center for non-communicable diseases, Jahrom University of medical sciences, Jahrom, Iran

Abstract

Introduction

The structure of chromatin is made up of dna, histones, and non-histone proteins with the basic repeating unit, nucleosome. the structure of chromatin can be reversibly modified in several ways including histone acetylation. histone acetyltransferases (hats) and histone deacetylases (hdacs) are two groups of enzymes that involved in acetylation and regulate gene expression. histone deacetylases have a key role in the remodeling of chromatin and the epigenetic regulation of gene expression. hdac inhibitors (hdacs) can inhibit hdacs and affect gene expression. hdac inhibitor valproic acid (vpa) has antitumor activities against certain cancers that make it an attractive drug for treating cancer. the aim of the present study was to analyze the effect of vpa on proliferation and apoptosis in colon cancer ht 29 cell line.

Methods

Materials and methods: the cells were cultured at a density of 5 Ã— 105 and treated with vpa to determine cell viability and flow cytometry. after 24, 48 and 72 h of treatment, mtt assay and flow cytometry assay were used to evaluate the viability and apoptotic effects of vpa.

Results

Results: the result of mtt assay indicated that valproic acid significantly reduced the number of viable ht 29 cells in a time- and dose-dependent manner ($p < 0.001$) in all treatment groups by 28% to 86% at 24 h, 24% to 74% at 48 h and 18% to 64% at 72 h. ic50 value of vpa that inhibited 50% of the ht 29 cancer cell was 2.5 Î¼m for 24 h (pË,0.001). the result of flow cytometry assay revealed that vpa induced significant apoptosis vs. control group in all treated groups. maximal and minimal apoptotic cell was observed in the groups which received vpa for 24 and 72 h respectively (pË,0.001).

Conclusion

Conclusion: vpa can significantly inhibit the growth and induce apoptosis in the ht 29 cancer cell line.

Keywords

Keywords: valproic acid, proliferation, apoptosis, colon cancer

Effect of vitamin d3 on female sexual function

Raziyeh Navidmehr,[1,*] Shahideh jahanian sadatmahalleh ,[2] Anoshirvan kazemnejad,[3]

1. Tarbiat Modares University
2. Tarbiat Modares University
3. Tarbiat Modares University

Abstract

Introduction

According to the who, gender is a central aspect of human life throughout life that includes gender, identity and gender role, sexual orientation, eroticism, pleasure, intimacy, and reproduction. everyone has the right to access sexual information and to experience sexual intercourse for pleasure or reproduction .based on studies conducted in 60 countries, at least 40-45% of adult women have a manifestation of sexual dysfunction, damage to quality of life, psychological problems, and couples divorce are undesirable effects of sexual dysfunction, which in many countries are a social taboo. many physical, psychological, and social factors can affect sexual performance, low levels of 25-hydroxyvitamin d (25(oh)d) appear to be related to sexual dysfunction in women.vitamin d is a steroid hormone that plays a very important role in bone metabolism, neuromuscular system, and the immune system and cardiovascular system. vitamin d3 also plays a significant role in biology in female reproduction. in human ovarian tissue, 25(oh)d produces progesterone up to 13%, production of 9% estradiol and estrogen production by 21%. probably, vitamin d3 deficiency in women may result in sexual dysfunction.

Methods

A literature search was conducted through pub med to identify vitamin d3 deficiency and sexual dysfunctional related studies.

Results

A variety of studies have been carried out and statistical methods have been used, its seen that women who vitamin d3 deficiency levels total fsfi (female sexual function index) score was insignificantly lower in women with vitamin d deficiency than in women with vitamin d insufficiency and normal, especially in three domains (sexual desire, orgasm, and sexual satisfaction) .prescribing vitamin d3 to women who were deficient, improved sexual desire, orgasm, and sexual satisfaction and increased the their fsfi score and if prescribing to women with vitamin d insufficiency, it only improve desire stage.

Conclusion

The results have shown that administered vitamin d supplementation improves female sexual functioning in women with low vitamin d status.

Keywords

Sexual dysfunction, fsfi, vitamin d3

Effect of zinc supplement on the number of embryos obtained from ivf

Fatemeh Oroujzadeh,[1,*] Mahnaz azarnia,[2] Seyyedeh ghadireh mirabolghasemi,[3] Mahdi hadi,[4]

1. Department of Cellular & Development Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran
2. Department of Cellular & Development Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran
3. Department of Cellular & Development Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran
4. Advanced Biopharmaceuticals Department, Tofigh Darou, Research and Engineering Company, 18h Karaj highway, Tehran, Iran

Abstract

Introduction

Since ivf-related techniques have a rapid progression, they are used as an effective therapy for the treatment of sterile couples. zinc is essential a factor for reproductive cycle of animals, due to critical role to the formation and maturity of sperm. also it is necessary for ovulation and fertilization during pregnancy. zinc deficiency causes a number of abnormalities such as: spontaneous abortion, pregnancy-related stroke, long-term pregnancy or premature abnormalities and growth regression. also, studies have shown that autologous serum has a series of key proteins and growth factors that can treat some diseases, such as endometritis, associated with inflammation of the uterus. autologous conditioned serum (acs) is used in human and veterinary medicine to regulate inflammatory response. in this study, we examine the effect of zinc supplement in culture medium compared to the acs on the number of embryos in ivf culture.

Methods

By use of zinc supplement and acs (from blood of mouse) in the mhrm culture medium, the effect zn and asc on development and the number of embryos, from the egg stage to the 4 cells embryo (which can be transmitted to the uterus horn), were studied. in present study, a few numbers of female and male mice (nmri) were used to extract adult oocyte and sperm. female mice were stimulated with intraperitoneal injection of pmsg and hcg hormones for super ovulation. released oocytes from the oviduct part were removed by dissection of oviduct. also, the epididymis tail was placed in a culture medium containing bsa in the incubator for one hour in order to capacity-building of the sperms. ultimately, more motile and healthy sperms were collected. then sperms were added to culture mediums contain zinc and also acs, separately, including oocytes. these cultures were incubated for 4-6 hours in incubator for fertilization. in the end, two and four cells embryos were observed 24 to 48 hours after fertilization, respectively.

Results

According to studies, zinc supplement is essential for the maturity of the ovule. it is possible that this zn supplement can increase the number of embryos. based on data in this study, the number of embryos from

medium contain zinc supplement was increased compared with control group, of course no in significant range. conversely, in culture contain autologous serum the number of 2 and 4 cells embryos were significantly decreased compared with control group. it conclude that, zn supplement can be considered as a positive effective factor on development of embryos in ivf culture more than autologous serum factor.

Conclusion

Blastocyst formation at a specific dose has been dramatically increased, according to zinc supplementation studies conducted on ivm of pigs oocytes. zinc supplements are expected to increase the number of embryos derived from ivf by adjusting the amount of intracellular glutathione (gsh) and expressing a series of transcription factors. our experiment on nmri mice supported such studies. however, according to our study, it is possible that acs has not enough proteins to grow embryos.

Keywords

zinc supplement ivf bsa acs

Effective bacterial genes in immunity against alphainfluenza virus

Ali Hojabr rajeoni,[1,*]

1. Tehran University, Veterinary College

Abstract

Introduction

Alphainfluenza virus from orthomyxoviridae family causes important zoonotic diseases ranging from asymptomatic infection to severe, systemic disease with above 90% mortality. hpai viruses of h5n1 subtype have been considered as a major animal and public health threat. bacterial genes, express various proteins, affect host immune system and can be used as cross immunoprotective agents.

Methods

Alphainfluenza h5n1 subtype clade 2.3.1c and b.licheniformis genes and protein data obtained from ncbi. they have been analyzed and evaluated as point of protein interactions and immunity by bioinformatic analyzing, iedb and b cell assay.

Results

This study shows pgsbcaae genes from b.licheniformis, itâ€™s genes expression, gamma_dpga polypeptide stimulates the host innate immune system, b cells and causes cross protection against bacteria and alphainfluenza h5n1 subtype clade 2.3.1c.

Conclusion

Use of effective bacterial genes above their important role in treatment of bacterial diseases, they will be useful in prevention and producing new drugs and vaccine with low cost.

Keywords

Alphainfluenza h5n1 subtype b.licheniformis pgsbcaae gamma_dpga polypeptide immunity

Effective factors on coping strategies in women with breast cancer: a comprehensive literature review

Elahe Samami,[1] Zohreh shahhosseini,[2,*] Forouzan elyasi,[3] Seyyed noraddin mosavi nasab,[4] Leila shojaee,[5] Ehsan zaboli,[6]

1. M.Sc. Student of Midwifery counseling. Student Research committee, Mazandaran University of Medical Science, Sari, Iran.
2. Sexual and Reproductive Health Research Center, Mazandaran University of Medical Science, Sari, Iran.
3. Department of Psychiatry, Psychiatry and Behavioral Research Center,Mazandaran University of Medical Science,Sari, Iran.
4. Health Sciences Research Center, Mazandaran University of Medical Science, Sari, Iran.
5. Gastrointestinal Cancer research center, Mazandaran University of Medical Science, Sari, Iran.
6. Gastrointestinal Cancer research center, Mazandaran University of Medical Science, Sari, Iran.

Abstract

Introduction

: efficient coping strategies are effective methods to manage stresses resulted from breast cancer. there are various effective factors on efficient coping strategies, so this review aims to investigate the effective factors on coping strategies in women with breast cancer.

Methods

This study is a review that the researcher was initially conducted her computer search in google scholar database and then more specifically in persian databases such as scientific information database (sid), magiran, and in english databases included pubmed, web of science, scopus, science direct and springer using persian and english keywords from 2000 to 2018 to find related articles. finally out of 97 articles, 49 studies were used to write this study.

Results

: the findings of this research were classified in 4 main levels: medical factors (including disease stage, disease type and treatment type), psychological factors (including severe depression, schizophrenia, personality disorders, bipolar disorder and suicide history), social factors (including information support by treatment team, psychological support from partner, family and financial support) and religious-spiritual factors (including hope, positive thinking, believe in fate, praying and trust in god).

Conclusion

: according to the significance of coping strategies and the effect of medical, psychological, social and religious- spiritual factors on them, it is recommended to health service providers pay attention to the

factors and improve efficient coping skills in women with breast cancer through educational and consulting interventions.

Keywords

Coping strategies, breast cancer, social support, spiritual factors, psychologica

Effects of aerobics exercise on breast cancer survivors: a systematic review

Somaye Pouy,[1,*] Latif panahi,[2]

1. Student Research Committee, Guilan University of Medical Sciences, Rasht, Iran.
2. Student Research Committee, Guilan University of Medical Sciences, Rasht, Iran.

Abstract

Introduction

Aerobic exercise has important role in the control complications in cancer patients and has a lot of useful consequences in patients with breast cancer and can improve patientâ€™s quality of life.this study aim to survey the impression of aerobics exercise on breast cancer survivors and patients.

Methods

We done a comprehensive search through databases of cochrane, medline, embase, cinahl, scopus and as well as conference proceedings and grey literatures with keywords of breast cancer and exercise. we included only randomized controlled trials that assess effect of exercise on quality of life, cardiorespiratory fitness, fatigue or physical functioning as primary outcomes of breast cancer patients or survivors. all articles critically appraised with prisma checklist.

Results

Of 144 studies, 15 randomized control trials were included in the review. there was some evidence that physical function, cardiorespiratory fitness and quality of life was improved among those who exercised. also, symptoms of fatigue did not appear to be increased and there were few adverse effects reported. exercise also led to significant improvements in physical functioning and peak oxygen consumption and in reducing symptoms of fatigue.

Conclusion

The results show that exercise has positive effect on quality of life, cardiorespiratory fitness, physical functioning and decreasing fatigue in breast cancer patients and survivors.

Keywords

Breast cancer, exercise, systematic review.

Effects of cadmium chloride on the intra-cellular Î± - estrogen receptor and inhibitory role of n- acetylcysteine in cervical cancer cells

Hasan Shaker babashkandi,[1,*] Behrouz shahbazi,[2]

Abstract

Introduction

Cadmium is a heavy metal that is classified by the international center for cancer research in humans as a high-risk metal. the aim of this study was to evaluate the cadmium activated alpha-estrogen intracellular receptor which has estrogenic effects of cadmium, and the purpose of this study was to investigate the effect of n-acetylcysteine as an inhibitor of cadmium on cadmium-activated alpha-estrogen receptor.

Methods

The human uterine cervical cancer cell line, hella, was purchased from the pasteur institute of iran and cultured in a culture medium with high glucose called dmem. then, the expression of alpha-estrogen receptor gene expression in these cells by rt-pcr and real-time pcr was investigated before and after intervention by cadmium chloride and n-acetylcysteine. the results of this study were compared by multiple anova tests in spss software version 22.

Results

The expression of alpha-estrogen receptor gene expression after treatment with cadmium chloride in the case groups showed a significant increase compared to the control group ($p < 0.0001$). after treatment with n-acetylcysteine at concentrations of 2.5, 5, 7 and 10 nm, it was able to inhibit cadmium effects in increasing expression of alpha-estrogen receptor expression ($p < 0.0001$).

Conclusion

From the results obtained in this study, it can be concluded that the cadmium element at concentrations above 1 nm can increase the progression of cervical cancer by inducing the expression of alpha-estrogen receptor gene expression. on the other hand, n-acetylcysteine at concentrations above 2.5 nm can inhibit cadmium effects in increasing the expression of Î±-estrogen receptor.

Keywords

Cervical cancer, alpha-estrogen receptors, cadmium, n-acetycystein.

Effects of curcumin nano phytosome on lipid peroxidation induced by ketamine in schizophrenia model

Bita Bavaghar tabari,[1,*] Akbar hajizadeh moghadam,[2] Mahboobeh zare,[3]

Abstract

Introduction

Ketamine (2-chlorphenyl-2-methylamino-cyclohexanone),has been used to induce a schizophrenia-like condition as an animal model in which to study this condition. the observed an increase in oxidative damage marked by an increase in lipid peroxidation, and a decrease in enzymatic defenses, in the rodent brain is increased by administering ketamine in subanesthetic doses. curcumin, a hydrophobic polyphenol, is the main material extracted from turmeric dried rhizomes. curcumin is a potent antioxidant and anti-inflammatory agent that has been known to have different drug effects. this bioflavonoid is a potent free radical scavenger that has the ability to inhibit lipid peroxidation in in vitro and invivo systems. the formulation of curcumin phytosomes (a collection of corcumins with phosphatidylcholine) is introduced to improve the bioavailability of curcumin. the aim of this study was to investigate the effects of curcumin nano phytosome on malondialdehyde (mda) in sub cortex area of rats in an experimental model of schizophrenia induced by ketamine.

Methods

the rats were randomly divided to six groups of control, positive control, sham, ketamine, and two groups of ketamine receiving curcumin and curcumin nano phytosome at a concentration of 15 mg / kg body weight orally for 30 days. all groups received ketamine (20 mg / kg body weight) for intraperitoneal injection for 14 days except control and positive control. than lipid peroxidation as a measure of thiobarbituric acid reactive substances (tbars) formation was performed.quantitative data were analyzed by anova, tukey test at the level of $p < 0.05$.

Results

The findings of this study indicate that the curcumin and especially its nano phytosome decreased the mda in sub cortex area.

Conclusion

These results suggested that curcumin and especially its nano phytosome may inhibit ketamin-induced oxidative stress, and that it may possess therapeutic potential for the treatment of schizophrenia

Keywords

Nano phytosome curcumin ,schizophrenia model, lipid peroxidation, ketamine.

Effects of echinacea purpurea on immune cells in rats

Seyed davood Hajiseyedi,[1,*] Sara hajiseyedi,[2] Shabnam rezaee maghani,[3] Sina hajiseyedi,[4] Soheila sanei mousavi,[5]

1. Tabriz Azad University
2. Gonabad medical university
3. Drug store
4. Azad mashahd university
5. Maede school

Abstract

Introduction

Echinacea has become one of the most popular herbal supplements. used to alleviate colds, sore throats, coughs, and other respiratory infections. the most common constituents present in echinacea include alkylamides, caffeic acid derivatives, polysaccharides, and lipoproteins. polysaccharides are typically present at the highest concentration in aqueous or fresh pressed juice extracts while alkylamides are more likely to be major constituents in ethanolic extracts. furthermore, it has recently been shown that bacterial lipoproteins may also be responsible for the observed stimulatory activity of echinacea in macrophages. such lipoproteins can be present in plants without contamination from external bacteria due to the presence of endophytes. several studies have described the effects of e. purpurea on the immune system. in 1997, burger et al. revealed the immunostimulatory effect of unpurified fresh pressed e. purpurea juice on human peripheral blood macrophages in vitro. conducted a study addressing the phagocytic activity of alveolar macrophages. most recently, sasagawa et al. (2006) examined the effects of ethanolic extracts obtained from aerial portions of e. purpurea on stimulated jurkat t cells. they found that low concentrations of the extract suppressed the ability of activated t cell. the public generally considers this herb safe and effective as suggested by the dramatic increase in echinacea use; however, additional studies are needed to further define the immunomodulatory effects of echinacea. in this study, we set out to define the immunomodulatory activity of e. purpurea extract

Methods

Eight wistar rats aged 6-12 weeks were bred and maintained in the animal research facilities at the islamic azad university of tabriz, iran. rats were housed under specific pathogen-free conditions and maintained on 12 h dark/light cycles. standard laboratory food and water were provided ad libitum. all protocols for the use of animals were approved by the islamic azad university of tabriz, iran. animals were divided into the two identical groups by chance; group 1: the control group received no herbal remedy and group 2 received herbal remedy (e.purpura extract) at the dose of 2.0 microg/ml dissolved in drinking water daily for 8 days. 1 week later blood samples obtained and biochemical factors including igg, igm, iga, total protein and albumin were measured. igg, igm, iga and total protein were measured by the nephalo method and albumin were measured using colorimetric method. extracts were prepared at pharmacognosy department of islamic azad university of tabriz, iran. from 2-year-old cultivated e. datasets with multiple

comparisons were evaluated by one-way analysis of variance (anova) with dunnett test. values of $p<0.01$ were determined to be significant statistically

Results

Data obtained from the measurement of biochemical factors revealed that e.purpura extract cause an increase in levels of igm and iga but no effects on igg, total protein and albumin

Conclusion

Due to its popularity as an herbal supplement, many researchers have attempted to define the immunomodulatory mechanisms of echinacea. e. purpurea has been shown to have immunostimulatory effects on monocytes, macrophages, natural killer cells, and t cells in vitro. to date, few studies have attempted to elucidate the immunomodulatory effects of e. purpurea on immune system. in 2006, wang et al. revealed that their e. purpurea altered immune-related genes in human dcs. additionally, the potential cellular signalling events were investigated via genomic and proteomic analyses following dc exposure to their butanol extracts. since dcs play an important role in both innate and adaptive immunity, it is essential to investigate the effects of e. purpurea on these cells. in this study, we set out to define the immunomodulatory activity of e. purpurea extract. sullivan et al. (2008) examined similar parameters when testing the effects of e. purpurea polysaccharides on macrophages in vitro. they found that polysaccharides isolated from e. in 2005, matthias et al. revealed that following oral consumption of ethanolic e. purpurea liquid extracts, alkylamides appeared in plasma after 20 minutes and reached a maximum concentration of 336Â±131 ng/ml in human plasma, which demonstrates that alkylamides are bioavailable. by comparison of the above-mentioned literature, it reveals that e.purpura increase immune system in rats and it may be due to its components

Keywords

E.purpura, immune cells , rats

Effects of fucoidan extracted from algae on cancer prevention and treatment

Arghavan Hosseinpouri,[1,*] Mahdi mohammadi,[2] Narges obeidi,[3]

1. Department of Cellular and Molecular Sciences,Faculty of Siences,Khalij fars University,Bushehr.
2. Departmet of Biotechnology,Persian Gulf Studies and Research Center, Khalij fars University,Bushehr.
3. Department of Hematology, Faculty of paramedicine, Bushehr University of Medical Sciences

Abstract

Introduction

Due to the increase in cancer mortality rates, studies have been conducted to develop preventive treatments and anticancer medicines around the world, and due to the side effects of chemical drugs, attention has been paid to natural-drug-based drugs.

Methods

Recent studies have been carried out on sulfate polysaccharides such as fucoidan, which are extracted and purified from some brown algae (fucales), including undaria pinnatifida, fucus vesiculosus, fucus evanescens, the promising features of the anti-tumor function of the fucoidan have been shown on lung, breast, liver, colon, prostate, and bladder cancer cells.

Results

For example, a study on the effects of fucoidan extracted from sargassum angustifulium on hct-15 cell line cancer has shown that fucoidan causes 50% cell death after 24 hours.the anticancer properties of this compound in research conducted until 2017 briefly include the following: induction of caspase-dependent apoptosis and independent of caspase in cancer cells by pi3k / akt, mir-29, ros, id-1 and endoplasmic reticulum protein , preventing the progression of cell cycle in cdk and p21waf1-mediated cancer cells, activating inflammatory responses in cancer cells, preventing the ability of angiogenesis in cancer cells, increasing the anti-cancer effect of chemotherapy agents, preventing colony formation in cancer cells and anticoagulation in tumor therapy.

Conclusion

In addition, recent research has focused on the development of fucoidan based nano drugs. the reported fucoidan target p-selectin on target on cancer cells and protamine/fucoidan nanoparticles act as promising options for intracellular release of anticancer drugs againts breast metastasis.

Keywords

Fucoidan, cancer,tumor therapy,brown seaweed.

Effects of hydroalcoholic extract of rosa damascena, urtica dioica root and their combination on memory, anxiety, depression level and muscle strength in pre-andropausic male rats

Mohsen Abedini esfahlani,[1,*] Sayed noureddin nematolahi-mahani,[2] Tahereh haghpanah,[3] Mohammad reza afarinesh,[4]

1. Department of anatomy, Afzalipour Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran
2. Department of anatomy, Afzalipour Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran
3. Department of anatomy, Afzalipour Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran
4. Kerman Cognitive Research Center and Kerman Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran.

Abstract

Introduction

Unlike women that experience sudden changes in sex hormones,in men it happen gradually which is known as â€˜andropauseâ€™ or â€˜male menopauseâ€™. this condition may occurre due to decrease in testosterone hormone level. andropuase have various signs including decrease of memory and muscular strength, depression and sexual dysfunction. commonly, testosterone therapy has been proposed for treatment of andropause, which might induce some side effects especially benign prostatic hypertrophy (bph). according to the previous studies showing the beneficial effects of urtica dioica root and rosa damascena extract on the male sex hormones, the present study aimed to investigate the effect of hydroalcoholic extract of rosa damascena, urtica dioica root and their combination on the testosterone hormone level and andropause symptoms in pre-androposic male rats.

Methods

thirty-two 12-month old male rats were used as a middle-aged model. the treatment period was 50 days of rosa damascena (40 mg/kg) and urica dioica root (50 mg/kg) administration. the novel object recognition test, open field, wire grip and swimming retention tests were performed for cognition, anxiety, muscular strength, and depression at 1, 25 and 50 days of the start of experiments. after the end of behavioral tests, the animals were killed and blood samples were collected.

Results

no significant difference was observed in muscular strength in any of the groups receiving the extracts compared to the vehicle group. recognition on 25 day showed a significant increase in the rosa damascena and combination groups, while on 50 day all three treatments showed a significant increase compared with the vehicle group. grooming and rearing were significantly increased on 50 and 25 days respectively

in the combination group. immotility in forced swimming test increased significantly in either of the treated animals on 50 day. the duration of climbing in this test showed a significant increase in the combination group on 25 and 50 days as compared with the vehicle group. swimming period was nearly identical in the treated groups with no significant difference with vehicle group. testosterone level showed a decrease in the rosa damascena group and a significant increase in the combination group as compared with the vehicle group.

Conclusion

the current study showed that the hydroalcoholic extract of rosa damascena, urtica dioica root and their combination could differently withstand andropausic changes in an aged animal model of andropause. change in the anti oxidant levels and gonodal-hypophysis-hypothalamus axis function might have improved the symptoms of andropause.

Keywords

Andropause, aging, testosterone,rosa damascena, urtica dioica

Effects of lactobacillus colon cancer and normal cells proliferation

Farzaneh Nazari,[1,*] Hossein fazeli,[2]

Abstract

Introduction

Several beneficial effects have been attributed to the probiotic lactic acid bacteria. it was determined that lactobacilli can exert antiproliferative effects on the various cancer cell lines including colon cancer. effects of lactic acid bacteria on colon cancer may vary from strain to strain and there is a need to find the new probiotic strains with tumor suppressing properties through in vitro studies.

Methods

Anti-proliferative activities of heat-killed cells and cell-free supernatants of a native strain of lactobacillus were assessed on human colon cancer cell lines (caco-2 and ht-29) and normal cells (l-929), using mtt assay. cells were seeded at 2Ã—104 cells/mlin 96 well plates and incubated for 24 hr. then heat-killed cells (od620: 0.025, 0.0.05, 0.1) and cell-free supernatants of bacteria were added at concentration of 2.5, 5 and 10 mg/ml. after 48 hr incubation mtt (5 mg/ml) was added and the absorbance was measured at 540 nm using elisa plate reader.

Results

Results showed that heat-killed cells and cell-free supernatants of both probiotic strains reduced the growth rate of cancer and normal cells. these results suggested that anti-proliferative effect may not be an exclusive characteris ticwhich is dedicated to officially approved probiotics.

Conclusion

Lacticacid bacteria could be considered as colon cancer biological product, most likely due to its advantages in significant organic acid production.

Keywords

Cancer, lacticacid bacteria, mtt assay

Effects of prenatal lipopolysaccharide exposure on reproductive activities and serum concentrations of pituitary-gonadal hormones in mice offspring

Parvin Gharibpanah,[1,*] Samira rahimimeydani,[2] Bahareh ghods,[3] Parvin gharibpanah,[4]

1. Biology Department-Karaj Branch-Islamic Azad University-Karaj-Iran
2. Biology Department-Karaj Branch-Islamic Azad University-Karaj-Iran
3. Biology Department-Karaj Branch-Islamic Azad University-Karaj-Iran
4. Biology Department-Karaj Branch-Islamic Azad University-Karaj-Iran

Abstract

Introduction

maternal infection during pregnancy is a risk factor for some behavioral problems with neurodevelopmental origin. this study aimed to evaluate the effects of exposure of pregnant mice to the bacterial lipopolysaccharide (lps) on sexual behavior and serum level of pituitary-gonadal hormones of offspring in adulthood

Methods

Pregnant nmri mice (n= 7/group) were treated with intra-peritoneal administration of lps (1, 5 and 10 Âµg/kg) at day 10 of gestation. induction of the pro-inflammatory cytokines, tumor necrosis factor-alpha (tnf-Î±), interleukin-1beta (il-1Î²) and interleukin-6 (il-6) were measured in maternal serum 2 hours following the maternal lps challenge. behavior in the adult male offspring reproductive activity was investigated using receptive female mice. concentrations of testosterone, luteinizing hormone (lh) and follicle-stimulating hormone (fsh) in adult offspring serum were measured using the enzyme-linked immunosorbent assay (elisa) method (at postnatal day 60, n= 10/group)

Results

One-way anova showed that lps administration induces a significant increase in tnf-Î±, il-1Î² and il-6 levels of maternal serum. prenatal lps exposure reduces sexual behavior and serum concentration of lh and testosterone in adult male offspring

Conclusion

Prenatal exposure to lps increases pro-inflammatory cytokine levels, affects development of neuroendocrine systems and results in the inhibition of reproductive behaviors and reactivity of hypothalamicâ€“pituitary-gonadal (hpg) axis in adult male offspring

Keywords

Prenatal lipopolysaccharide ,mice offspring ,reproductive activities

Effects of resveratrol on foxo1 and foxo3a gene expression in adipose tissue, and serum insulin, insulin resistance and serum sod activity in the type 2 diabetic rats

Hosein Mohammadi,[1,*] Yaser mohassel,[2] Sonia salari,[3]

1. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran
2. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran
3. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran

Abstract

Introduction

Diabetes mellitus (dm) is a common metabolic disorder characterized by elevated blood glucose level. oxidative stress plays a critical role in insulin resistance. fork head-related transcription factor (foxo) proteins are important transcriptional factors involved in oxidative stress and insulin resistance. resveratrol (rsv) is a polyphenol with hypoglycemic and antioxidant properties.

Methods

The aims of present study were to examine the effects of rsv on foxo gene expression, serum superoxide dismutase (sod) activity, insulin level, and insulin resistance in type 2 diabetic (t2dm) rats. thirty male wistar rats were used in this study. dm was induced in rats (n=24) using streptozotocin (stz) & nicotinamide (na); then, they were divided into 4 groups (each group with 6 rats). six untreated normal rats were used as normal control group (group 1); diabetic rats in groups 2 to 5 were treated by 0, 1, 5 and 10 mg /kg body weight of rvs, respectively for 30 days. at the end of experimental period, the rats were sacriï¬• ced, abdominal incision was given and blood was collected from the cardiac puncture, serum was separated, adipose tissues was also obtained and stored at âˆ’80Â°c. glucose was determined by pars azmun kit (iran). insulin serum level was determined by elisa method. sod activity inserum was determined using randox kit(england).

Results

The foxo1 and foxo3a genes expression in adipose tissue were evaluated using realâ€• time pcr. the p<0.05 was considered as a significant level. findings of the present study indicated that resveratrol significantly reduced blood glucose level and increased insulin level and improved the insulin sensitivity. resveratrol resulted in an increased serum sod activity and caused decreased expression of foxo1 and foxo3a in adipose tissue of rats with t2dm.

Conclusion

The results showed that the rvs by attenuation of foxo expression in adipose tissue of type 2 diabetic rats had the hypoglycemic potential and antioxidant properties and consequently ameliorated insulin resistance.

Keywords

Diabetes mellitus, oxidative stress, foxo, superoxide dismutase

Effects of trichostatin a on epigenetic reactivation of p14arf, p15ink4b, and p16ink4a genes in breast cancer

Maryam Daemi,[1,*]

1. Department of Biology, faculty of science, University of Isfahan, Isfahan, I.R. Iran

Abstract

Introduction

Objective and aim: epigenetic modification of chromatin plays an important role in the regulation of gene transcription and expression. the modifications include acetylation, phosphorylation, methylation, sumoylation, ubiquitylation, and ribosylation, all of which can affect the gene expression significantly. post-translational modifications of histone tails provide an open chromatin structure resulting in activation of gene expression, the histones should be in an unlocked configuration to be in a permissible state for gene transcription. a balance between the activity of two group of enzymes including histone deacetylase (hdacs) and histone acetyltransferase (hac) determine the acetylation level of histone. histone deacetylase activity induces histone deacetylation leads to chromatin compaction and silenced gene. histone deacetylation of the promoter region of tumor suppressor genes leads to carcinogenesis. histone deacetylase inhibitors (hdacis) promote acetylation of histone which neutralizes the positive charge of the histone tails resulting in decreased affinity of the histone for the negatively charged dna strand. this change loosens the chromatin structure to an open configuration which enables the transcriptional machinery to access the dna chain leads to enhance gene transcription. according to chemical structure, hdacis can be classified into four classes including aliphatic acids, hydroxamates, cyclic peptides, and benzamides. previously, we evaluated the effects of genistein in comparison with 5-aza-2â€²-deoxycytidine on epigenetic reactivation of p14arf, p15ink4b, and p16ink4a genes in breast cancer. the results of the previous work encouraged us to design this study. the aim of the current study was to access the effect of trichostatin a (tsa) on epigenetic reactivation of p14arf, p15ink4b, and p16ink4a genes in breast cancer mda-mb-361 cell line.

Methods

Materials and methods: human breast cancer mda-mb-361 cell were purchased from the national cell bank of iranâ€˜pasteur institute and cultured/treated with tsa with different concentrations of tsa (1, 5, 10, 15, and 20 Î¼m) except control groups which incubated with dmso only. after 24 and 48 h, the cell viability was measured using mtt assay. to determine whether tsa could reactivate the gene expression, real-time quantitative reverse transcription polymerase (qrt-pcr) was performed. in this regard, the cells were cultured and treated with tsa (5 Î¼m, based on ic5o values) for 24, 48. after treatment, relative expression of the genes was obtained by qrt-pcr.

Results

Results: tsa indicated significant inhibitory effects and also activated p14arf, p15ink4b, and p16ink4a gene expression significantly. inhibitory effect of tsa was dose and time-dependent manner. the relative expression of these genes was 1.6 to 1.8 ($p < 0.003$), 1.9 to 2.2 ($p < 0.001$) and 1.7 to 2.1 ($p < 0.001$) at 24 and 48 h respectively.

Conclusion

Conclusion: our result demonstrated that tsa can reactivate p14arf, p15ink4b, and p16ink4a gene expression resulting in cell growth inhibition in human breast cancer mda-mb-361 cell line.

Keywords

Keywords: trichostatin a, tumor suppressor genes, breast cancer

Effects of zataria multiflora esential oil, thymol and carvacrol on echinococcus granulosus protoscoleces

Elnaz Kianmehr,[1] Behrouz ezatpour,[2] Hossein mahmoudvand,[3,*]

1. Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran

Abstract

Introduction

Zataria multiflora boiss (lamiaceae) commonly grows in iran is a popular medicinal plant with various pharmacological activities mentioned in traditional iranian medicine and modern phytotherapy. this study was designed to evaluate the chemical composition and scolicidal effects of z. multiflora essential oil on the protoscoleces of hydatid cysts on an in vitro model.

Methods

The components of the z. multiflora essential oil were identified by gc/ms analysis. protoscoleces of echinococcus granulosus were aseptically aspirated from the livers of naturally infected sheep. various concentrations of essential oil, thymol and carvacrol were used for 5â€“30 minutes. eosin exclusion test was used to determine the viability of protoscoleces.

Results

The main components were thymol (41.8%), carvacrol (28.8%), and p-cymene (8.4%). findings showed that essential oil at the concentrations of 12.5 and 6.25 Î¼l/ml killed 100% protoscoleces after 5 and 20 minutes of exposure, respectively. in addition, thymol and carvacrol at the concentrations of 100 Î¼g/ml and 100 Î¼l/ml killed 100% protoscoleces after 10 minutes incubation, respectively.

Conclusion

Obtained results in this investigation for the first time demonstrated that z. multiflora essential oil and its main components might be a natural source for the production of new scolicidal agents.

Keywords

Cystic echinococcosis; prtotoscoleces; essential oil; thymol; carvacrol; gc/ms

Elationship between abnormal karyotypes as chromosomal variants and recurrent pregnancy loss or infertility

Maryam Moshfeghi,[1,*]

Abstract

Introduction

although polymorphic variations are identified to happen in the common people ,but all experts are thought to have no affect on phenotype and this population have normal appearance. on the other hand, these variants have newly been reported in infertile and subfertile individuals couples with upper frequencies and with higher prevalence in recurrent pregnancy loss.one of this type is polymorphic variations on the long arms of chromosomes 1 ,about the length of the centromeric heterochromatin. (1qh+)

Methods

This study was a prospective study of the data of 140 infertile couples that recruited one after the other to infertility clinic. we had also, a group of 110 men and women as control group that had been done karyotype for other reason and recruited in our study without history of reproductive failure.then we compare their karyotypes.

Results

The most frequent abnormality was klinefelter syndrome (n=4 ,2.8%). after that 46,xy,1qh(+) was the most common autosomal abnormality (n=8,5.7%) . all of control group had normal assay.

Conclusion

In couples with normal variant autosomal abnormality and normal phenotypes it is important to pay attention about role of these little abnormality in reproductive out come and explain to parents.

Keywords

Chromosomal variations; infertility; pregnancy loss

Electrospun nanofibers for vascular tissue engineering: design and applications

Sonia Fathi karkan,[1,*] Reza maleki baladi,[2] Reza rahbargazi,[3]

1. Department of medical Nanotechnology, faculty of Advanced Medical Science, Tabriz Medical University, Tabriz, Iran
2. Young Researchers and Elite Club, Tabriz Branch, Islamic Azad University, Tabriz , Iran
3. Department of medical Nanotechnology, faculty of Advanced Medical Science, Tabriz Medical University, Tabriz, Iran

Abstract

Introduction

Attention in electrospun fibers has newly increased because of their capability to create nanoscale materials. electrospun fibers mimic the extracellular matrix well, they are used as tissue engineering scaffolds. regenerative medicine has exposed that engineered nanofibers have the talent to imitate the environment of the cell and play a significant role in cellular attachment to the extracellular matrix and cell-to-cell connectivity. they also help in the growth and differentiation of cells, which is needed before the tissue regeneration process. in this review article, we will review articles on the different types of electrospun nanofibers used in angiogenesis.

Methods

The electrospinning technique is one of the most widely used and advanced methods of polymer nanofibers production. nanostructured scaffolds produced by electrospinning technique are able to create a very similar structure of extra cellular matrix

Results

Although electrospinning was first described over 70 years ago, attention to the technique has increased dramatically within the past 10 years, due in large part to the rising interest in nanoscale properties and materials.

Conclusion

The generation of designer scaffolds with clinically relevant dimensions and the homogeneous distribution of cells within them will also need to be addressed for tissue engineering applications

Keywords

Regenerative medicine, electrospun nanofibers

Endoscopic ultrasound in esophageal obstructing tumors

Amir Hasanvand,[1,*] Zeynab yaberi mohammad,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

It is not uncommon for the endosonographer to encounter an obstructing esophageal cancer that prevents the passage of the ultrasound scope. in fact, up to one-third of patients who present with esophageal cancer will have luminal stenosis to the degree passage of a 12â€“13 mm endoscope is prevented. there are several options the endoscopist may entertain to overcome this challenge. one is to position the echoendoscope tip at a position proximal to the tumor and perform the examination from here. accuracy is significantly reduced by this method, and evaluation of distal lymph nodes â€“ such as the celiac nodes â€“ may be impossible. however, this practice often reveals at least a t3 disease, which can have an important impact on management strategy.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

. endoscopic dilation of the stricture to allow scope passage is an additional option. this can be done using a through-the-scope balloon dilator or savory bougienage over a wire. dilation to at least 15 mm is usually required to facilitate scope passage. studies in the past associated malignant esophageal stricture dilation with a rate of perforation approaching 24%. more recent studies, however, have shown a much lower rate of perforation, specifically when careful gradual serial dilation is performed and â€œthe rule of threesâ€• is employed. an important consideration to keep in mind is whether or not dilating the stricture to allow scope passage will change the overall management of the patient (and whether subjecting them to the risks of dilation is worthwhile). studies have shown that roughly 90% of obstructing tumors will be t3 disease or higher. thus, the majority of these patients will be allocated to neoadjuvant chemoradiation rather than direct esophagectomy, regardless of whether lymphadenopathy is detected distal to the lesion. a third option for the staging of obstructing strictures is via the use of small-caliber hfcps or miniprobes. the small diameter of these probes may permit their passage through a stenotic tumor and provide additional staging information. they are not as effective in thicker tumors or for n-staging, and are not as

routinely used in clinical practice. similarly, a small-caliber curvilinear echoendoscope used for endobronchial ultrasonography (ebus) can also be considered for use in stenotic tumors.

Conclusion

Mostly, the tumor is clearly at least t3 or n1 from even incomplete ultrasound imaging, or else advanced disease is present on cross-sectional imaging. a linear eus scope can be especially helpful in stenotic tumors, as the tip can be deï¬,ected away to obtain more longitudinal imaging from the proximal aspect, in order to more accurately assess whether the lesion invades through the muscularis propria (t3).

Keywords

Endoscopic ultrasound, esophageal tumors, indication

Epidemiological, clinical characteristics and outcome of snake envenomation in northern khuzestan province, southwestern iran

Hamid Kassiri,[1,*] Farzaneh tandis ,[2]

1. School ofHealth, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Abstract

Introduction

Many species of venomous snakes are found in iran. the most medically important species which are responsible for the most snakebite incidents in iran belong to the viperidae family, including vipera lebetina, echis carinatus, pseudocerastes persicus, vipera albicornuta and the elapidae family, especially naja naja oxiana. as a result, snakebite is a considerable health hazard in iran, especially in the rural area of south and southâ€“west of iran. given the high prevalence of snakebite in shush, gotvand, and dezful counties, the present study aimed at investigating the prevalence of snakebite and its epidemiologic factors in these cities in 2013. the results of this study can be used in the prevention and control programs for snakebite, and hence can reduce its incidence in the region.

Methods

The data were recorded in a questionnaire using interviews with the those referring the disease control and prevention units at the health centers. data were analyzed using descriptive statistics and the chi-square test in spss. the significance level was set at $p < 0.05$.

Results

Data were collected from 89 snakebite cases. the age distribution of cases showed that the largest rate of snakebites occurred among the 25-34 (44.9%) year old group. no case was reported in the age group less than 5 years. a total of 92.1% of snakebites were male. the high frequency of snakebites among men can be due to their working outdoor, which increases the risk of snakebites. the most frequent snakebites (21.3%) were happened at june. the highest incidence of snakebite (51.7%) cases was taken place in villages. legs were more at risk of sting by snakes (59.6%). most of snakebite (42.7%) cases occurred in spring. none of the people had a history of snakebite, and hence had no history of receiving the antivenin. most snakebites occurred in the morning and afternoon (from 6 to 12), possibly because rural activities occur at this time of day.

Conclusion

The results of this study indicated that most of the cases happened in june, spring, rural areas and legs. in order to reduce snakebites and their consequences, people should be more informed about snakebite. anti-snake-venom sera should be constantly available in health centers that are geographically more exposed to snakebites. health center staff should update their knowledge of various types of venomous and non-

venomous snakes , as well as snakebites. useful information about snakebites can be provided for people using educational tools such as posters, brochures and speeches. informing people about the importance of immediate treatment of snakebite is effective in reducing the delay in visiting treatment centers.

Keywords

Epidemiology, snakebite, iran.

Epidermal stem cell diseases and treatment

Daniyal Afrazeh,[1,*] Zahra mobin,[2]

1. Young Researchers and Elite Club, Zahedan Branch, Islamic Azad University, Zahedan, Iran
2. Young Researchers and Elite Club, Zahedan Branch, Islamic Azad University, Zahedan, Iran

Abstract

Introduction

Stem cells are uncontrolled cells that can differentiate into specific cells, so stem cells have a lot of potential for regenerative therapies, regenerative therapies are used to stimulate faster healing, and in future they can be used to treat parkinsons and alzheimers, or diabetes, and also they are the source of continuous epidermis rejuvenation, the formation of new hair and hair dyes.

Methods

Data collection has been reviewed through the use of new scientific sites and articles

Results

Keratin layer or the superficial skin layer and the fibroblast cells located in the middle layer of the skin are used for cell therapy burns. since cell therapy is a new and evolving therapeutic approach, the goal of burn cell therapy is to replace tissues that have been damaged with the cells that are cultured in the laboratory environment.

Conclusion

Considering that the epidermis is the main place for skin regeneration, the renewal of the epidermis tissue is due to the activity of the stem cells, and in a short time after the burn in the body. 2 to 4 cmÂ² of unburnt skin from armpit or groin is taken and their cells are cultured in a laboratory, then by using a suitable carrier, after two to four weeks, they cover the burnt skin. these cultured cells make a normal epidermis on the burnt skin.

Keywords

Stem cell, diseases, treatment, regeneration

Epigenetic changes in celiac disease

Fatemeh Khajooee,[1,*] Fatemeh hendijani,[2]

1. Student Research Committee, Faculty of Pharmacy, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
2. Department of Pharmacognosy and Pharmaceutical Biotechnology, Faculty of Pharmacy, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Abstract

Introduction

Celiac disease (cd) is a gluten-sensitive enteropathy mediated by the immune system and considered one of the most complex genetic diseases. genetic and epigenetic factor were known to play role in pathology of the disease (fernandez-jimenez). the rate of concordance in monozygotic twins is about 75 %, it is suggested that approximately 60â€“90% of the variance in liability to the disease had a genetic origin, while environmental factors correspond for 10-40% of disease liability. heritability implies that an epigenetic marker has the ability to persist during development and that is potentially transmitted from generation to generation epigenetic programming, including cpg methylation and histone modifications, and non-coding rna functios occurring during early postnatal development can influence the risk of disease in later life. dna methylation is carried out by a class of enzymes called dna methyltransferases dnmts, which depend on the levels of sadenosylmethionine (sam). sam acts a methyl donor for over 200 methylation levels and is converted to s- denosylhomocysteine (sah), an inhibitor of methylation reactions. in this review we were going to review all studies in which epigenetic changes were investigated in celiac disease.

Methods

In order to find related studies in the literature, pubmed and scopus databases was searched. following key terms was applied:("non coding rnas" and "celiac disease") and ("dna methylation" and "celiac disease") and ("histone modification" and "celiac disease") . no limitation for language and year of publication was applied in the search. all studies in which epigenetic changes in celiac disease were entered for data extraction.

Results

21 related studies were found after database search. all full texts were screened for data extraction. dna methylation at 8 nfkb-related genes and non-coding rnas were found to affect celiac disease. nfkb is a major mediator of il15, which is able to decrease claudin-2 levels in epithelial tight junction structures and leads to augmented paracellular permeability, on the other hand genetic polymorphisms in key nfkb-mediators such as rel and tnfaip3 have been associated with susceptibility to cd. other studies also showed that of the 22 genes that are constitutively overexpressed in cd mucosa, 7 (ikbkb, ikbkg, irak1, map3k14, nfkb2, nfkbie and traf2) are core proteins coding genes. another three genes are members of the mapk

family, which has been demonstrated central to the nfkb system by direct interaction, uniprot annotation and manual curation approaches. the association of cd with genes that affect 3â€™ utr sequences could lead to a decreased stability or increased degradation of the respective mrna. on the other hand, they could promote the inhibition of protein translation by altering binding sites of rnas or affect binding sites to mirnas.

Conclusion

Dna methylation at nfkb-related genes and map kinase family and also function of non-coding rnas can affect pathology of celiac disease and control of immuneresponse. these results could humbly help configuring a novel point of view, to elucidate how epigenetic alterations participate in the development and course of cd and also how their modification help to find new effective treatments.

Keywords

Non coding rnas , celiac disease , dna methylation , histone modification , epigenetics

Epigenome targeting approaches for colorectal cancer

Parian Shirkhani,[1] Fatemeh behnam rassouli,[2,*]

1. Department of Biology,Faculty of Science,Ferdowsi University of Mashhad
2. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

Colorectal cancer (crc) is a life threatening disease with high prevalence in industrial and developing countries. epigenetic modifications are early events that happen during colorectal tumorigenesis, and contribute to diverse features of malignant phenotype.

Methods

Number of recent review articles included key words epigenetic modification, colorectal cancer and cancer cell self-renewal were extracted from databases pubmed and web of science.

Results

The pathology of colorectal adenomas is associated with overactivity of cox-2, epidermal growth factor receptor (egfr), and wnt and kras pathways, while metastatic colorectal carcinoma is mainly caused by inactivation of tumor suppressor gene tp53 and downregulation of tgf-ÃŸ signaling. epigenetic alterations frequently reported in cancers include aberrant methylation of cpg islands that often result in repression of tumor suppressor genes, and abnormal histone modifications that cause genomic instability. reactivation of self-renewal signaling, including shh, notch, and tgf-ÃŸ/stat3, by epigenetic changes is observed in most cancers. accordingly, direct targeting of such pathways, for instance wnt in crc, might be eï¬€ective against both stem and dediï¬€erentiating cancer cells. a number of beneficial wnt inhibitors that have been developed include drugs targeting tankarases 1 and 2, porcupine, and disheveled. nevertheless, more ideal therapeutics could be those affecting downstream targets that have crosstalk with other signaling cascades such as tcf/lef, twist and myc.

Conclusion

To sum up, approaches that reverse epigenetic modiï¬• cations associated to self-renewal of cancer cells hold great promise for crc treatment.

Keywords

Epigenetic modification, colorectal cancer, self-renewal

Evaluate the changes in the expression of casc2 gene and its possible effect on the notch signalling pathway in acute lymphoblastic leukemia of the jurkat e6.1 cell line under treatment with ni

Fatemeh Ghorbany,[1,*] Golnaz asaadi tehrani,[2] Sina mirza ahmadi,[3]

1. azad university of zanjan
2. Azad university of zanjan
3. Azad university of zanjan

Abstract

Introduction

Investigating the relationship between changes in the expression of the casc2 gene ,in the acute lymphoblastic leukemia cell line jurkat e6.1 treated with thiosemicarbazone ni chemotherapy drug background and purpose: leukemia is a type of cancer that usually starts with bone marrow. all is the most common cancer in children and about a quarter of all cancers among people under the age of 15 years. in recent years, a lot of attention has been paid to finding new anti-cancer compounds containing metallic ions. dipyridine ketone-derived thiosemicarbazone is a strong and selective anticancer agent that overcomes drug resistance and is currently undergoing pre-clinical progress. antimicrobial activity of this new thiosemicarbazone by (1) ribonucleotide reductase inhibition (2) oxidation-reduction activities of thiosemicarbazone complexes with iron (fe) and copper and nickel and the formation of cytotoxic free radicals are very effective and is one of the drugs used to treat various types of leukemia. the aim of this study was to evaluate the changes in the expression of casc2 gene and its possible effect on the notch signalling pathway in acute lymphoblastic leukemia of the jurkat e.6.1 cell line under treatment with thiosemicarbazone nickel

Methods

The ni drug was prepared at concentrations (0.5 and 1 micromolar) and the jurkat e.6.1 cancer cells were treated with the thiosemicarbazone ni after the cell passage in groups and time (24 hours). rna extraction and cdna synthesis were performed and the expression of the lncrna casc2, was evaluated by realtime pcr. finally, the results were analyzed by relative quantitative measurement and rest software.

Results

The results of this study showed that casc2 showed a significant increase ($p < 0.001$) during 24 hours of treatment with nickel in concentrations (0.5 and 1 macromolecular), and the highest increase in expression at a concentration of 0.5 macromolecular was observed

Conclusion

The expression of the tumor suppressor gene ,casc2 affected by the ni drug , it increases the expression of the gene, which is related to the time and concentration of the nickel for this gene. according to the results, it can be seen that concentrations (0.5 and 1 micromolar) of nickel in the 24-hour period of the concentrations and optimal time they are the effect of the drug. the results of this study can be used to control and treat optimal treatment of leukemia in humans by identifying molecular pathways in the function of the chemotherapy drugs used, as well as introducing new drugs and preventing uncontrolled growth of jurkat cancer cells

Keywords

All, casc2 lncrna,, thiosemicarbazones ni

Evaluating antibacterial activity of copper nanoparticles biosynthesized by aqueous extract of capparis spinosa fruit

Ardalan Maleki chegeni,[1] Hossein mahmoudvand,[2] Katrin ebrahimi,[3,*]

1. Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Department of Biology, Payame Noor University, Tehran, Iran

Abstract

Introduction

This study was conducted to synthesize the copper nanoparticles using the aqueous extract of capparis spinosa and also evaluated their antibacterial activities against some pathogenic bacterial strains.

Methods

Uv-vis spectroscopy analyses, fourier transform of infrared (ftir), scanning electron microscopy(sem), and energy dispersive x-ray (edx) were used to recognize the synthesized nanoparticles. the methods for evaluating the antibacterial activity of the synthesized copper nanoparticles was using broth microdilution against some gram-positive and gram-negative bacteria and disk diffusion method. after adding the extract to the copper sulfate solution, the color of the solution changed from light blue to yellowish green. existence of a maximum peak at the wavelength of 414 nm confirmed the formation of the copper nanoparticles. ftir spectrum analysis showed that the factor groups created a coating extract on the surface of the nanoparticles.

Results

Scanning electron microscopy demonstrated the size of the particle between 17 and 41 nm. the findings showed that staphylococcus aureus and bacillus cereus as gram-positive bacteria were most susceptible to synthesized copper nanoparticles in comparison with the gram-negative bacteria (klebsiella pneumoniae, and escherichia coli).

Conclusion

The obtained findings demonstrated that the aqueous extract of c.spinosa acts as a reviver and stabilizer factor. the synthesized copper nanoparticles demonstrated activity against both gram-positive and gram-negative bacteria.

Keywords

Nanoparticles; antimicrobial; green synthesis; copper

Evaluating the antioxidant status and oxidative stress in type 1 diabetes patients

Nasim Amiri kojuri,[1,*] Amir hossein esmaeili,[2]

1. Department of Medical Science, Islamic Azad University, Babol Branch, Babol, Iran
2. Department of Medical Science, Islamic Azad University, Babol Branch, Babol, Iran

Abstract

Introduction

In type 1 diabetes, the increase in oxidative stress in body appears as the result of the increase in free radicals production or the disorder in the antioxidant defense. evaluating the antioxidant status and oxidative stress in type 1 diabetes patients is the aim of present study.

Methods

In this study 30 type 1 diabetic patients referring to the shahid beheshti hospital in nowshahr as well as 30 healthy persons aged 14-30 years old were studied. blood sample was taken from all participants when they were on fast state, then the serum separation was done. the glucose serum density, cholesterol, triglyceride, ldl â€“ c, hdl- c, uric acid, h2o2, glutathione measured. the datas were evaluated and assessed using tâ€“ test.

Results

Cholesterol and triglyceride density were significantly higher in patients comparing with healthy people. the hdl-c level showed a decrease in the patients significantly. the glucose level, ldl-c, uric acid, glutathione and h2o2 in both two groups had no significant change.

Conclusion

Regarding the results, the type 1 diabetic patients status has to be considered for the oxidative stress. also, natural antioxidants are recommended to be used.

Keywords

Antioxidant, oxidative stress, type 1 diabetes

Evaluating the correlation between increasing age of pregnancy and sycp3 gene mutation in pregnant women of tehran province

Mahdiyeh Pirayesh,[1,*] Ali barzegar,[2] Ahmad ebrahimi,[3]

1. Sana Institute, Sari
2. 2Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University, Sari
3. Cellular and Molecular Research Center, Obesity Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Normal chromosome segregation particularly depends on the formation of synaptonemal complex (sc) during prophase of meiosis i. maternal age is strongly positively associated with the prevalence of aneuploidies, including down syndrome, in spontaneously aborted fetuses and newborns (1). sycp3 gene mutations have been shown to generate an aberrant synaptonemal complex in a dominant-negative manner and to contribute to abnormal chromosomal behavior that might lead to recurrent miscarriage (2). in present research, we studied common mutations detected in exon 8 of sycp3 gene in pregnant women who conferred to genetics laboratory of mohheb yas hospital in tehran province.

Methods

Sycp3 gene single nucleotide polymorphisms was examined using pcr and sequencing in amniotic samples of 50 pregnant women with a history of embryonic aneuploidy and recurrent miscarriages because of chromosomal abnormality and 50 pregnant women with normal fetus and no history of miscarriage and abnormal embryonic karyotype. statistical analysis was performed by logistic regression method and $p<0.05$ was considered as significant level.

Results

More than 20 single nucleotide polymorphisms found in intronic boundaries of patients, 2 of which is reported in this report for the first time. the -33 c>a mutation was revealed in 62% of patients. statistical analysis showed that there is significant relationship between presence of -33 c>a nucleotide polymorphism and the age of pregnant mother ($p < 0.05$).

Conclusion

Pregnancy at higher age is attributed to sycp3 gene polymorphism which may be a cause for chromosomal nondisjunction leading to trisomic feature. screening for this single nucleotide polymorphism especially in higher age of pregnant mother may be helpful as a marker to prevent occurrence of potentially trisomic chromosomal abnormalities.

Keywords

Pregnancy, age, sycp3, polymorphism

Evaluation and compare the quality of nursing care from the view of nurses and patients of hematology and oncology wards in instructional hospitals in zahedan city

Mahan Mirmortazavi,[1,*] Fatemeh kiani,[2]

1. MSc Student of Community Health Nursing, Student Research Committee, Islamic Azad University, Isfahan (Khorasgan) branch
2. Community Nursing Research Center, Zahedan university of medical sciences

Abstract

Introduction

One of the most important elements of health care services is the quality of care. among them, nurses are considered as the most important people in providing nursing care. on the other hand, patients as caregivers can provide health care providers with valuable insights into the quality of nursing care. therefore, this study was conducted to evaluate and compare the quality of nursing care from the perspective of nurses and patients in the oncology and hematology department of educational hospitals in zahedan in year 2018.

Methods

This is a cross-sectional study. 36 nurses participated in the study using a census sampling method and 33 patients enters the study too. in order to collect data, a questionnaire for demographic information and qualpac questionnaire was used to assess the care process and quality of care that was completed and then entered into spss software version 22. using descriptive statistics (frequency distribution tables, charting, determination of central indicators and dispersion) and analytical statistics (independent t-test and pearson correlation test) were analyzed at 95% confidence level.

Results

According to the results, the mean score of the qualpac questionnaire for nurses was 86.72 Â± 17.99 and 78.99 Â± 9.45, respectively, and the difference between the two scores was significant (p = 0.02). according to the pearson test, there was a positive and significant correlation between the number of hospital weeks and the average score of the questionnaire (p = 0.02 and r = 0.343). also, there was a positive and significant correlation between the number of hospital admissions and the mean scores of the questionnaire (p = 0.032, r = 0.357). no significant relationship was found between the other measured variables with the score of the questionnaire.

Conclusion

Considering the fact that the average quality of nursing services from patients point of view is lower than the nurses viewpoint, more attention should be paid to improving the quality of nursing care from patients.

Keywords

Health care quality, oncology, hematology

Evaluation of nat8l expression in alzheime ,s rat model after hadscs intravenous administration

Mina Eftekharzadeh,[1,*] Milad kazemiha,[2] Marjan shariatpanahi,[3] Arash sarveazad3,[4] Fatemeh moradi,[5] Hamidreza asgari,[6]

1. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran
2. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran
3. Department of Toxicology & Pharmacology, School of Pharmacy, International Campus, Iran University of Medical Sciences, Tehran, Iran
6. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

In the present study, we transplanted human adipose-derived mesenchymal stem cells by intravenous injection in hippocampus of alzheimer,s disease (ad) rat model. the accumulation of Î²-amyloid peptide (aÎ²) and neuronal cell death in the brain play an important role in memory and learning dysfunction and cognitive impairment in alzheimer,s disease.the present study was designed to evaluate alteration of n-acetyltransferase 8 like (nat8l) expression after intravenous administration of human adipose derived stem cells (hadscs) in alzheimer,s disease (ad) rat model.

Methods

In this study, 32 male rats were used in 4 groups: control, sham, ad rat model, and hadscs treatment group. we used morris water maze (mwm) for evaluating behavioral changes and western blot for assessing nat8l expression

Results

Behavioral results showed that the spatial memory improved after hadscs injection in ad rat model. consequently, there was also a significant increase in nat8l expression in hadscs treatment group comparing to ad rat model.

Conclusion

According to our results in this study, the mechanism of protective effects of hadscs in improving memory might be related to elevation of nat8l expression.

Keywords

Alzheimer,s disease -hadscsc-nat8l-

Evaluation of a gene panel on ovulation induction in pcos patients

Tahereh Javid tajrishi,[1] Seyed ahmad mousavi,[2] Ali asghar akhlaghi,[3] Marzieh shiva,[4] Mehdi totonchi,[5] Parvaneh afsharian,[6,*]

1. 1.Department of Molecular Genetics, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and culture, Tehran, Iran. 2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
2. 3.Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.
3. 4. Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
4. 5. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
5. 2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran. 3.Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.
6. 2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.

Abstract

Introduction

Pcos is the most prevalent endocrine disorder in women and a major cause of anovulatory infertility. treatment of pcos aims to restore ovulation which consists of clomiphene citrate (cc), aromatase inhibitors (ais), recombinant fsh (rfsh) and insulin sensitizers (such as metformin). drug metabolizing genes polymorphisms might alter the function of drug-metabolizing enzymes or targets leading to a different response to their ovulation induction effects. the aim of this study was to investigate a pharmacogenetic panel for drug response prediction in pcos patients.

Methods

A total of 12 single nucleotide polymorphisms in four genes [cyp2d6, cyp19a1, fshr, and stk11] were investigated in 79 pcos patients (143 cycles) and 87 healthy women with normal oogenesis (133 cycles) who have been in controlled ovulation induction cycles and were taken clomiphene citrate or letrozole in each cycle. all the ovulation induction cycles (276 cycles) were categorized based on follicle count with a minimum size of 15 mm confirmed by ultrasonography. bioinformatics and statistical analysis were performed in r environment and stata software to evaluate the relationship between significant haplotypes and drug response.

Results

According to haplotype and regression analysis, in pcos patients with a variant haplotype in cyp19a1 gene (rs2414096-a/(ttta) 12 tandem repeats/tct trinucleotide insertion/rs700519-c) a significant 1.4-fold decrease in average number of follicles with a minimum size of 15 mm was detected in comparison with the control group ($p<0.05$). nevertheless this relationship was not influenced by the drug types.

Conclusion

No significant associations between ovulation induction and polymorphisms of cyp2d6, cyp19a1, fshr, and stk11 genes were confirmed in pcos patients comparing to healthy controls. however, average number of follicles larger than 15 mm was significantly lower in patients with cyp19a1 polymorphism in comparison with the control group ($p<0.05$).

Keywords

Pcos, ovulation induction, polymorphism, haplotype

Evaluation of aÎ² deposits in hippocampus of ad rat model after intravenous injection of hadscs by immuno- and thioflavin s- costaining

Mina Eftekharzadeh,[1,*] Maryam doshmanziari,[2] Marjan shariatpanahi,[3] Arash sarveazad3,[4] Fatemeh moradi,[5]

1. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran
2. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran
3. Department of Toxicology & Pharmacology, School of Pharmacy, International Campus, Iran University of Medical Sciences, Tehran, Iran
4. Colorectal Research Center, Iran University of Medical Sciences, Tehran, Iran
5. Department of Anatomy, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Alzheimer,s disease (ad) is a progressive neuropsychiatry disorder that gradually deteriorates memory and behavioral functions. amyloid beta (aÎ²) is considered as the most toxic substances in the ad brain. aÎ² immunofluorecent staining distinguishes fibrillar and non-fibrillar aÎ², whereas thioflavin-s (thio-s) identifies the Î²-pleated fibrillar amyloid form of ad. the present study was designed to evaluate aÎ² deposits in hippocampus of ad rat model after intravenous injection of human adipose derived stem cells (hadscs).

Methods

Twenty-four male rats were used in 4 groups; control, sham, ad rat model, and hadscs treatment group. the hadscs characterization was confirmed by flowcytometry technique. an immuno- and thioflavin s-costaining (double staining method) wasutilized for detecting aÎ² plaques in ad rat model following injection of hadscs.

Results

Statistical analysis revealed that administration of hadscs significantly decreased immunoreactive and thio-s positive plaques number in ad group (###pvalue< 0.001). we also found that the plaques detected by anti-beta amyloid antibody were significantly more than plaques which distinguished by thio-s in all the groups (f [3, 40] = 0.15, p =0.928). conclusion: consequently, our results showed that the hadscs had effective role in decreasing amyloid aggregation following migration to the site of injury.

Conclusion

As aÎ² toxicity is the major reason of neuronal death in ad, hadsc may be a promising candidate for ad therapy due to its high potential for clearance of aÎ² deposits.

Keywords

Alzheimer ,s disease; thioflavin; amyloid beta-protein; stem cell transplantation

Evaluation of antbacterial activities of ethanolic and hydroalcoholic extract of sumac (rhus coriaria) on cariogenic oral pathogens

Sahram Dadelahi,[1,*] Yasamin sayed hajizadeh,[2] Saba hajazimian,[3]

1. Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran
2. Department of Microbiology, Urmia Branch, Islamic Azad University, Urmia, Iran
3. Department of Genetics, Tabriz Branch, Islamic Azad University, Tabriz, Iran

Abstract

Introduction

Dental caries is an infectious disease and various microorganisms are involved with its progression. antibacterial agents used against oral pathogens have side effects and their excessive use has caused drug resistance. therefore, identification of natural compounds and medicinal plants with antibacterial activity has been considered by the researchers. the sumac (rhus coriaria) is one of the native plants of iran, which is widely used as a tasting and flavoring food among iranians. therefore, the aim of this study was to evaluation of the antimicrobial activity of ethanolic and hydroalcoholic extract of sumac on oral pathogens of streptococcus mutans, lactobacillus rhamnosus and actinomyces viscosus.

Methods

In this study, ethanolic and hydroalcoholic extracts of sumac were prepared by maceration method. antibacterial activity of prepared extracts was evaluated by minimum inhibitory concentration (mic) and minimum bactericidal concentration (mbc) methods on standard strains of s. mutans, l. rhamnosus and a. viscosus.

Results

The obtained results showed that the most antibacterial effect of ethanolic and hydroalcoholic extract of sumac was related to s. mutans, l. rhamnosus and a. viscosus, respectively. however, the antibacterial activity of hydroalcoholic extract was higher than ethanolic extract.

Conclusion

In general, it can be said that ethanolic and hydroalcoholic extracts of sumac in high concentrations has an appropriate antibacterial activity, and can be used in the pharmaceutical industry to production of antibacterial agents and disinfectants compounds to controls of infectious diseases and dental caries.

Keywords

Antimicrobial, extract, sumac, oral pathogens

Evaluation of anti-cancer effect of almond hull extract against osteosarcoma cells

Ameneh Khany,[1] Azadeh meshkini,[2,*]

1. Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

Plants are considered as primary resources for the producing effective drugs in the treatment of cancer owing to the possession of active compounds. almond hulls (alh), as an agricultural waste material, contain a high level of polyphenols and possess remarkable antioxidant. considering the anti-cancer effects of antioxidants, it was hypothesized that alh extract has cytotoxic effect against tumor cells.

Methods

The total phenolic and flavonoid content of alh were evaluated by the folineciocalteu assay and aluminum chloride reagent, respectively. antioxidant activity was assessed by 2,2-diphenyl-1-picrylhydrazyl (dpph). the identification of compounds was performed by gas chromatographyâ€“mass spectrometry (gc-ms). cells viability was evaluated by (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) (mtt) and the mode of cell death was determined by acridine orange and ethidium bromide (ac/etbr) staining.

Results

Alh extract demonstrated a concentration dependent scavenging activity by quenching dpph radicals with sc50 value of 25 Âµg/ml. based on the colorimetric techniques, the total content of phenolic and flavonoid compounds at 0.625 mg/ml were 0.0645mg galic/g extract acid and 0.07254mg catechin/g extract, respectively. gc-ms analyses showed that almond hull extract contains phenolic compounds such as methoxysalcylic acid, 2,6 dimethyl phenol, and sinapic acid and flavonoid compounds such as quercetin and catechin. mtt assay revealed that almond hull extract inhibited the proliferation of osteosarcoma calls (saos-2) in a concentration dependent manner. ic50 value was calculated 123.7 Âµg/ml. cell cycle analyses showed that more than 19% of treated cells were arrested in g2/m phase as compared with that in untreated sample (14%). moreover, it has been revealed that the reduction in the proliferation is accompanied with the cell death. ac/etbr staining demonstrated that the apoptosis is a dominant mode of cell death in alh-treated cells.

Conclusion

The results showed that alh has high antioxidant activity and cytotoxic effects against osteosarcoma cells. therefore, alh could be considered as an candidate for the treatment of cancer, however further elaborate investigations are required to establish the in vivo efficacy of alh.

Keywords

Almond hull, antioxidant, anti-cancer, osteosarcoma.

Evaluation of antibacterial effects of salvia officinalis and calendula officinalis l. hydroalcoholic extracts on streptococcus salivarius (ptcc 1738) and pseudomonas aeruginosa (ptcc 1707)

Mohammad karim Khosropanah,[1,*] Sirvan bahrami,[2] Kambiz davari,[3]

1. 1. Assistant professor of plant physiology, Department of Biology, Islamic Azad University, Sanandaj branch.
2. 2. M.Sc Student of Microbiology, Department of Biology, Islamic Azad University, Sanandaj branch
3. 3. Assistant professor of Microbiology, Department of Biology, Islamic Azad University, Sanandaj branch

Abstract

Introduction

Infectious diseases are one of the great challenges of medical science in the 21st century, and, as a result, the production of new antibiotics is increasing day by day. at the same time, the increasing spread of bacterial resistance to antibiotics has made it difficult and costly to treat infectious diseases. hence, coping with the drug resistance phenomenon in order to reduce its incidence or to limit resistant microbial agents is of great importance. also, unwanted side effects are one of the biggest treatment problems. in order to solve these problems, there is a great incentive to search and provide antimicrobial compounds, especially from plant origin. natural compounds of plants can be used as antimicrobial agents in the treatment of infections or as food preservatives. accordingly, and considering the use of sage and marigold in the treatment of respiratory and skin infections in traditional medicine, respectively, the aim of this study was to investigate the antimicrobial effects of hydroalcoholic extract of these plants on streptococcus salivarius and pseudomonas aeruginosa .

Methods

In this study, disk diffusion method was used to determine the antimicrobial ability of extracts. in this step, 40, 60 and 80 Î¼l of extracts were used at 0.1 g / ml concentration. in the next step, the minimum inhibitory concentration (mic) and minimum bactericidal concentration (mbc) of the extracts were investigated with serial dilution method. at the end, the antimicrobial activity of the extracts was compared with antibiotics specific to each microbial strain.

Results

The results showed that the extract of both plants had an antimicrobial effect on the gram-positive bacterium, s. salivirus. the highest diameter of zone of inhibition was related to the amount of 80 Î¼l of marigold hydroalcoholic extract with a mean diameter of 17.33 Â± 0.57 mm . this value for the extract of sage was 12.33 Â± 0.87 mm. it was also found that the extract of the sage in the studied amounts did not affect the growth of the gram negative bacterium, p. aeruginosa, while the inhibition zone of the marigold extract on this bacterium was 13.33 mm in diameter. also, the minimum inhibitory concentration and the

minimum bactericidal concentration of the marigold extract on s. salivarius were 3.125 and 25 mg/ml, respectively, and these amounts for p. aeruginosa were 25 and 50 mg/ml, respectively. a comparative study on the effect of specific antibiotics on each bacterial group showed that p. aeruginosa had the lowest resistance to ciprofloxacin with a zone of inhibition diameter of 40.66 and the highest resistance to sulfamethoxazole with a diameter of 10.38 mm. it was also found that amoxiclav, ampicillin and clindamycin antibiotics do not have an effect on the growth of p. aeruginosa in disk diffusion method. the effect of gentamicin, nalidixic acid and tobramycin on s. salivarius was not significantly different and the relative diameter of the inhibition zones was at range of 10.66 to 11.34 mm.

Conclusion

Based on the results, although, the extract of the sage did not affect the growth of p. aeruginosa, which could be due to the type of the compounds of this extract and its inability to penetrate the agar, it can be suggested that, the hydroalcoholic extract of marigold and sage have a good potential to be used as natural antibiotics. however, further proof is needed.

Keywords

Antibacterial effects, sage, marigold, streptococcus salivarius, pseudomonas aeruginosa

Evaluation of anticancer activities of lactobacillus casei ut1 isolated from north west of iran traditional curd, on colorectal tumor cells hct116

Mitra Rabiei,[1] Gholamreza zarrini,[2,*] Majid mahdavi,[3]

1. Department of Biology, Faculty of Natural Science, University of Tabriz
2. Department of Biology, Faculty of Natural Science, University of Tabriz
3. Department of Biology, Faculty of Natural Science, University of Tabriz

Abstract

Introduction

Colorectal cancer is one of the most common cancers in the world. much attention has been given to nutritional supplements that can alter intestinal flora as factors preventing colon cancer. some studies show that fermented products of some strains of lactobacilli could reduce the risks of certain types of cancer and inhibit the growth of certain tumors in vitro assays, animal studies, human studies, epidemiological and intervention studies. during this project, due to the major role of probiotics to control intestinal health, anti-cancer effects of cytoplasmic extract of lactobacilli isolated from traditional dairy products, on hct116 colorectal cancer cell lines examined.

Methods

Traditional dairy products samples were collected from the region of azarbayjan and the suspensions were cultured in mrs agar medium. the isolates were identified by biochemical and molecular methods. supernatants of the isolates cultures were collected and their cytotoxicity was evaluated on hct116 cancer cells by mtt assay, fluorescent staining and cell cycle assay.

Results

Cell assays results showed that supernatant of ut1 isolate shows inhibitory of cancer cells proliferation, as well as apoptosis and cell death activity ($p<0.05$). proper method and time for release of metabolites can vindicate the significant cytotoxic effect of metabolites obtained from isolates in this project compared to other studies. the results showed that the isolate was 99% compatible with lactobacillus casei.

Conclusion

Results achieved in this study suggest that the use of some metabolites of lactobacilli can candidates for studies on compounds having anti-cancer effect.

Keywords

Lactobacillus, anticancer effects, hct116 cancer cells.

Evaluation of anticancer effects of lactobacillus paracasei sp. st1 isolated from azerbaijan traditional dairy product on colorectal tumor cells hct116

Mitra Rabiei,[1] Gholamreza zarrini,[2,*] Majid mahdavi,[3]

1. Department of Biology, Faculty of Natural Science, University of Tabriz
2. Department of Biology, Faculty of Natural Science, University of Tabriz
3. Department of Biology, Faculty of Natural Science, University of Tabriz

Abstract

Introduction

Today, many of the natural health products have attracted the attention of scientists. natural health products may have anticancer effects due to the probiotic activity of their existing organisms. lactic acid bacteria are the most important group of microorganisms used in food fermentation, that among them, the genus lactobacillus is a very significant microorganism. there is evidence that the use of lactobacillus species reduces the risk of cancer and these bacteria have anticancer effects. this project was carried out with a focus on reviewing the anti-cancer activity of lactobacilli in the "shoor" traditional dairy product.

Methods

In this study, shoor samples were collected from the region of azarbayjan and the suspensions were cultured in mrs agar medium. the isolates were identified by biochemical and molecular methods. supernatant was extracted by mrs broth medium and its cytotoxicity was evaluated on hct116 cancer cells by microscopy and mtt assay.

Results

Cell assays results showed that supernatant of st1 isolate had a significant anticancer effect on cancer cell line ($p<0.05$). the results showed that the isolate was 99% compatible with lactobacillus paracasei.

Conclusion

Results achieved in this study indicate that lactobacilli in azerbaijan traditional dairy products can be suitable candidates to find effective anti-cancer compounds. paying attention to traditional dairy products and encouraging people to use probiotics, can be useful in increasing the health of the community. in addition, it is very important to study the application of these microorganisms as starter.

Keywords

Probiotics; lactobacillus; hct116 cells; cytotoxicity

Evaluation of antifungal activities of the essential oil and various extracts of nigella sativa and its main component, thymoquinone against pathogenic dermatophyte strains

Saghar Modaresi,[1] Hossein mahmoudvand,[2] Asghar sepahvand,[3] Seyyed amin ayatolloahi mousavi,[4,*]

1. Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
2. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran
4. Department of Medical Parasitology and Mycology, Kerman University of Medical Sciences, Kerman, Iran

Abstract

Introduction

Plant extracts and plant-derived compounds are valuable sources as folk medicine for the treatment and prevention of a wide range of diseases including infectious diseases. in the present study, the antifungal activities of the essential oil and various extracts nigella sativa and its active principle, thymoquinone against trichophyton mentagrophytes, microsporum canis and microsporum gypseum as pathogenic dermatophyte strains have been evaluated. in addition, the cytotoxic effects of n. sativa against murine macrophage cells were determined.

Methods

In this study, the antifungal activity was studied by disk diffusion method and assessment of minimum inhibitory concentration (mic) of extracts using broth macrodilution method. in addition, the cytotoxic activity of n. sativa was evaluated by colorimetric assay (mtt). the components of the n. sativa essential oil were also identified by gas chromatography/mass spectroscopy (gc/ms) analysis.

Results

The results showed that the essential oil and various extracts of n. sativa particularly thymoquinone have potent antifungal effects on t. mentagrophytes, m. canis and m. gypseum as pathogenic dermatophyte strains. in the assessment of the cytotoxicity activity, it could be observed that n. sativa had no significant cytotoxicity in the murine macrophages at low concentrations. while, thymoquinone in comparison with essential oil and various extracts of n. sativa showed higher cytotoxicity on murine macrophage cells. in the gc/ms analysis , thymoquinone (42.4%), p-cymene (14.1%), carvacrol (10.3%) and longifolene (6.1%) were found to be the major components of n. sativa essential oil.

Conclusion

The findings of this study suggest a first step in the search of new antiderma-tophytic drugs and aid the use of n. sativa seeds in the traditional medicine for dermatophytic infections.

Keywords

Black cumin; microsporum canis; microsporum gypseum; trichophyton mentagrophytes

Evaluation of antioxidant activity and cytotoxicity of an ethanol extract of cannabis sativa on human breast cancer mda-mb-231 cell line

Hedyeh Parvaneh,[1,*] Babak babakhani,[2] Mahdieh houshani,[3]

1. Department of Cellular and Molecular Biology, Islamic Azad University, Tonkabon Branch, Tonkabon, Iran
2. Department of Biology, Islamic Azad University, Tonkabon Branch, Tonkabon, Iran.
3. Department of Plant Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran

Abstract

Introduction

Breast cancer is the second most common cancer in the women. natural products extracted from medicinal plants can play an important role in cancer treatment. this study investigated antioxidant and cytotoxic activity of an ethanol extract of cannabis sativa in a human breast cancer cell line.

Methods

Mda -mb-231cell line was cultivated and proliferated. then, the cells exposed to different concentrations of c. sativa (25, 50, 100 and 200 Î¼g/ml) and were incubated for 24, 48, and 72 hours. after the incubation period, the colorimetric mtt method was used to determine cytotoxicity. the total phenol, flavonoid, anthocyanin, and carotenoid contents of the extract as well as the antioxidant activity using dpph method were determined.

Results

The ethanol extract significantly decreased growth of cells compared to control (pË,0.05). the maximum growth inhibition obtained 96.99% at the concentration 200 Î¼g/ml. the extract of c. sativa is a rich source of antioxidant compounds. the phenol and carotenoid compounds of the extract were equal to 29.94Â±0.12 mg galic acid/g of dried weight, and 31.93Â±0.18 mg galic acid/g of wet weight of the plant, respectively. furthermore, the extract significantly inhibited dpph radicals and the highest inhibitory effect (51%) was obtained by 2.3 mg/ml of the extract.

Conclusion

These results suggest that the ethanol extract of cannabis sativa has significant antioxidant and cytotoxic activity against mda-mb-231 cell line. further studies are needed to clarify potential anticancer effects of its ingredients.

Keywords

Antioxidant, cannabis sativa, mda-mb-231 cell line, mtt assay

Evaluation of apoptosis and necrosis induction by chitosan based oxaliplatin using mtt and real time pcr methods in colon cancer cell line

Zohreh Alimadadi,[1,*]

Abstract

Introduction

oxaliplatinum is one of the drugs used to cancer therapy, but it also has side effects. one of the best sterategy is the use of nano gels, especially chitosan. the aim of this study was cyctoxic effect of chitosan nanogel encapsulated oxaliplatin on colon cancer cell line (ht29) and bax and bcl2 gene expression.

Methods

In this study, cytoxic effect of chitosan nanogel encapsulated oxaliplatin on ht29 cell line was assessed via mtt technique after 24 hours. subsequently, after treatment of ht29 cells with ic50 cocentration of chitosan nanogel encapsulated oxaliplatin, the cell rna was extracted and converted to cdna. finally, bax and bcl2 gene expression comparing to Î²-actin (refference gene) using real time pcr was analysed.

Results

Treatment of ht29 cells with 100, 50, 25, 12.5, 6.25, 3.125 Âµg/ml chitosan nanogel encapsulated oxaliplatin showed the 100 Âµg/ml had more cytoxic effect and it was significant ($p<0.001$). the ratio of expression of bax band bcl2 genes to reference genes was up-regulated and down-regulated (59/0Â±3.54,42/0Â±16/0001).

Conclusion

based on obtaind data, in can be concluded that due to the induction of apoptosis by oxaliplatin, this nanogen can be used in colon cancer treatment.

Keywords

Oxaliplatin, apoptosis, chitosan, real time pcr oxaliplatin, apoptosis, chitosan, real time pcr

Evaluation of biosensors classification for detection of osteoporosis

Mohammad Hadian jazi,[1] Elham sheikhi,[2,*]

1. Student Research Committee, Islamic Azad University Tehran Medical Branch
2. Department of Clinical Biomedical Engineering, Tehran Medical Sciences Branch, Islamic Azad University

Abstract

Introduction

Bone is an active organ with the capacity of continuous remodeling throughout adult life. bone health depends on how the cellular mechanisms in the body create balance in the remodeling process. osteoporosis is the foremost common metabolic bone disorder characterized by a basic disintegration of bone tissue driving to an expanded chance of break. it is a silent disease in numerous circumstances may causes a feared complication such as hip and break with is related expanded morbidity and four times higher mortality within the elderly population so being a critical public health issue of the elderly, it is predictable and by early detection the heavy burden cost that imposes on the society and the one of devices that help to early detection of osteoporosis is biosensor. in fact biosensors are devices during which thereâ€™s a coupling of biological detector whit a detector system employing a transducer. biosensors discuss with â€˜easy to useâ€™ devices that are developed to assist in the early diagnosing and treatment of malady.

Methods

Given the fact that osteoporosis is a disease of the disease, and there are currently no proper methods available, we have looked into this disease and solutions. it should be noted that by first examining existing methods and studying several articles on osteoporosis, and the current methods of diagnosis, we conclude that these methods are not suitable for diagnosis, and the patient becomes aware of his illness when one of his members is seriously injured. in the sequel, we examined the diagnostic biosensors and their structure, and finally, bone biosensors were expressed. biosensors are nowadays ubiquitous in biomedical diagnosis as well as a wide range of other areas such as point-of-care monitoring of treatment and disease progression, environmental monitoring, food control, drug discovery, forensics and biomedical research. a wide range of techniques can be used for the development of biosensors. their coupling with high-affinity biomolecules allows the sensitive and selective detection of a range of analytes.

Results

Current advancements in bone biosensors recently, technological advancements in biosensors have permitted assessment of the biomechanical quality moreover as the metabolic standing of bone. these investigations and improvements have been increased the operation of obtainable biosensors and developed inexpensive, fast, reliable and sensitive point-of-care devices. in spite of the great sensitivity

and selectivity, the use of such techniques has huge limitations because of the high equipment cost and the labor involved. prevention of bone deterioration in early stages highly depends on the sensitivity of the bone to mechanical signals, which is crucial in defining, maintaining, and recovering bone mass. measuring bone surface strain in-vivo would be invaluable for studying the structural effects of osteoporosis. for this purpose, in this section a number of biosensors have been proposed.

Conclusion

Osteoporosis, named as a â€œsilent killerâ€• is turning into a lot of prevailing bone degeneration illness in society. besides the present clinical treatment of pathology, it might be a lot of useful to develop associate degree in place sensing element to notice the strain of living bones or notice specific proteins (biomarkers or signal molecules within or outside of the bone cells) for the first designation of pathology. this review seeks to produce associate degree insight into the present progressive materials and technologies within the bone biosensing element field for osteoporosis diagnosis. as biomedical engineering science becomes a bigger part of multiple sectors, together with physics magnets, optics, information technology, martial development, and drugs, medical analysis goes to maneuver quickly into a future wherever scientists, engineers, and clinicians may work along to develop smart biosensors to observe various conditions inside the body. biosensors will have nano-technological elements or will be engineered at the nano-scale themselves. due to their little size, nano-scale devices will pronto move with biomolecules on the surface of or within the cells. the engineers can work on the event and fabrication of the biosensor devices with the assistance of medical researchers to trot out vital biological questions and also the clinicians to deal with sensible problems.

Keywords

Bone health, metabolic disease, osteoporosis detection, osteoporosis biosensors advancements

Evaluation of braf v600e mutation in the urinary bladder cancer

Maryam Moradinasab,[1,*] Fatemeh farshadpour,[2] Reza taherkhani,[3] Mohammad reza farzaneh,[4] Maryam nekooie,[5]

1. The Persian Gulf Tropical Medicine Research Center, The Persian Gulf Biomedical Sciences Research Institute, Bushehr University of Medical Sciences, Bushehr, Iran
2. The Persian Gulf Tropical Medicine Research Center, The Persian Gulf Biomedical Sciences Research Institute, Bushehr University of Medical Sciences, Bushehr, Iran
3. The Persian Gulf Tropical Medicine Research Center, The Persian Gulf Biomedical Sciences Research Institute, Bushehr University of Medical Sciences, Bushehr, Iran
4. The Persian Gulf Tropical Medicine Research Center, The Persian Gulf Biomedical Sciences Research Institute, Bushehr University of Medical Sciences, Bushehr, Iran
5. Department of Biocheimistry, Faculty of Medical Sciences,Shiraz University of Medical Sciences,Shiraz ,Iran

Abstract

Introduction

The v-raf murine sarcoma viral oncogene homolog b1 (braf) is a serine/threonine kinase that belonged to the mitogen activated protein kinase (mapk) signaling pathway and plays an important role in the cell proliferation, survival and differentiation. the most common braf mutation, found in over 90% of human cancers, is c.1799t>a transversion which results the substitution of glutamic acid for valine at codon 600 (v600e) in exon 15. this genetic change leading to constitutive activation of the mapk pathway and prompting tumor cells to grow, survive and invade. in the present study, we investigate braf v600e mutation status in southern iranian patient from bushehr with urinary bladder cancer.

Methods

This study was conducted on 181 patients with histological confirmed urothelial cell carcinomas of bladder including 138 males and 43 females, between december 2010 and october 2015. genomic dna was extracted from formalin-fixed paraffin-embedded (ffpe) tissue using high pure template preparation kit according to the manufacturerâ€™s instructions. real-time pcr was applied to detect braf v600e mutation status by using taqman mgb probes and confirmed by direct dna sequencing.

Results

Analysis revealed that among the 181 cases, 19 (10.5%) tumors harbored braf v600e somatic mutation and 162 cases (89.5%) were wild-type. on the other hand, 15 (9.04%) tumors with stages ta and t1 are mutant for braf v600e compared to four (26.67%) for stage t2 and t3 (p-value= 0.056).

Conclusion

These results should be confirmed in larger studies, but suggest that braf mutation rate was low in urinary bladder cancer and there was no significant association between braf v600e mutation and urothelial cell carcinomas of bladder in southern iranian patient.

Keywords

Braf v600e, mutation, urinary bladder neoplasms, bushehr

Evaluation of chelidonium majus l. alkaloidal extract effect on hela cell line compare to normal cell

Faeghe Mobaraki,[1] Masoud parsania,[2,*] Behzad poopak,[3]

1. Department of Genetics,Faculty of Advanced Science and Technology,Tehran Medical Sciences,Islamic Azad University,Tehran
2. Department of Microbiology,Faculty of Medicine,Tehran Medical Sciences,Islamic Azad University,Tehran,Iran
3. Department of Laboratory Sciences, Faculty of Paramedical,Tehran Medical Sciences,Islamic Azad University,Tehran,Iran

Abstract

Introduction

Cervical cancer is one of the most common cancers in women. chelidonium majus l. is one of the most important medicinal plants in the treatment of some cancers. the aim of this study was the evaluation of the anticancer effect of the alkaloidal extract of chelidonium majus l. on hela cells with cervical cancer source.

Methods

The hela cells and fibroblast normal cells were cultured in dmem medium containing fbs and antibiotics. cells were treated with different concentrations of c.majus extract for 48 hours. mtt assay was used to evaluate the cytotoxicity of cell extracts and determine the viability. quantitative real-time pcr was used to evaluate the expression of bax and bcl-2 genes.

Results

After 48 hours, the cc50 value of the extract was determined 78 Î¼g/ml for hela cells and 1580 Î¼g/ml for fibroblast cells. with increasing concentration of the extract, the viability of hela cells decreased significantly compared to fibroblast cells. the results of real-time pcr showed that expression of the bax gene in hela cells that were treated with 800 Î¼g/ml concentration of c.majus extract was significantly increased compared to 400Î¼g/ml concentration (p =0.047). the expression of the bcl-2 gene in hela and fibroblast cells was not a significant difference (p = 0.735). the bax/bcl-2 ratio in hela cells treated with 800 Î¼g/ml concentration was the significant difference compare to fibroblast cells (p=0.029). in this study, paired studentâ€™s t-test was used for statistical analyzes

Conclusion

In summary, the results of this study confirm that the c.majus extract induces apoptosis in hela cells in a dose depending conditions. however, it has no significant effect on the induction of apoptosis in fibroblast cells.

Keywords

Chelidonium majus l alkaloid extract, hela cell- apoptosis- bax and bcl-2.

Evaluation of cytotoxic and antibacterial activities of dihydropyrimidon substituted pyrrole

Asieh Khalilpour,[1,*] Seyede houriye fallah ,[2] Abdoliman amouei,[3] Hossein ali asgharnia,[4]

1. Department of Environmental Health Engineering, Faculty of Paramedical Sciences, Babol University of Medical Sciences, Babol, I.R. Iran
2. Department of Environmental Health Engineering, Faculty of Paramedical Sciences, Babol University of Medical Sciences, Babol, I.R. Iran
3. Department of Environmental Health Engineering, Faculty of Paramedical Sciences, Babol University of Medical Sciences, Babol, I.R. Iran
4. Department of Environmental Health Engineering, Faculty of Paramedical Sciences, Babol University of Medical Sciences, Babol, I.R. Iran

Abstract

Introduction

Cancer is one of the leading causes of death among people in the world. chemotherapy is one of the most effective methods used for treating cancer patients. therefore the development of impressible and safe anticancer agents with high activity and less toxicity is a major focus for scientists. heterocycles are an important class of compounds which exhibit useful medicinal chemistry. among heterocycles, n-heterocycles, especially dihydropyrimidones are important compounds have attracted must attention because they exhibit diverse biological activities. dihydropyrimidone substituted pyrrole has been reported as a potential anticancer agent due to its activity on inhibition of cells growth and induction of tumor cell death.

Methods

In vitro cytotoxicity of the dihydropyrimidone substituted pyrrole was evaluated against hela cancer cell lines using mtt assay. in vitro cytotoxicity of dihydropyrimidone substituted pyrrole was evaluated using hela cell line exposed at concentrations 6.25â€“100 Âµg/ml at 24, 48 and 72 h. also, this compound was tested for their antibacterial effects against gram positive (staphylococcus aureus and bacillus subtilis) and gram negative (escherichia and pseudomonas aeruginosa).

Results

The cell viability decreased along with the increase of the tested compounds concentration. the cell viability for dihydropyrimidone substituted pyrrole was 65 % after 24 h incubation at least concentration (6.25 Âµg/ml) and was 5 % in the highest concentration (100 Âµg/ml). also, the cell viability in the smallest concentration of doxorubicin (positive control) (6.25 Âµg/ml) was 51.52 %, while it was 8.39 % in the largest concentration (100 Âµg/ml). therefore, cell viability decreased along with the increase of dihydropyrimidone substituted pyrrole and doxorubicin concentration. furthermore, the cytotoxicity of dihydropyrimidone substituted pyrrole (ic50 value of 18.83Â±0.40 Î¼m) was lower than doxorubicin

(ic50 value of 11.65Â±0.50 Î¼m). in each concentration, when time increased from 24 to 48, the cell viability reduced. these trends are not observed after 72h. the cell viability for some tested compounds displayed inverse proportional relation to concentration after 72 h. this might be due to lake of cytotoxicity of these compounds after 72 h as it was observed in some reported research works. these compounds, effective against all of the tested gram positive bacteria that exhibited the highest antibacterial activity against b. subtilis.

Conclusion

Our study shows that the dihydropyrimidone substituted pyrrole could have a dose and time-dependent for preventing growth on hela cancer cell line. it seems to come with further research and utilizes its compound in cancer treatment.

Keywords

Dihydropyrimidone substituted pyrrole, cytotoxicity, hela, antibacterial activities

Evaluation of cytotoxic effect of monolaurin on human breast cancer cell line (mcf-7)

Elham Rahimi,[1,*]

Abstract

Introduction

fatty acids, monoglycerides, and some esters of fatty acids have shown antitumor and antimicrobial effects. monolaurin (1-glycerol-monolaurate) is an esterified form of lauric acid which is found in coconut oil and might be similar to some monoglycerides found in human breast milk. in the present study, we evaluated the cytotoxic effect of monolaurin on a human breast cencer cell line (mcf-7) and also a normal breast cell line (mcf-10a).

Methods

The cytotoxic effect of monolaurin on mcf-7 and mcf-10a cell lines was evaluated using standard mtt assay. for this purpose, different concentrations (20- 120 Âµg/ml) of monolaurin were tested for evaluation of cell viability and ic50 values. data analysis was performed by the spss software using anova.

Results

Monolaurin could reduce the viability of mcf-7 cells, with the ic50 value of 80 Âµg/ml, while it did not show any significant cytotoxic effect on mcf-10a cells in these concentrations.

Conclusion

Our results indicated that monolaurin might have cytotoxic effect on breast cancer cells but not normal breast cells. therefor it could be suggested to be used as a cytotoxic agent in breast cancer treatment, although in vivo evaluation are necessary to confirm it.

Keywords

Cytotoxic effect, monolaurin, breast cancer, mcf-7, mtt assay

Evaluation of dha induced survivin gene expression in colorectal cancer cells

Farideh Hosseini samadyoorddi,[1,*] Mohammadreza sam,[2] Nasrollah jabbari,[3] Hossein mozdarani,[4]

1. Department of Radiology Technology, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Department of Cellular and Molecular Biotechnology, Institute of Biotechnology, Urmia University, Urmia, Iran.
3. Department of Medical Physics and Imaging, Solid Tumor Research Center, Urmia University of Medical Sciences, Urmia, Iran
4. Department of Medical Genetics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.

Abstract

Introduction

Survivin is one of the iaps that inhibits apoptosis. over expression of survivin gene as a landmark of malignant cells is known as a resistant factor against to cancer therapy agents too. then finding the safe, inexpensive and attainable compounds that suppress survivin gene expression and cooperated with radio-chemo therapy agents can increase cancer therapy efficacy and diminish its side effects. in this study we evaluated the effect of omega-3 docosahexaenoic acid (dha) on surnivin gene expression in colorectal cancer cells (crc) as a radio-sensitizer agent.

Methods

Radioresistant ht-29 cells were pretreated with 50 and 100 Âµm dha before exposing to 2 and 10 gy of gamma radiation. after 48 hr survivin mrna was extracted then we compared survivin mrna level in treated gropes with each other.

Results

Dha reduced survivin gene expression level singly or in combination with radiation, whiles we donâ€™t have significant reduction in gropes that only take gamma ray.

Conclusion

Survivin gene expression was resistant to radiation. dha can be considered as a radio-sensitizer agent in crc by mechanism of survivin gene suppressing and increasing radiation induced apoptosis

Keywords

Survivin, dha, crc. radiation,

Evaluation of expression of ck-18 tumor marker in blood samples of patients with breast cancer using real time pcr

Armin Gharibi,[1,*] Roudabeh behzadi andouhjerdi,[2]

1. islamic azad university central tehran branch
2. islamic azad university central tehran branch

Abstract

Introduction

Breast cancer is one of the most common cancers in the world. according to world health statistics, one in every 8 to 10 women develops breast cancer and according to iranian statistics, in our country, the probability is one in every 10 to 15 women. the mean age of diagnosis for breast cancer in the western countries is 56 years and in iran is 45 years. since this cancer develops in women at an age of maximum individual, familial, and social efficiency, attention to this disease is of particular importance. one of the most common methods used to diagnose cancer is laboratory tests using tumor markers, factors present in the blood, urine or body tissues and their increase or decrease can be used for various purposes in screening, diagnosis, prognosis or treatment of diseases. cytokeratins(ck) are the largest subgroup of interstitial proteins and their expression change during the cancerous development. cytokeratin (ck-18) is one of the major proteins of the epithelial cell skeleton, and in this research, the expression potential of ck-18 gene was studied as a molecular biomarker for diagnosis of breast cancer in the circulatory system using real-time pcr technique, so that it can be used in further studies on mechanism of action of this gene as a suitable target for the treatment of breast cancer.

Methods

Blood samples of patients and healthy individuals (as control group) were purchased from cancer institute of imam khomeini hospital, tehran and their rna were extracted. in the next step, cdna molecule was synthesized using reverse transcriptase enzyme (rt) and gene-specific primers were designed and synthesized. then the expression of ck-18 tumor marker was evaluated by real-time pcr technique; finally, the data obtained from cancer samples and the control group were analyzed by spss software.

Results

: ck-18 was observed and measured in patientsâ€™ serum and was very low in the healthy group.

Conclusion

Ck-18 expression was measured quantitatively and was positive in patientsâ€™ serum. also, according to the disease grade, ck-18 expression was different in patientsâ€™ serum; the more the disease progressed, the higher the expression

Keywords

Circulating tumor cells (ctc), breast cancer, ck-18, tumor marker, real-time pcr

Evaluation of expression of mir-20a and mir-30a in helicobacter pylori infected patients compared to gastric cancer patients by real time pcr technique

Mahnaz Mohammadi,[1,*] Saba hariri,[2]

1. ,Azad University Islamshahr

Abstract

Introduction

Gastric cancer is one of the most common cancers in the world and the second leading cause of death in the world after lung cancer. one of the main causes of this disease is the helicobacter pylori bacteria. also, mirnas are effective in most biological processes. the objective of this study is to evaluate the mir-30a and mir-20a expression in the patients infected helicobacter pylori compared with gastric cancer patients.

Methods

For this purpose, the real time pcr technique was used. in this study, samples were selected from through the patients referred to imam khomeini and shariati hospitals. the population was 40 people who had cancer but they were not under any treatment, 40 patients infected with helicobacter pylori who were referred to the hospital for other treatments, but they did not have cancer, and 12 people who were not infected with helicobacter or gastric cancer.

Results

The findings of the study indicated that changes of mirna-30a, mirna- 20a expression in the blood of patients infected helicobacter pylori and gastric cancer are higher than healthy people who are also negative in terms of helicobacter pylori, and comparatively, changes of mir-30, mirna-20a expression in the blood of individuals who are healthy but in terms of h. pylori are positive were lower than the previous two groups.

Conclusion

Based on the results helicobacter pylori can enhance the expression of mir-20a and mir-30a in patients with gastric cancer.and these mirnas play an important role in the induction and pathogenesis of gastric cancer. we can also use micro-rnas as biomarkers to diagnose the disease.

Keywords

Gastric cancer, helicobacter pylori bacteria, real time pcr, mirnas

Evaluation of fibrinolytic and antioxidant effects of allium affine hydroalcoholic extract

Sima Seifabadi,[1,*] Mojtaba ramezani,[2]

1. Applied Physiology Research Centre
2. Applied Physiology Research Centre

Abstract

Introduction

Allium affine is a member of amaryllidaceae family, which grows wildly in some western regions of iran. limited information is available about the pharmacological activities of this plant. the present study aimed to evaluate the fibrinolytic and antioxidant effects of hydroalcoholic extract of a. affine aerial parts.

Methods

The in vitro antioxidant properties of the extract were evaluated by total phenolic content assay, 1,1-diphenyl-2-picrylhydrazyl (dpph) scavenging activity and ferric reducing antioxidant power (frap) assay. the in vivo studies included the determination of hydroperoxides level and frap value in serum samples of rats receiving i.p. injections of the plant extract for 21 days. the fibrinolytic activity of the extract was quantitatively evaluated by measuring the clot weight.

Results

In vitro antioxidant analysis exhibited the promising potential of dpph scavenging and total antioxidant capacity of a. affine extract. in the in vivo analysis, a. affine extract reduced the serum hydroperoxides level and increased the serum total antioxidant capacity in rats. in vitro fibrinolytic assay also elucidated notable thrombolytic activity of the plant extract.

Conclusion

The results of this study revealed the valuable antioxidant and in vitro fibrinolytic activities of a. affine extract. further studies are needed for better evaluation of anticoagulant and thrombolytic activities of this plant and understanding its detailed mechanisms.

Keywords

allium affine, antioxidant, fibrinolytic agents

Evaluation of four phenotypic methods for the detection of carbapenemase producing pseudomonas aeruginosa and their comparison with the polymerase chain reaction

Masoumeh Beig,[1,*]

Abstract

Introduction

Increase resistance to carbapenems is a worldwide clinical concern.early and correct identification of carbapenemase-producing isolates for management of antimicrobial therapy is very important.we compared the performance of the modified hodge test (mht),imp/edta , carba np test (cnpt) and carbapenem inactivation method (cim) for quick and precise carbapenemase enzymes diagnosis.

Methods

The methods were appraised by using 97 pseudomonas aeroginosaisolates, the collection contained 48 non-carbapenemase, 11 klebsiella pneumoniae carbapenemases (kpc) producers, 19 verona integron-encoded metallo-Î²-lactamase (vim) producers, 20 imipenemases (imp) producers, 35 oxacillinases (oxa48) producers, and 25 strains harboring ampc carbapenemase genes.

Results

During this study, 47 carbapenem-resistant pseudomonas aeroginosa isolates were subjected to carba np ,mcim,mht,imp/edta tests, and tested by pcr for blakpc, blavim, blaoxa48, blaspm, blasim, blagim, blaampc, blaimp genes .48/49 (97/95%) isolates were positive for carbapenemase production by carba np,46/49 (93/87%) by mcim , 27/49 (57/44%) by using ddst and 25/49 (%) by mht .

Conclusion

Our results showed that carbanp test, carbapenem inactivation method (cim) test are very are highly sensitive and proprietary, brummagem, prompt methods for the discovery of carbapenemase producer isolates. and helpful instrumentation which can be accomplished in the routine laboratory method for diagnosis of carbapenemase producing in p. aeruginosa isolates.

Keywords

Evaluation, phenotypic methods, carbapenemase, p. aeruginosa

Evaluation of glutathione reduction (gsh) and total antioxidant capacity (tac) in serum of non-alcoholic and non-diabetic fatty liver

Seyedeh roja Sajadi,[1,*] Amirhossein esmaeili,[2]

1. Department of Medical Science, Babol Branch, Islamic Azad University, Babol, Iran
2. Department of Medical Science, Babol Branch, Islamic Azad University, Babol, Iran

Abstract

Introduction

Fatty liver plays a major role in the spread of disease as an oxidative stress factor, inflammation has been reported as a liver damage agent and it plays an important role in the formation of many liver diseases. antioxidant levels of the body by reducing lipid peroxidation and liver necrosis, it can protect the liver to some degree against these injuries. in this study, the level of gsh and tac was evaluated as an antioxidant factor in patients with non-diabetic nafld.

Methods

In this experimental study (case-control), a study was conducted on 85 subjects (50 patients + 35 healthy controls). tac level using the frap method and based on ferric iron reduce to ferrus by calorimetric method, the gsh level was also evaluated by spectrophotometry using the titez method. data analysis was analyzed using spss-21 software, anova was used to analyze the data and tooke and duncan tests were used to compare the means and mean Â± sd values were calculated and the difference between the means at the probability level p <0.05 was considered significant.

Results

The results of this study showed that tac levels(Î¼m) in patients with non-alcoholic and non-diabetic fatty liver (1267.0 Â± 305.5) compared to healthy control group(967.85 Â± 213.2) has significantly increased (p <0.001). while the amount of gsh (Î¼m) in the patient group (275.11Â± 81.63) compared to healthy group (300.53 Â± 10.72) significant decrease was observed (p <0.042).

Conclusion

Since fatty liver induces the production of free radicals ros and rns, it causes lipid peroxidation and oxidative stress in these patients, the increase in tac in these patients is likely to suggest the antioxidant defense system to combat free radicals and oxidative tissue damage. we know that the liver is the main source of glutathione, therefore, liver oxidative damage following fatty liver can be associated with a decrease in serum gsh levels, in addition, glutathione is a direct adjuvant to free radicals and acts as a substrate for the glutathione peroxidase and glutathione s-transferase enzymes to detoxify hydrogen peroxide and also hydroperoxide lipid, therefore, decrease of gsh level in the patient group is more likely than control group.

Keywords

Fatty liver, oxidative stress, total antioxidant capacity (tac), glutathione reduction (gsh).

Evaluation of gold nanoparticles effect on the cytotoxicity, oxidative stress, and acetylcholinesterase activity in caco-2 cells exposed to malathion

Zeinab Shahmahmoodi,[1] S. jafarinejad,[2] M. r. hormozi-nezhad,[3] H. ghafari,[4] m. ghazi-khansari,[5,*]

1. Department of Pharmacology, School of Medicine, Tehran University of medical science, Tehran, Iran

Abstract

Introduction

Gold nanoparticles (aunps) represent one of the stable, and easily synthesized nanoparticles (nps) with unique optical properties which have been extensively used in consumer products and medicine. however, at present, we have limited knowledge of aunps cytotoxicity due to the conflicting available data in the literature. malathion is an organophosphorous (op) insecticide widely used in agriculture, residential area and public health programs with a clear mechanism of cytotoxicity

Methods

In this study, the cytotoxicity of malathion and aunps stabilized with citrate with sizes 10 and 20 nm were investigated in caco-2 cells by measuring cell viability, acetylcholinesterase activity, and oxidative stress (lipid peroxidation level and glutathione content). also the effects of pretreatment of caco-2 cells with aunps in malathion treated cells were evaluated by measuring the mentioned parameters. the ic50s values at 48 hr were calculated for malathion, aunps 10 and 20 nm. then, the lowest concentration of aunps and the ic50 concentration of malathion were selected for further experiments to evaluate the effects of pretreatment of caco-2 cells with aunps on cell viability, acetylcholinesterase activity, and oxidative stress of malathion

Results

The results showed remarkably significant protective effects of aunps by attenuation of parameters of cytotoxicity induced by malathion in cells. it is the first report of the protective effects of aunps against malathion-induced cytotoxicity in caco-2 cell line

Conclusion

Considering the results obtained in this study, it can be concluded that gold nanoparticles not only have no adverse effects on cytotoxicity, inhibition of ache, lipid peroxidation and glutathione level, but also they can somewhat improve the adverse effects of malathion in this cases

Keywords

Gold nanoparticles; acetylcholinesterase; malathion; caco-2 cells; cytotoxicity; oxidative stress

Evaluation of immunogenicity of mannosylated chitosan nanoparticles containing brucella antigens as a new vaccine candidate

Zohre Sadeghi,[1] Mahdi fasihi ramandi,[2] Saeid bouzari,[3,*]

1. Pasteur Institute of Iran
2. Baqiyatallah University of Medical Sciences
3. Pasteur Institute of Iran

Abstract

Introduction

Brucellosis is the most common zoonotic bacterial disease that is transmitted from animals to humans. a key tool for the control, elimination, and eradication of brucellosis is the development of an effective vaccine; however, there is no available effective vaccine against brucella. in this work, we evaluated the vaccine potential of modified chitosan nanoparticles containing flic protein against brucellosis.

Methods

The amplification of flic gene was performed by using the pcr. then, the amplified gene was cloned and expressed in pet28a-bl21 (de3) expression system. the proteins were purified with ni-nta column. sds-page and western blot was used for confirmation of purified protein. mannosylated chitosan nanoparticles are synthesized by chemical synthesis and then nanoparticles are examined in terms of structure, shape and size by ftir, sem and dls. mannosylated chitosan nanoparticles containing flic were applied for immunization of balb/c mice. antibody-dependent immune mechanisms as well as the ifn-Î³, il-2, and il-10 cytokines were determined in post-immunized mouse serum. in challenging tests different groups of immunized mice were infected with brucella.

Results

Flic gene was amplified and cloned in pet28a vector. then, expression of flic was performed in bl21 (de3) that sds-page and western blot showed the high purity of the eluted protein on column. s.c immunization of mannosylated chitosan nanoparticles containing flic elicited a strong specific igg response (higher igg2a titers) and significant ifn-Î³ /il2 production.

Conclusion

In general, the results exhibited that flic is immunogenic antigen and its administration with mannosylated chitosan in mice induced th1 immune response.

Keywords

Brucella, flic, chitosan, vaccine

Evaluation of lactoferrin toxicity on breast cancer cell line mcf-7

Amir Khalafi,[1,*] Fatemeh moradian,[2] Alireza rafiei,[3]

1. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University,
2. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University,
3. Faculty of medicine,department of Immunology, Molecular and Cell Biology Research Center

Abstract

Introduction

Cancer refers to uncontrolled growth and the abnormal development cells in the body, however, among the several advances in cancer treatment, there is still a sense of the need for anti-cancer agents that play the role of increasing cellular resistance, lactoferrin as act multi-functional protein that plays several biological functions, such as anti-bacterial, antiviral, antifungal, anti-inflammatory, anti-tumor, anti-oxidant, and immunological activities.

Methods

The concentration of purified lactoferrine protein was determined by brad ford method and loaded on 10% sds-page gel for confirmation of purification.then cancer cell line, mcf-7 was cultured after counting the cells up to 5,000 cells were transferred to 96 wells plate and incubated for 24 hours and treated with different concentration of lactoferrin (0,50,300,600 and 800Âµg/Âµl) with three replicates and after 24 hours percentage of viability evaluated by mtt method.

Results

The concentration of lactoferrin was 3 mg /ml, and 80 kda band of purified protein showed on sds-pag.the level of viability of cancer cells mcf-7 after treatment with lactoferrin concentrations of 50,300,600 and 800 Âµg/Âµl were 94, 83, 62 and 32%, respectively

Conclusion

According to this result as well as from the previous studies, on anti-cancer effects of lactoferrin, this protein can use as a supplement to treat cancer

Keywords

AntiÂ¬cancer, breast cancer, lactoferrin, mtt

Evaluation of larvicidal and the possible mechanisms of the formulations of geraniumâ€™s essential oils against anopheles stephensi.

Maryam Dehghankar,[1] Naseh maleki ravasan,[2,*] Azar tahghighi,[3] Maryam eidi,[4]

1. Islamic Azad University Of Science and Research
2. Pasteur Institute Of Iran
3. Pasteur Institute Of Iran
4. Islamic Azad University Of Science and Research

Abstract

Introduction

Mosquitoes are considered in transmission of diseases with a high mortality rate than other organisms. malaria is the most commonly transmitted mosquito-borne disease, the main vector in asia, anopheles stephensi. continued use of pesticides results in environmental pollutions and disruption of natural biological control systems. the problem is pesticide resistance of which increases the dose of pesticides and trying to find alternatives stronger and more secure. essential oils are one of the most suitable alternativesØŒ which are the first generation of botanical and green pesticides.

Methods

Considering the extraordinary properties of this plant, in this study, the effect of larvae of essential oil in vitro according to the who guidelines was studied on larvae of this family. then, in order to overcome the poor solubility of oil in water, a nano emulsion o/w containing geranium essential oil was created and ultimately the effect of essential oil on the symbiotic bacteria of the stomach larvae was evaluated

Results

In this study, the effect of larvae of geranium on culicidea family mosquitoes was investigated and the best concentration of nano formulation was determined for each group. considering that the ultimate goal of this project was to become an effective herb plant in environmental protection, it could also be sustained and cost-effective due to changes in formulation and the preparation of nano emulsion. also, the effect of this essential oil on the gastric microbiota of these larvae has been tested, which has not been investigated so far.

Conclusion

In all concentrations, the growth of bacteria has dropped dramatically, which indicates that the essential oil in these bacteria can play a part in the role of antibiotics and prevented the growth of mosquitoâ€™s stomach bacteria and ultimately destroys the larvae of anopheles stephensi family and exterminate malaria in iran. the ultimate goal of this project was to reach an effective herbal larvicides which is eco

friendly, and can be sustained and affordable due to changes in their formulations and the preparation of their nanomaterial.

Keywords

Larvicidal; anopheles stephensi; essential oil; geranium; nano formulation; gastric micro biota.

Evaluation of lethal and sub-lethal antimicrobial photodynamic inactivation effect on quorum sensing regulated-biofilm formation gene expression of serratia marcescens

Zahra Fekrirad,[1] Nasim kashef ,[2,*] Ehsan arefian,[3]

1. Department of Microbiology, School of Biology, College of Science, University of Tehran
2. Department of Microbiology, School of Biology, College of Science, University of Tehran
3. Department of Microbiology, School of Biology, College of Science, University of Tehran

Abstract

Introduction

Antimicrobial photodynamic inactivation (apdi) is an encouraging new option for killing pathogenic microorganisms. this method involves the use of a nontoxic photosensitizer, which is excited by exposure to visible light, leading to generate reactive oxygen species. it is likely that during the treatment, the photosensitizer or light would achieve in the target site at sub-lethal concentrations. therefore, microorganisms will not be eradicated completely and may become tolerant to apdi or other antimicrobial agents. the present study was designed to explore the effects of lethal and sub-lethal apdi using methylene blue (mb) on the expression of genes (bsma and bsmb) regulating the biofilm formation and a putative regulatory luxr homologue (swrr) in s. marcescens atcc 13880.

Methods

Planktonic cells exposed to lethal and sub-lethal apdi (mb at final concentrations of 0.025 mm and 0.05 mm, respectively, and light dose of 15 j/cm2). treated and untreated cells were allowed to form biofilm for 24 hours. biofilm formation was evaluated using crystal violet (cv) assay and scanning electron microscopy (sem). gene expression of apdi-treated cells were determined by quantitative real-time polymerase chain reaction.

Results

Quantitative assay (cv) results and morphological observations (sem) indicated that both single lethal and sub-lethal apdi treatments resulted in a significant reduction in biofilm formation ability of s. marcescens atcc 13880 compared to their non-treated controls ($p<0.05$). lethal and sub-lethal apdi down regulated the expression of qs-controlled biofilm formation genes (bsma and bsmb) and qs gene (swrr) in s. marcescens atcc 13880.

Conclusion

Our results indicated that the transcriptional decreases caused by mb mediated lethal and sub-lethal apdi did lead to phenotypic changes. sub-lethal apdi did not result in more biofilm formation ability of bacteria.

Keywords

Antimicrobial photodynamic inactivation, biofilm formation, quorum sensing, s. marcescens

Evaluation of mir-210 and mir-874 expression in the patients infected with helicobacter pylori compared to gastric cancer patients using real-time pcr technique

Mahnaz Mohammadi,[1,*] Mina yaghoob kazemi,[2] fahimeh namati mansor ,[3]

1. ,Azad University Islamshahr

Abstract

Introduction

: helicobacter pylori is a spiral-shaped, gram-negative, microaerophilic bacterium that selectively colonizes the gastric epithelium. it is proposed that a role of this bacterial effector in cell proliferation in tissue stomach and progressive of gastric cancer (gc). micrornas (mirnas) play key roles in regulating genes. the objective of this study is to evaluate the mir-874 and mir-210 expression in the patients infected helicobacter pylori compared with gastric cancer patients.

Methods

This cross-sectional study was performed on 40 stomach cancer patients with positive h.pylori and 40 positive h.pylori without stomach cancer and 12 negative h.pylori. expression of mirnas were evaluated using real-time pcr technique.

Results

The findings of the study indicated that changes of mirna-874 and 210 expressions in the blood of patients infected helicobacter pylori and gastric cancer are higher than healthy people who are also negative in terms of helicobacter pylori and gastric cancer.

Conclusion

: based on our results h.pylori but not stomach cancer can be expressed mir-210 and mirna874. it can be concluded that over expression of these mirnas is significantly associated with infection with h.pylori that this subject may play key roles in impaired apoptosis and progressive to cancer.

Keywords

Stomach cancer, mir-210, mir-874 , elicobacter pylori

Evaluation of neutrophil to lymphocyte ratio(nlr)as a marker to determine the extent of disease in patients with preeclampsia

Roya Motavalli,[1,*] Shabnam jafari zare,[2] Roya jafary,[3]

1. Department of midwifery, Ardabil branch, Islamic Azad University, Ardabil, Iran
2. Department of Gynecology, Ardabil branch, lslamic Azad University, Ardabil, Iran
3. M.D, Ardabil branch ,Islamic Azad University, Ardabil, Iran

Abstract

Introduction

Early diagnosis of preeclampsia and its severity in pregnant women in greatly important for controlling this disease and prevent for subsequent dangers for mother and the fetus. current study is conducted to assess neutrophil lymphocyte ratio (nlr) as a determining factor for the severity of the disease in patients with preeclampsia referring to sabaln hospital, ardabil.

Methods

This was a case control study on 50 pregnant women with severe preeclampsia (group 1), 50 pregnant women with mild preeclampsia (group 2), and 50 healthy pregnant women (group 3). the three groups were homogenized for basic variants including age, gestational age, mean bmi, gravid, and parity. required information including age, gestational week, bmi, gravid, parity, 24 hour urine protein, systolic and diastolic blood pressure, and nlr were obtained and analyzed.

Results

nlr is significantly higher in women with severe preeclampsia compared with mild preeclampsia ($p=0.031$) and healthy women ($p<0.001$). nlr did not show difference between mild preeclampsia and healthy women ($p=0.209$). significant positive correlation was observed between nlr and proteinuria ($p<0.0001$, $r=0.558$), systolic blood pressure ($p=0.0026$, $r=0.244$), and diastolic blood pressure ($p=0.0028$, $r=0.242$).

Conclusion

Results of this study showed that maternal nlr can be used as a marker for preeclampsia severity.

Keywords

Neutrophil lymphocyte ratio, neutrophil, lymphocyte, (nlr), preeclampsia severity, pregnant women.

Evaluation of physical health and relation with life styles of medical sciences students

Poorya Davoodi,[1,*] Atoosa hashemi,[2]

1. 1. Young Researchers and Elite Club, Shahre Rey Branch, Islamic Azad University, Tehran, Iran
2. 1. Young Researchers and Elite Club, Shahre Rey Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Physical health is one of the most important goals in developed and developed countries, which is the main cause and background of hypertension, diabetes, cardiovascular disease and cancers. physical health of students who are the future makers of a community is of particular importance.the purpose of this study was to investigate the physical health status of medical students of islamic azad university in 2016.

Methods

This cross-sectional study was performed on all new students in tehran medical sciences branch, islamic azad university between september 2016 and february 2017.samples from the present study were included by census sampling method and 1200 new students were included in this study.

Results

The new university students were 1200, and 1057 people participated in the study and 857 students completed the questionnaire in full. the results of this study showed that physical health is directly related lifestyle and women have a better lifestyle than men.

Conclusion

This study showed that lifestyle of individuals has a direct impact on their physical health and lifestyle of students is important in their future health.

Keywords

Physical health, life styles, students

Evaluation of quantiferon-tb gold plus performance: a systematic review and meta-analysis

Sepideh Benvari,[1,*] Babak pourakbari,[2] Setare mamishi,[3] Shima mahmoudi,[4]

1. Department of Microbiology, Faculty of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran
2. Pediatric Infectious Disease Research Center, Tehran University of Medical Science, Tehran, Iran
3. Pediatric Infectious Disease Research Center, Tehran University of Medical Science, Tehran, Iran
4. Pediatric Infectious Disease Research Center, Tehran University of Medical Science, Tehran, Iran

Abstract

Introduction

Quantiferon-tb gold plus (qft-plus), is a new generation of quantiferon assay that differs from quantiferon-tb gold in-tube test (qft-git). the aim of this study was to compare the performance of the new fda-approved qft-plus interferon (ifn)-Î³ release assays (igras) with the qft-git version of this assay.

Methods

We searched all studies published in english in electronic databases, including pubmed, scopus, and web of science.

Results

The positive proportion of positive results by qft-plus was higher than qft-git in cured tb cases (82% vs. 73%). the two tests showed a substantial agreement and the majority of the ltbi subjects responded concomitantly to both qft-plus and qft-git. however, qft-plus showed a stronger association with surrogate measures of tb suspects than qft-git. the qft-plus test demonstrated a higher sensitivity than qft-git in the older adults.the sensitivity, specificity, lr+, lr- and dor overall were 94% (95% ci 89â€“97), 96% (95% ci 94â€“98), 24.4 (95% ci 15â€“39), 0.05 (95% ci 0.03â€“0.11) and 414 (95% ci 251â€“685), respectively. the area under summary roc curve was 0.99 (95% ci 0.97â€“0.99).

Conclusion

Qft-plus performs equivalently to the qft-git for detection of patients at risk for ltbi; however, qft-plus test had higher sensitivity than the qft-git test, with similar specificity among the older participants. higher ifn-Î³ release in tb2 compared to tb1 might be due to with recent ltbi. on the other hand, declining of ifn-Î³ release in tb2 could be serving as a tool for monitoring of the efficacy of tb therapy.

Keywords

Quantiferon-tb gold plus, ifn-Î³ release assays, diagnostic accuracy

Evaluation of relationship between age and nrf2 gene expression in alzheimers disease model of drosophila melanogaster

Javad Amini,[1] Nima sanadgol,[2] Mohsen shahriari,[3] Mohammd hadadi,[4] Naser sanchooli,[5,*]

2. department of biology, faculty of sience, university of zabol, zabol. iran

Abstract

Introduction

Alzheimers disease is the most common form of dementia among the aging. increasing the age is one of the risk factor for alzheimers disease, beta-amyloid extracellular plaques and neurofibrillary tangles are two main symptoms of alzheimers disease, which hyperphosphorylated tau protein pools can be reason of neurofibrillary tangles. one of the important events in alzheimers disease is oxidative stress in neurons. nrf2 is a transcription factor that is expressed in response to low active oxygen levels, which can regulate the antioxidant response, hence it can be a good indicator of oxidative stress.

Methods

Because drosophila melanogaster has a short life cycle, maintaining a convenient and inexpensive is a very good model for neuronal studies, so we use this model. the lines of usa-tau r406w and gal4-elav, gal4-ok 107, gal4-gmr were prepared. we isolated female virgin fly from gal4-elav and cross with male uas-tau r406w and then we extract rna from progeny at 10 days, 20 days and 30 days and we quantify with qreal-time pcr. also, we cross female virgin from gal4-ok107 and male uas-tau r406w and use for behavioral assay at 10 days, 20 days and 30 days flies. we setup cross between gmr-gal4 and uas-tau r406w for the tau r406w expression conformation.

Results

As a result, over expressing the tau r406w protein in drosophila melanogaster neurons, with increasing age, the expression of nrf2 increased, and decreased the memory in flies efficiently.

Conclusion

Age increasing due to the over expression of nrf2, indicating increased oxidative stress levels with age in the alzheimers model.

Keywords

Alzheimers disease, nrf2, tau r406w, drosophila melanogaster

Evaluation of relationship between hypermethylation of dkk1 gene promoter with laryngeal squamous cell carcinoma

Arefe Mashhadi nezhad,[1,*]

1. Department of Genetics, Zanjan Branch, Islamic Azad University

Abstract

Introduction

Laryngeal squamous cell carcinoma is the second most common malignancy among head and neck cancers. several factors are involved in this cancer but epigenetic mechanisms are the most important factor in carcinogenesis. the most important epigenetic change known is methylation, which is divided into two types of hypermethylation and hypomethylation. the aim of this study was to investigate the status of methylation of promoter of dkk1 gene and its relationship with the prevalence and progression of laryngeal squamous cell carcinoma.

Methods

Dna was extracted from tissue samples of 29 patients. also, 30 healthy tissues were used as controls. extracted dna was treated by bisulphite and tested by methylation specific pcr. the results were analyzed by electrophoresis on agarose gel and spss software

Results

Results:methylated, hem-methylated and non-methylated were found to be 13.79%, 75.86% and 10.34% respectively in cancerous tissue. methylated, hemi methylated and non-methylated were also found to be 0, 53.33% and 46.66% in normal tissue. also, there was a significant relationship between the status of methylation of patients and the degree of tumor differentiation ($p = 0.04$). overall, this study showed that methylation of promoter of dkk1 gene with laryngeal squamous cell carcinoma has a significant relation ($p = 0.004$)

Conclusion

The results suggest the role of the genetic factors in the incidence of laryngeal cancer and the methylation of the promoter of the dkk1 gene could be used as a biomarker in the prognosis and development of laryngeal squamous cell carcinoma.

Keywords

Laryngeal squamous cell carcinoma. dkk1. hypermethylation

Evaluation of the ap, psa and rsid tests compared to the dna typing for semen detection in forensic medicine

arezu Abdi,[1,*] Azam soleimani,[2] Zohreh baratieh,[3] Alireza saburi,[4] Fardin mardani,[5]

1. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.
2. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.
3. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.
4. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.
5. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.

Abstract

Introduction

Serological typing for detection and identification of semen is typically done by using ap, psa, and rsid tests in forensic medicine. therefore, accurate identification of body fluid may provide crucial information about the events of crime scene. studies have shown that current methods do not provide the level of specificity or sensitivity required by the forensic field. therefore, the results of these methods are often incompatible with dna typing results. the purpose of this study was to evaluate the charactristics of ap, psa, and rsid tests compared with dna typing results.

Methods

A total of 43 samples of evidence related to sexual assault were evaluated with ap, psa and rsid, respectively.then, dna extraction from spots was performed with the qiaamp dna investigator kit. pcr amplification was performed using the ampflstr yfiler kit for total samples. raw data obtained abi 3130 was analyzed using genemapper (applied biosystems) software.

Results

Data of dna typing showed that, 93.33% of ap and psa positive response are true positive and 76.92 % of ap and psa negative response are false negative. also for rsid was 100% and 84.84% respectively. percentage of accuracy, specificity, sensitivity, pvc and nvc for both psa and psa were 72.9, 23, 93.33, 78.94 and 23.07, respectively, and for rsid 32.6, 15.1, 100, 26.31 and 15.1, respectively.

Conclusion

Use of both ap and psa for screening semen can increase the chances of obtaining a dna profile. also, the rsid alone does not have accuracy required for semen identification. so, results of dna typing is the ultimate valid respons.

Keywords

Screening, rsid, dna typing, ap, psa

Evaluation of the effect of type 2 diabetic serum on malondialdehyde, superoxide dismutase and catalase activity in hdf cancer cell line compared to normal human fibroblast cells

Farzane Hasanzade,[1] Safoura sameni ,[2,*] Seyedeh sara hashemi ,[3] Hanie jafary ,[4]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran
3. Burn & Wound Healing Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
4. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Introduction cancer is one of the most important health problems and a main common cause of mortality in the world. therefore, its prevention, diagnosis and treatment are of interest to many researchers in biological sciences. diabetes is one of the most common chronic diseases showing a growing trend in the global statistics including iran. type 2 diabetes and cancer have many common risk factors, but the potential biological links between the two diseases are not fully understood yet. evidences obtained from studies by different researchers suggest that increased blood glucose or hyperglycemia in diabetes triggers the release of free radicals and stimulates glycosylation of free radicalsâ€™ inhibitor enzymes. some other studies indicate that some hyperglycemic drugs are associated with increased/decreased risk of cancer. in addition, some other studies have shown that increased oxidative stress induction (imbalanced production of free radicals and antioxidant immune system) can be used as a treatment for cancer. target this study aims to evaluate the effect of serum of patients with type 2 diabetes on oxidative stress changes in hdf cancer cells and its comparison with human fibroblast cells. the importance of research the discovery of the relationship between cancer and diabetes as two common diseases in the general populations is crucial for timely, rational and informed decision-making, not only in the field of public health and social economy, but also for the purposeful prevention and managing of diabetes in everyday clinical practice. the serum of diabetic patients contains a high level of harmful molecular factors for the cells. increased blood sugar or hyperglycemia in diabetes triggers the production of free radicals and glycosylation of free radical inhibitor enzymes. on the other hand, studies have shown that increased induction of oxidative stress can be used as a treatment for cancer. in this study, for the first time, the inhibitory effect of these factors in serum of diabetic patients is investigated on oxidative stress induction in cancer cells.

Methods

Total amount of 20cc blood samples were taken from one selected (based on specific criteria) diabetic patient and one healthy individual based on the ethics charter of the shiraz university of medical sciences, and ultimately their blood serum was extracted. in this study, hdf cell line and human fibroblast cells were cultured in dmem medium. the serum of diabetic and normal individuals and fbs serum (as control) were

then added to the culture medium, separately. after 24 hours, the cellular supernatant liquid was collected, and afterwards, the oxidative stress parameters were measured based on the activity of cat, mda and sod.

Results

The exact results of the measured parameters indicate that the culture medium containing type 2 diabetes serum has a greater effect on the levels of cat, mda, sod enzymes produced by cancer cells than the culture medium containing the fbs serum. furthermore, in cancer cells the level of these enzymes is higher than the human fibroblast cells.

Conclusion

According to our findings, the level of cat, mda and sod enzymes in cancer cells has increased in comparison with normal fibroblasts. therefore, these enzymes, which cause the oxidative stress by increasing the level of free radicals, can also lead to the destruction of cancer cells, and thereby, they can be considered as an effective factor in healing the cancer

Keywords

Oxidative stress - cancer - diabetes

Evaluation of the effect of zinc oxide nanoparticles synthesized by hyssopus officinalis extract on the number, size and distribution of blood platelets in balb/c mice

Ghasem Rahimi,[1] Ehsan karimi,[2,*] Hamed adib eslamie,[3]

1. islamic azad university of mashhad
2. islamic azad university of mashhad
3. islamic azad university of mashhad

Abstract

Introduction

Nanotechnology is used in three levels including material production, devices and systems. one of the important features of nanotechnology is a high surface-to-volume ratio that changes the behavior of materials on a nanoscale scale (1). in fact, on this scale, the laws of classical physics change, and the laws of quantum physics enter the scene. almost when we reach the nanoscale, the physical-chemical properties, the color, and even the melting point is completely transformed. an increase in the surface-to-volume ratio has led the atoms in the surface to have a greater effect on the physical properties of particles than those in the mass particle (2). over the past few years, the publication of scientific journals, textbooks and other professional literature on nanoscale research has undergone dramatic changes and tremendous changes occurred in the clinical field. in addition, there is now a widespread coordination among medical professionals that has revolutionized nanotechnology (3). the unique properties of nanoscale materials encourage scientists and researchers to promote simple and inexpensive methods for nanoparticle production. among many methods of synthesizing nanoparticles green methods, especially using plant extract, have attracted attentions. plants have a special antioxidant properties due to the presence of carotenoids, polyphenols, flavonoids and anthocyanins, which inhibit the oxidation process in the body (4). the catalytic activity of the synthesized nanoparticles depends on their size, so that nanoparticles of smaller size have faster activity than other nanoparticles (5). technologically, zinc oxide has great application in science and industry and zno nanoparticles is well-known nanoparticles which widely used in non-medical and medical investigations. hence, researchers have considered zno nanoparticles for their scientific and industrial programs (6). bing wang et al. have studied oral toxicity of zinc oxide nanoparticles on mice. they noticed the negative effects of zinc oxide nanoparticles in bone, kidney and pancreatic tissues; in addition, pathological lesions in the stomach, liver, heart and spleen were detected(7).

Methods

In this research, 20 male white balb/c mice, 25-30 g, purchased from the house of animals of the razi vaccine and serum research institute in mashhad. the mice were kept in special cages under controlled conditions (temperature of 22 Â°c and relative humidity 60 Â± 10%, 12 hours of light and 12 hours of darkness) with easy access to water and food. the animals were randomly divided into 4 groups (n=5). group 1 was considered as a control group (without treatment). groups 2, 3 and 4 were received dosage of

100, 200 and 300 mg/kg, respectively. the mice have received 1 ml of suspension of zinc oxide nanoparticles orally by gavage until day 20, while the mice in control group have received pbs. ultimately, the mice were anesthetized by the ether and the blood was taken directly from the heart, and then blood plasma testing was done. statistical analysis was performed using spss software and anova test was used to analysis variables. the level of significance was set at $p < 0.05$.

Results

The results of comparing the number of blood platelets in the treated samples compared to the control group showed that concentration of blood platelets was decreased with increasing concentration of zno nanoparticles. the results also demonstrated that at a concentration of 300 mg/kg of zinc oxide minimum number of blood platelets was observed which was statistically significant compared to control group. comparison of mean platelet volume measurement (mpv) in groups treated with zno nanoparticles synthesized by the green method with the control showed reduction in the size of the platelets. at a concentration of 300 mg/kg, the reduction in platelet size significantly decreased compared to the control group. platelet distribution width (pdw) also decreased with increased concentration of platelets. data were statistically significant.

Conclusion

The synthesized zinc oxide nanoparticles from the h officinalis extract at concentrations have a significant effects in reduction of number, size, and distribution of platelets. however, the time exposed to these nanoparticles should be considered. furthermore, considering the high accumulation and long-term effects, significant pathological changes and cellular penetration in the use and handling of nanoparticles should be of importance.

Keywords

Zinc oxide, hyssopus officinalis, platelets

Evaluation of the efficacy of organic nanoparticles on pseudomonas aeruginosa

Mojgan Oshaghi,[1,*] Niloufar rashidi,[2] Parisa roshani asl,[3]

1. Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
2. Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
3. Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Pseudomonas aeruginosa is one of the most important opportunistic pathogens contributes to a large number of healthcare-associated infections. the treatment of infections caused by this pathogen is difficult because of the inherent and acquired resistance to the most effective antimicrobial agents. the continued evolution of drug resistance has disallowed many routinely used antibiotics. nanotechnology, proposes a promising platform for addressing this challenge. unique properties and multiple bactericidal mechanisms of nanomaterials, make them more effective than conventional drugs. nowadays, the development of organic nanomaterials for biomedical practices has increased. the focus of this paper is to present a review of the potential applications of organic nanoparticles (nps) in control of p. aeruginosa and also describes their distinctive features and method of function.

Methods

The information of this article was collected by searching the keywords related to the subject on the electronic databases and surveying different scientific articles published in reliable online journals.

Results

Organic nps can load molecules either by conjugation on the surface or in the core, or by physical encapsulation, which make them attractive systems for drug delivery and biomedical applications. lipid-based nps (liposomes, solid lipid nps, nanoemulsions), polymeric nps and dendrimers are examples of organic nps that their ability to eradication of p. aeruginosa has proven by several research groups. have been reported that these nps could have antimicrobial and antibiofilm effects against p. aeruginosa. lots of studies demonstrated that encapsulated antibiotics into these organic nps, enhances the microbial susceptibility and antimicrobial activity of antibiotics against p. aeruginosa clinical isolates. the bioavailability, biocompatibility, safety of encapsulated drug, localization in particular organs, increased period of action and reduced the side effects are some benefits of organic nps that introduce them as the hopeful means of antibiotics carriage. since their mechanism of action seems to be the disruption of bacterial cell membranes, they would not cause to the creation of resistant strains.

Conclusion

According to the studies, organic nps have great potential for preventing and treating p. aeruginosa infections. although the biocompatibility of nps is generally determined by in vitro research, their safety and cytotoxicity must be more evaluated. however, the studies demonstrates the tendency to overcome the obstacles and realize the promises of nanomaterials for medical applications.

Keywords

Pseudomonas aeruginosa, organic nanoparticles, antimicrobial, antibiofilm

Evaluation of the new drug delivery herpatch imported derma drugs regarding zinc content with pharmacopeia legislations

Seyed yadollah Khezri,[1] Behrouz akbari-adergani,[2,*]

1. Department of the pharmaceutical sciences, college of pharmacy, Tehran branch, Islamic Azad University, Tehran, Iran
2. Food and Drug Laboratory Research Center, Food and Drug Administration, Ministry of Health and Medical Education, Tehran, Iran

Abstract

Introduction

In this study, different imported and domestic patches of skin that were in a good appearance and have a production date and appropriate expiry date, each with three replications from different series of production randomly from the level of pharmacies (supply level) were collected and their zinc content was evaluated.

Methods

Since zinc level control in these samples is not the usual control of these drug systems, the amount of free and total zinc in each sample was measured by atomic absorption. to determine the concentration of zinc, the sample was injected into the atomic absorption device.

Results

By knowing that 50 ppm of zinc produce the least amount of toxicity in the body, and the levels of 5000 ppm cause serious toxicity in the body, and the fact that the free zinc in most samples was less than 500 ppm.

Conclusion

Therefore it can be concluded that according to the ph conditions of the skin, the use of internal patches with this property produces minimal toxicity. also, some of the patches had a free and total zinc more than the permitted limits in comparison to the in-house samples that are more prone to toxicity. therefore, control of zinc level of skin patch samples is recommended.

Keywords

Dermal patches, zinc oxide, drug delivery, pharmacopoeia, heavy element

Evaluation of the stability of iodine in iodized salt against heat, light and humidity in distributed salt in babol

Asieh Khalilpour,[1] Abdoliman amouei,[2] Hossein ali asgharnia,[3] Mojgan rezapour,[4] Zahra moulana,[5] Seyede houriye fallah,[6,*]

Abstract

Introduction

The effect of iodine on the human is inevitable in all stages of life and the lack or deficiency of iodine causes mental retardation and the huge cost of the treatment and care. the aim of this study was to evaluate the effect of heat, humidity and light on the iodine content in iodized salt.

Methods

In this analytical-descriptive study, five brands of refined iodized salts were randomly selected from supermarkets in babol city. all tests were performed in the chemistry laboratory of paramedical school in babol university of medical sciences. in the current study, the samples were kept for three months in the conditions of humidity, without humidity, light, darkness, temperature 370c, refrigerator and ambient temperatures. the iodine of samples was tested every 15 days. titration method based on britain pharmacopoeia method was used to measure the iodine. data were analyzed with t paired and anova tests using spss.

Results

The results showed that the iodine reduction was observed in all samples. the iodine reduction was 9.69, 8.34, 8.85, 7.8, 13.96, 9/6, 8/64 and 5/41 mg/l for refined salts at refrigerator temperature with humidity, refrigerator temperature without humidity, 370c with humidity, 370c without humidity, ambient temperature with light and humidity, ambient temperature with light and without humidity, ambient temperature with humidity in darkness and ambient temperature without humidity in darkness, respectively.

Conclusion

The reduction of iodine was higher in humidity, light and refrigerator temperature than in dryness, darkness and 370c, respectively. the results indicated that the best condition for keeping the salt was ambient temperature, darkness and non-humidity situation.

Keywords

Iodine, iodized salt, humidity, light, heat

Evaluation of toxocaria eggs contamination in mashhad public parks (2017)

Hossein Mokhtari,[1,*] Hassan yazdanfar,[2] Mohadeseh sabur,[3]

2. Department of health science Mashhad medical science branch,Islamic Azad University,Mashhad,Iran
3. Department infectious diseases,Mashhad medical science University,Mashhad,Iran

Abstract

Introduction

Toxocariasis is a disease caused by presence of larva in the human body, causing various complications in patients and its transmission route is from the infected soil to dogs and cats stools parasite eggs and soil is a special reservoir for strange and transfer to human.therefore,the purpose of this study was the evaluation of mashhad public parks pollution to toxocara eggs.

Methods

This study was performed on 30 samples of parks. from each park , four sites were identified for sampling, including garbage cans, park entrance, children playgrounds and sanitary facilities. then samples were evaluated by cliton-lean flotation in the laboratory and was investigated by optical microscope. chi-square and t-student tests were used to compare the data.

Results

From studied parks ,only six parks (20%) had contaminated with toxocara eggs and (10%) of the samples in the entrence,(10%) from children plarground,(6%) of the toilets samples and (16.7%) of garbage collection samples were positive. in this study(50%) of jungle parks and green parks were contaminated and there was no case in mountainous parks.(4.2%) of non polluted parks were forest park type and it was significant statistically (p= 0.012). however, the contamination parks dose not have a significant relationship with area and location(p=0.561%).

Conclusion

Prevalence of egg toxocara contamination was high and due to the use of people from parks and high complications in infected people. preventive measures should be taken by responsible organizations for remove contamination in the studied places.

Keywords

Toxocara , park, mashhad , parasite egg

Evaluation of umbilical cord blood cd133+ cells expansion with inhibition of tgf-_ receptorii on poly l- lactic acid

Maryam Islsmi,[1,*] Fatemeh soleimanifar,[2] Maryam darvish,[3]

Abstract

Introduction

Despite the umbilical cord blood(ucb) benefits â€“ easy access , availability , rich sources of hematopoietic stem cells(hscs) , low number of hscs in one unite of ucb has been a limitation for adult cd133+ transplantation. the expansion of cd133+ in culture is one approach to overcome this problem. in this study, we evaluated the expansion of ucb-hscs on plla scaffold as well as inhibiting the tgf-_ signaling pathway through reduction of tgf-_rii expression

Methods

Materials and methods: cd133+cells were isolated from ucb by macs technique and transfected by sirna targeting tgf-_riimrna. cd133+cells were expanded on plla scaffold in presence serum free medium containing growth factors. thise culture condition was evaluated for the number of total nucleated cells (tncs), cd133+ surface marker as well as using cfu assay on day 7 after culture.

Results

Results: the fold increase in cd133+ cells, tncs, and colony numbers was observed to be highest in plla scaffold(3d)culture medium compared to 2d.the difference between number of cells in 3d compared to 2d was statistically significant ($p < 0.05$)

Conclusion

The results showed that transfection of cd133+cells with sirna targeting tgf-_rii and using 3d culture system considerably increase the number of progenitors. therefore, this method could be useful for ucb-hscs expansion.

Keywords

Plla, cd133+ , umbilical cord blood,

Evaluation of uricacid ,total antioxidant capacity (tac) in smoker s blood compared to non-smokers

Shokooh Nazi aval,[1,*] Amir hossein esmaeli,[2]

1. Department of Medical Science, Babol Branch, Islamic Azad University, Babol, Iran
2. Department of Medical Science, Babol Branch, Islamic Azad University, Babol, Iran

Abstract

Introduction

Smokers are exposed to significant amounts of oxidizing agents. most studies are about the effect of smoking on the oxidative damage phenomenon and antioxidant changes. oxidative stress plays an important role in the pathogenesis of many diseases, such as lung cancer, chronic diseases, pulmonary obstruction, respiratory distress and cardiovascular disease. they also contain a variety of different oxidant materials, such as free oxygen radicals, which are highly unstable, attacking macromolecules in the cell, including dna, proteins and cell membranes, and damage the cell. the present study was conducted to evaluate the concentration of uric acid, total antioxidant capacity in elderly smokers and compare it with non-smoker elderly people.

Methods

: in this analytical-comparative study, factors such as uric acid, total antioxidant capacity in smokers were studied. a total of 60 people were studied, 30 of them were healthy smoker drivers aged 45-70 years old and an average weight of 90-60 kg with a history of at least 10 cigarettes per day for at least 10 years and 30 non-smokers were randomly included in the study, and none of the subjects had cardiovascular disease, cancer, diabetes and infection, and people they were referred to the laboratory for screening and fasting blood samples from these people was taken. data were described as mean and standard deviation, and the mean of data was evaluated in two groups by independent t-test and spss software was used for statistical analysis. the significance level was considered as $p < 0.05$.

Results

Among the smokers and non-smokers, the parameters of total antioxidant capacity, uric acid were very significant at the statistical probability level of 1% ($p < 0.01$) and the total od parameters at the level of 5% ($0.05 > p$) is meaningful.

Conclusion

Given the role of cigarette smoking as a risk factor for cardiovascular diseases and the role played by oxidative stress in them, measurement of uric acid in young smoker subjects represents a marker against tobacco-induced oxidative stress and recommends their timely giving up of smoking.

Keywords

Cigarette men, total antioxidant capacity, uric acid

Existence of direct correlation between the methylation rate of individual cpgs present in cyp1a1 gene cis-acting element

Leili Sadeghi amiri,[1,*] Ali barzegar,[2] Novin nikbakhsh zati,[3] Pooyan mehraban,[4]

1. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University
2. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University
3. babol university of medical sciences
4. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University

Abstract

Introduction

Gastric cancer is one of the most common malignancies in northern iran with high usage of agricultural pesticides. cyp1a1, as one of the most important prototype of cytochrome p450 detoxifying enzyme superfamily, is epigenetically regulated. recent studies have remarked the correlation between the methylation of individual cpgs present in the cis-acting elements of certain gene.

Methods

Paired tissue samples of turmeric as well as its surrounding normal gastric tissues was dissected from patients who were undergone surgery. genomic dna extracted using phenol-chloroform method was subjected to bisulfate treatment. desired region located in cyp1a1 gene promoter were pcr-amplified and were sequenced in bioneer company. statistically analyzing was done by spearman correlation coefficient.

Results

Results showed that cpg dinucleotides are relatively methylated in either normal or turmeric gastric tissues. statistical analysis revealed that there are significant (positive) correlation between some cpgs in both tissue ($p<0.05\%$).

Conclusion

Positive correlation found between the methylation rates of some cpg dinucleotides scattered in a -4167 _ -3746 bp consensus sequence known as xenobiotic response element. regarding to the importance of respective region in cyp1a1 gene promoter as xenobiotic and transcription factors response elements, correlative methylation rate would change transcription factors affinity leading to differential transcription rate and accordingly possible cancer incidence. screening methylation pattern of this region may be useful to clarify read-write strategy of dna methylation.

Keywords

Cyp1a1, dna methylation, gastric cancer, northern iran.

Exome sequencing in diagnosis of rare neurogenetic disorders

Paria Najarzadeh torbati,[1] Najmeh ahangari,[2] Mehranbeiraghi toosi,[3] Mohammad doosti,[4] Ehsan ghayoor karimiani,[5,*]

1. Next Generation Genetic Polyclinic, Mashhad, Iran
2. Next Generation Genetic Polyclinic, Mashhad, Iran
3. Pediatric Neurology Department, Ghaem hospital, Mashhad University of Medical Sciences, Mashhad, Iran
4. Next Generation Genetic Polyclinic, Mashhad, Iran
5. Honorary Research Associate, University of Manchester, UK

Abstract

Introduction

Diagnostic courses for neurogenetic disorders often require the use of substantial time and resources.previous studies have shown exome sequencing increased diagnostic and clinical utility in medical genetics. although genetic heterogeneity in neurogenetic disorders has been an obstacle to phenotype-based diagnostic testing, exome sequencing improved the presumptive diagnostic rate in patients from 25% to 48%. our objective was to describe the role of exome sequencing in a group of patients with neurogenetic disorders.

Methods

Five families with at least two affected individuals and mendelian inheritance pattern compatible with genetic disorders such as intellectual disability, seizures, epilepsy, paralysis, speech difficulties, vision and hearing problem have been conducted. a complete clinical and paraclinical examination has been done by expertspecialists and clinical geneticist. genomic dna was extracted and evaluated through whole exome sequencing followed by bioinformatic analysis. parents and healthy offspring were assessed for the candidate gene variants.

Results

We have found genetic variations in genes such as mfsd8, cln6, atm, clp1, atrx which have been reported previously or were novel variants based on computational prediction using bioinformatic tools. at the present time, powerful sequencing techniques are identifying large numbers of genetic variants associated with unique phenotypes.

Conclusion

We have demonstrated that exome sequencing as a high throughput molecular technique has rapidly become a component of the clinical approach that require a broad search for causal variants across the spectrum of genetically heterogeneous mendelian disorders.

Keywords

Exome sequencing, genetics, neurogenetic disorders, diagnosis

Exosome, a promising vector in gene therapy

Sara Rahsepar,[1,*] Fatemeh soltani ,[2]

1. School of Pharmacy, Mashhad University of Medical Sciences
2. Biotechnology Research Center, Mashhad University of Medical Sciences

Abstract

Introduction

Exosomes are cup-shaped nanovesicles derived from endosome with a size variation of 30â€“90 nm, which can be secreted by most biological cells. studies demonstrate that exosomes contain mrnas and non-coding rnas such as mirnas which can be transported to recipient cells, as a result exosomes play a significant role in intercellular communication. this natural ability draws attention to exosomes as potential vectors in targeted gene therapy.

Methods

Google scholar, pubmed and scopus databases were searched with no filters, using â€œ exosomes â€œ , â€œ gene therapy â€• ,â€œgene delivery â€œ and â€œ vector â€œ as keywords. 52 papers were related and this review includes 21 of them.

Results

Existing gene delivery vectors have plenty of limitations such as immunogenicity, infection and toxicity. on the other hand, exosomes are manufactured from recipientâ€™s own cells and can overcome the immunogenicity problem. they do not have the ability of self-replication, which prevents the infection probability. in addition, exosomes have a small and flexible bi- layer structure and transfect into cells with the same mechanism of viruses, hence have a high bioavailability and a considerable potential for gene delivery. this potential can be enhanced by using targeting peptides on the surface of exosomes.

Conclusion

According to these evidence, it can be concluded that exosomes have a unique potency as gene therapy vectors and require more consideration.

Keywords

Exosomes, gene therapy,gene delivery, vector

Exotoxin gene examination in pseudomonas aeruginosa strains isolated from patients in sari hospital

Anahita Nejaty,[1,*] Hami kabousi,[2] Fatemeh peyrouvi ghadikoulaei,[3]

1. Islamic Azad University of Ayatollah Amoli
2. Islamic Azad University of Ayatollah Amoli
3. Islamic Azad University of Qaemshahr Branch

Abstract

Introduction

Pseudomonas aeruginosa is one of the most opportunistic pathogens and as one of the main factors of hospital infection. the aim of this study was to detect the presence of the gene isolated in exos isolates from clinical samples.

Methods

: in this descriptive cross-sectional study, in 2017, sampling for 2 months, treatment centers, city of surrey. by performing biochemical diagnostic tests and the use of differential environments, on 40 samples (wound and urinary tract), 30 samples infected with pseudomonas aeruginosa. to check for the presence of pseudomonas aeruginosa isolates exos gene in isolation, pcr test was used.

Results

As a result of this investigation, the pcr test results showed that the existence of one of the most important factors gene exos angiogenesis, that is one of the most important factors are the existence of a creator of the disease pseudomonas aeruginosa isolates in all (100%) there were.

Conclusion

: according to the results of this study, there virulence exotoxin s factor can be a serious warning to the centers of disease control with the bacteria.

Keywords

Pseudomonas aeruginosa, hospital infections, exos gene, pcr

Exploring about immediate, gynecological, sexual and obstetric complications health consequences in female genital mutilation or cutting (fgm/c)

Zahra Baghersad,[1,*]

1. Master of midwifery, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran.

Abstract

Introduction

Female genital mutilation or cutting is recognized worldwide as a violation of the girlsâ€™ and womenâ€™s human rights and constitutes an intense form of discrimination against them due to the severe medical risks and health consequences. regarding the importance of the issue, the researcher aimed to provide a study aimed at determining the immediate, gynecological, sexual and obstetric complications health consequences in female genital mutilation or cutting.

Methods

This study is a review article analysis was performed of systematically using keywords "female genital mutilation or cutting, immediate, gynecological, sexual, obstetric complications" in information resources "pubmed, up to date, google scholar, biomed, wiley online library, elsevier" among 2005 to 2018 years and found 73 articles, 2 electronic books and 1 theses were connected with topics that that have been used of full-text articles.

Results

Immediate complications (excessive bleeding, urine retention, genital tissue swelling, problems with wound healing, and pain), genitourinary problems (scarring, keloids, abscesses, fistulae, damaged tissue of perineum, anal sphincter, disfigurement, vaginal obstruction and cysts, burning or painful urination, menstrual problems "dysmenorrhea, difficulty in menstruation, menstrual problems, irregular menses, and difficulty in passing menstrual blood", chronic pelvic infections, reproductive tract infections, genital infections and vaginitis), painful sexual intercourse (dyspareunia, hiv and sexually transmitted infections, and infertility), and obstetric outcomes (prolonged labor, tears/lacerations, caesarean section, episiotomy, instrumental delivery, hemorrhage failed, difficult labor).

Conclusion

Despite the few studies in this area, the researcher emphasizes that caring for girls and women who suffer from its consequences and research into the best and most acceptable treatment and care are important. also, while work continues to eradicate fgc in indigenous societies, we envision a future in which fgc-affected immigrant communities in the developed world receive holistic support. in the authorsâ€™ opinion, the ideal situation would be one in which formal training on fgc was developed for healthcare

providers, school personnel and social service workers. pediatric care providers would learn about this cultural norm to facilitate early intervention.

Keywords

Female genital mutilation or cutting, immediate, gynecological, sexual, obstetric complications.

Expression of aav-mcs-ires-egfp-opto-mglur6 in mouse retinal pigment epithelial cells as an optogenetic tool in neural differentiation

Hoda Shams najafabadi,[1] Zahra-soheila soheili,[2,*] Hamid ahmadieh,[3] Sharam samiei,[4] Ehsan ranaei pirmardan,[5]

1. Department of Molecular Medicine, National Institute of Genetic Engineering and Biotechnology
2. Department of Molecular Medicine, National Institute of Genetic Engineering and Biotechnology
3. 2- Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences
4. 3- Blood Transfusion Research Center High Institute for Research and Education in Transfusion Medicine
5. 4- Department of Molecular Genetic, Faculty of Biological Sciences, Tarbiat Modares University

Abstract

Introduction

In retinal degenerative disorders, such as age-related macular degeneration and retinitis pigmentosa neural retinal cells are damaged. neural retinal cell transplantation is one of the most promising therapeutic approaches in treatment of vision loss. retinal pigment epithelia (rpe) is a monolayer of highly specialized hexagonal-shaped cells, located between the neurosensory retina and the choroid. rpe cells represent stem cell like behaviors in cell culture. they could differentiate into neural retinal cells. optogenetic tools activate relative signaling pathway and culminate to neural differentiationin candidate cells. this study aims to induce neural differentiation of rpe cells by opto-mglur6 expression as an optogenetic tool.

Methods

Opto-mglur6 gene was cloned into paav-mcs-ires-egfp plasmid. to check the accuracy of cloning, the resultant constructs were subjected to digestion and sequencing experiments. mouse rpe (mrpe) cells were transfected with the constructs using calcium phosphate precipitation method. after 48 hours, expression of constructs was examined.

Results

Paav-mcs-ires-egfp-opto-mglur6 plasmid was constructed. sequence analysis revealed the true identity of the construct. gene expression for opto-mglur6 was confirmed in transfected mrpe cells.

Conclusion

Opto-mglur6 expression, in mrpe cell culture was successfully established.

Keywords

Opto-mglur6, optogenetic tools, retinal degenerative disorders, mouse retinal pigment epithelium

Expression of genmxa relapsing-remitting multiple sclerosis responders and nonresponders to interferon beta therapy

Mahtab Fattahi sadegh abadi,[1,*] Nahid eskandari,[2] Fattah sotoodehnejadnematalahi ,[3] Vahid shaygannejad,[4]

1. Department of Biology,school of Basic Science ,Science and research branch, Islamic Azad University,poonak, Tehran, Iran
2. Department of Immunology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
3. Department of Biology,school of Basic Science ,Science and research branch, Islamic Azad University,poonak, Tehran, Iran
4. Department of Neurology, Neurosciences Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Introduction

: multiple sclerosis (ms) is a chronic, inflammatory and demyelinating disease that affects the central nervous system. several therapies are available for the treatment of ms. interferon beta (ifn-Î²) represents one of the most commonly administered drugs for the treatment of the rr-ms patients. myxovirus resistance protein a (mxa) is a molecule induced after injection of ifn-b, and its quantification could be considered a biomarker of ifn-b bioactivity. the purpose of this study was to evaluate genmxa expression in responders and non- responders patients to interferon beta treatment in isfahan population.

Methods

A total of 70 patients including responders and non-responders to ifn-b (n=35) were enrolled. we analyzed the expression level of genmxa using peripheral blood from rr-ms patients at 12 months after starting with ifn-Î² therapy. real-time qpcr was performed to analyze genmxa expression.

Results

These results indicated that genmxa expression was increased in responders compared to controls, but this upregulation wasnâ€™t seen in non-responders. moreover, the level of mxa was increased in responders compared to nonresponders, ($p < 0.01$.)

Conclusion

Mxa expression levels may act as a marker of the biological effects of ifn-Î² therapy. the low levels of mxa in non-responders group could explain the ineffectiveness of this treatment in some patients.

Keywords

Interferon-beta; multiple sclerosis; genmxa

Expression of mir-29b-3p relapsing-remitting multiple sclerosis responders and nonresponders to interferon beta therapy

Mahtab Fattahi sadegh abadi,[1,*] Nahid eskandari,[2] Fattah sotoodehnejadnematalahi ,[3] Vahid shaygannejad,[4]

1. Department of Biology,school of Basic Science ,Science and research branch, Islamic Azad University,poonak, Tehran, Iran
2. Department of Immunology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
3. Department of Biology,school of Basic Science ,Science and research branch, Islamic Azad University,poonak, Tehran, Iran
4. Department of Neurology, Neurosciences Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Introduction

Multiple sclerosis (ms) is a chronic, inflammatory and demyelinating disease that affects the central nervous system. th17 andth1 cells are the main cells of inflammatory process in ms. mirnas are likely involved in most biological processes, and play important roles in the immune system function. the purpose of this study was to evaluate mir-29-3pexpression in responders and nonresponders patients to interferon beta treatment.

Methods

A total of 70 patients including responders and non-responders to interferon b (inf-b) (n=35) were enrolled. we analyzed the expression level of mir-29-3p using peripheral blood from rr-ms patients at 12 months after starting with ifn-Î² therapy. real-time qpcr was performed to analyze mir-29-3p expression.

Results

These results indicated that mir-29-3p expression was reduced in responders compared to controls, but this downregulation wasnâ€™t seen in non-responders. furthermore, the level of mir-29-3p was significantly decreased in responders compared to nonresponders ($p < 0.05$).

Conclusion

: mir-29-3p expression is associated with chronic inflammatory responses in ms. therefore, reduction of its expression may link to the downregulation of inflammation. overall, mir-29-3p expression levels might act as a marker of the biological effects of ifn-Î² therapy.

Keywords

Interferon-beta; multiple sclerosis; mir-29-3p

Expression of mt1 receptor in patients with gastric adenocarcinoma and its relationship with clinicopathological features

Ramin Ataee,[1,*] Farshid sargazi,[2] Nafiseh nasri nasr abadi,[3] Mojtaba najafi,[4] Hamed haghi-aminjan,[5] Seyed habibeh mirmajidi,[6]

1. Pharmaceutical sciences research center, Mazandaran University of medical sciences, Sari. Iran
2. Pharmaceutical sciences research center, Mazandaran University of medical sciences, Sari. Iran
3. Toxicology Pharmaceutical Sciences Research Center,Faculty of Pharmacy,Shahid Beheshti University of Medical Sciences
4. Animal Breeding and Genetics, Researcher at Mazandaran University of medical sciences. Sari. Iran
5. Department of Toxicology and Pharmacology, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran-Iran
6. 3Department of Medical Biotechnology, School of Advanced Medical Sciences and Technology, Shiraz University of Medical

Abstract

Introduction

Gastric cancer accounts 8% of the total cancer cases leading to 10% of total cancer deaths worldwide. the indoleamine n-acetyl-5-methoxytryptamine, better known as melatonin, is the principal hormone produced by the pineal gland. recently, it has been well documented some anti-cancer roles of melatonin in some malignancies as breast and colon cancer; as well as some its protective roles in the gi tract that have been known as free radical scavenger, antimitogenic and apoptotic properties. according to the anti-cancer effects of melatonin, wide distribution of this neurohormone in gi tract and some proposed physiologic and pharmacologic roles for this neurohormone and following our previous study which has shown expression of mt2 receptor in gastric adenocarcinoma, this study initially scheduled to determine the expression of melatonin receptor mt1 in tissue samples of adenocarcinoma cancer patients.

Methods

A total of 10 gastric adenocarcinoma patients and 10 normal individuals were examined for mt1 gene expression by real-time pcr. additionally, for screening of different alleles of mt1 in our samples, the sscp-pcr procedure was developed.

Results

Our results have shown interestingly high expression for mt1 receptor in cancer and marginal cancer groups comparing with normal group. our findings also have shown that a remarkable association between mt1 receptor mrna levels and grade in individuals over age 50. pcr-sscp analysis results showed a variation between individuals which may be effective on their gene expression patterns.

Conclusion

According to our knowledge, for the first time this study evaluated the expression of mt1 receptor gene in gastric adenocarcinoma tissues which consistent with our previous study but with some difference in comparisons between kind of tissue expression and difference in polymorphisms. moreover, these results show the defending role of melatonin in the gi system.

Keywords

Melatonin, gastric adenocarcinoma, mt1 receptor, gene expression, polymorphism.

Extensive diversity of caga carboxylic-end motifs in iranian helicobacter pylori strains

Anahita Dah pahlevan,[1,*] Saeid latifi-navid,[2] Saber zahri,[3] Seyedeh zahra bakhti,[4]

1. 1Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
2. 1Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
3. 1Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
4. 1Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran

Abstract

Introduction

The caga protein from different strains of h. pylori has a wide variation in the c-terminal regions, which includes repetitive phosphorylation fractions (epiya motifs). it has been shown that the number and composition of different motifs can be changed based on geographical situations and determine the clinical outcomes. the aim of this study was to determine the diversity and composition of various caga motifs in h. pylori strains obtained from different regions of iran.

Methods

A total of 283 h. pylori strains were obtained from cultures of gastric biopsy and then dna was extracted and genotyped. data were collected and analyzed using spss version 22.

Results

Of the 283 strains, 133 were positive for caga status. frequency of the epiya-a, b, c, and d motifs in iranian patients, was 95/133 (71.4%), 84/133 (63.2%), 92/133 (69.2%), and 81/133 (60.9%), respectively. in our study, the epiya-abcd type of motile was the most frequent compared to the type of epiya-abc (western), epiya-abd (eastern asian), epiya-bcd, epiya-acd, epiya-ab, epiya-ac, epiya-ad, epiya-bc, epiya-bd, and epiya-cd type motifs (38.3%, 10.5%, 1.5%, 2.3%, 4.5%, 3.8%, 5.8%, 3.8%, 1.5%, 3.0%, and 3.8%, respectively).

Conclusion

Therefore, in terms of the diversity of caga carboxylic-end motifs; in iranian strains, epiya-abcd type motif was different compared to those from the eastern asian (epiya-abd) and western (epiya-abc) strains, and iranian motifs may be associated with the severity of gastrointestinal diseases.

Keywords

Helicobacter pylori, caga, epiya motifs, iran.

Extraction and physicochemical investigation evs(extera cellular vesicle) of bifidobacter bifidum

Majid Taati,[1,*] Seyed davar siadat,[2] Zahranormohamadi,[3]

1. pastor
2. pastor

Abstract

Introduction

Since,spherical particles(muraca ,2015) can caused intraction between immune system and epithelial cells and secretion cytokine and thus cause immune system maturity (ruiz*2016)

Methods

Standard strain was provided from takgenzist mrsagar, bloodagar culturs ,were used ,to grow the strain . mrsbrothe was used for ineoculatiaon to grow to have culture en vrac. pcr(roche)was used 16srrna bifidobacter bifidum . the concentration of pr was studied by nanodrap(thermos) costant centerifugeues was used to extract extera cellular vesicle electerony microscoup was used to show ficicalc colifi cation and sds-page was used to detrmined chemical coalifications

Results

The band in 300pb shows that(figure1) this extense of bactry of this electerony microscop shows that the size of vesicaul are between 50-250nm(figure2) they are also esphericel sds-page result show that the size of vesicle are between 20-250 kdl(figyre3) that is in moreover,the prconcentration was 0.01mg/ml figure2:electerony microscop figure1:band for pcr figure3:band of sds-page figure3:band of sds-page

Conclusion

Marco(2015) stated that the size of vesicle are between 50-250 that is the same as we achieved kim (2017)also stated that the size of vesicels in gram positive bacteria are between 20-250 that is in the harmony of our results. acourding to the result to the study bifidobacter can be promising candidate in probiotic industry

Keywords

Centerifuge,sds-page,electron microscope,mrsbrothe

Extraction and purification of antimicrobial agents from serratia marcescens

Seyedeh maryam Mousavi,[1,*] Bita archangi,[2] Hossein zolgharnein,[3] Isaac zamani,[4]

1. khoramshahr university of marine science and technology
2. khoramshahr university of marine science and technology
3. khoramshahr university of marine science and technology
4. khoramshahr university of marine science and technology

Abstract

Introduction

S. marcescens is a gram-negative bacteria that produces many compounds such as biosurfactant, fatty acids, enzymes and pigment compounds. the abilities of this bacterium can be used in biotechnology. with regard to the infectious diseases spread and the resistance of pathogenic strains to common antibiotics, efforts to find natural compounds with antimicrobial activity have increased. accordingly, in this study, prodigiosin and bacteriocin compounds of s. marcescens were extracted and purified and their antimicrobial properties were investigated.

Methods

After isolation and molecular identification of the s. marcescens, the bacterium was cultured in peptone glycerol medium and then the compounds were separated by centrifugation and methanol as solvent. column chromatography was used to purify these compounds and their structure was confirmed by ft-ir. antimicrobial effect of purified prodigiosin and bacteriocin was evaluated using disc diffusion method on some bacterial strains.

Results

The results showed that purified prodigiosin had antimicrobial activity against escherichia coli, pseudomonas aeruginosa, bacillus subtilis and staphylococcus aureus. bacteriocin showed antimicrobial effect against e. coli strains.

Conclusion

According to these results, we can use s. marcescens as a source of natural antimicrobial compounds against some pathogenic strains that noted.

Keywords

S. marcescens, prodigiosin, bacteriocin, antimicrobial agents

Extraction bifidobacter bifidum and frequency in gut of irainian obes and normal people

Majid Taati,[1,*] Seyed davar siadat,[2] Zahranormohamadi,[3]

Abstract

Introduction

Bifidobacterium bifidum is one of vital elements of microbiota of digestion systems. (guglimetti2011) considering the fact that both short chain fatty acid (aoki,2017) and microbiota of digestion systems are influenced by age ,lifestyle , race,genetic and geography,(cresci,2015) it has been see that this bacteria can cure some disease such as obesit. (benefits,2017) this study investigates frequency percentage of b. bifidum in over weight and normal iranian people . this study aims to determine the frequency percentage of b. bifidum in irainian people for the first time.

Methods

We condoucted asurvey of fifty people a bout were sex (women and men),age, hauteur,weight,food,drinks(fizydrinks)us ing su,suger and salt, expÃ©rience of using weight deases (spichal deases like diabetes .ldl),taking medicin or using antibiotics . result were categorized in to two groups ,unhealthy people and healthy people .after that amuong healthy people according to bmi)body mass index) have were divided in to two groups :normal and over weight healthy people dna from their stool (healthy people)(dnaextraction according to qiagen standard) has been extracted to,determine the persontage of bifidobacter bifidum frequency ,qpcr technique. was used data was analysed by spss and t-test and then tables were drown in excel data.

Results

Results showed that b.bifidum was less amonge over weight people comperd to people .table shows that present of studied people aged between 20-39 and 62 percent aged between 40-60 .(table 1) frequency percent valid percent cumulative percent valid Ø³Ø§Ù„ 20-39 Ø§Ù• Ø±Ø§Ø¯ 31 62.0 62.0 62.0 Ø³Ø§Ù„ 40-60 Ø§Ù• Ø±Ø§Ø¯ 19 38.0 38.0 100.0 total 50 100.0 100.0 table1; frequency of age qpcr showed that minimum4.72e+001and maximum4.53e+013 of b. bifidum freequancy wich respectively (table 2) n valid 48 missing 2 mean 1.8081e+012 std. error of mean 1.01400e+012 median 5.9400e+009 std. deviation 7.02517e+012 range 4.53e+013 minimum 4.72e+001 maximum 4.53e+013 table2: statistics b. bifidum p/ was achieve 5percent in 0.027 persent that was not significant

Conclusion

Since gut microbiota plays an important rol in human health suach as proving necessary nutrition ,producing vitamin k thus, it has been the subject of a lot of studies . ley2006 studied bacteroides frequency and found out in over weight people the amount of bactery is less and normal people .in the present study we found out this reualt stating the decrease of bifidobacter frequency a moung iranian over

weight people compared to normal ones ,other studies like (cani2009)showed the same result us our study .,brevotess(2013) and gowens (2017). becauase of genetic ,lifestyle, food , geography b. bifidum frequency among over weight people is less than normal ones ,there fore identifying gut microbiota is necessary nessecery to treat over weight people diseases .

Keywords

Bifidobacter bifidum,qpcr,overweight people.

Fabrication of trail â€“ s layer/ graphene quantum dot complexes for induction of apoptosis in colon cancer cells

Shima Lotfollahzadeh,[1] Elahe sadat hosseini,[2] Maryam nikkhah,[3,*]

1. Department of Nanobiothechnology, Faculty of Biological Sciences, Tarbiat Modares University
2. Department of Nanobiothechnology, Faculty of Biological Sciences, Tarbiat Modares University
3. Department of Nanobiothechnology, Faculty of Biological Sciences, Tarbiat Modares University

Abstract

Introduction

Tumor necrosis factor (tnf) related apoptosis inducing ligand (trail), known as a cytokine of the tnf superfamily, is considered as a promising anti-tumor agent due to its ability to induce apoptosis selectively in a wide variety of tumor cells while sparing vital normal cells. however, its therapeutic efficacy has been hampered by its extremely short half-life and weak pharmacokinetic profile. to overcome these obstacles trail-based nano therapies, aiming to significantly improve its circulating time in vivo have been employed. crystalline bacterial cell surface layers (s-layers) are two-dimensional proteinaceous arrays that have been identiï¬• ed in a great number of different species of bacteria and represent an almost universal feature of archaea .one of the most fascinating properties of isolated native s-layer proteins and s-layer fusion proteins is being capable to self-assemble into monomolecular crystalline arrays in suspension and recrystallize at liquid-surface interfaces, lipid structures and on solid supports (e.g. polymers, metals, silicon wafers) . in this context we have fabricated trail â€“ s-layer fusion protein conjugates with graphene quantum dots (gqds) to benefit self-assembly properties of s-layer protein to improve the systemic circulation and elevate antitumor activity of trail as well as tracking and real time monitoring of the complex via fluorescent gqds.

Methods

Expression and purification of trail â€“ s-layer fusion protein: trail â€“ s-layer fusion protein cdna was cloned into prokaryotic expression vector pet28a and was expressed in iptg induced e.coli bl21(de3) cells and purified using immobilized metal-ion affinity chromatography. purified proteins was analyzed by sds-page. synthesis and characterization of gqd : non-toxic blue-luminescent graphene quantum dots (gqds) were synthesized by hydrothermal method and characterized by uv-vis, photoluminescence (pl), fourier transform infrared (ftir) and raman spectroscopies, atomic force microscopy (afm) and transmission electron microscopy (tem) conjugation of fusion protein and gqds : conjugation was achieved by mixing of fusion protein aqueous solution (0.16 mg/ml) and gqds (0.05mg/ml) followed by incubation at room temperature for 2h in dark. trail â€“ s-layer /gqd complexes were characterized by uv-vis and photoluminescence (pl) spectroscopies, gel retardation assay, size and surface charge(Î¶-potential) obtained by dynamic light scattering (dls) in the presence or absence of ã€–caclã€—_2 (bivalent cations help to recrystallization) , atomic force microscopy (afm) and transmission electron microscopy (tem) cytotoxicity assay, cell imaging and apoptosis assay : ht29 cell line was cultured for all cellular assays .the viability of the cells was determined by mtt assay. doxorubicin (dox), treatment of the cells was done

to sensitize ht29 cells to trail. fluorescence microscopy was used for cell imaging and the percentage of apoptotic cells were measured by flow cytometry assay.

Results

Trail â€“ s-layer fusion protein expression was analyzed by sds-page 12.5% and purified protein as a single band was obtained. gqds characterization was performed by all mentioned method and non-toxic highly blue-luminescent graphene quantum dots with a narrow size distribution was achieved. investigation of the trailâ€“s-layer /gqd complex formation was performed at first by gel retardation assay. results showed that free fusion protein and gqd travel a longer distance in the gel compared to the complex. the change in the Î¶-potential and size of the complex reveals that electrostatic interactions have been established . formation of gqd-protein complex were further characterized by uvâˆ’vis and ï¬‚uorescence spectroscopies. in the uvâˆ’vis spectra, two absorption peaks appear at â¼280 and â¼337 nm, characteristic of protein and gqd, respectively, indicating successful conjugation of the protein and gqds . furthermore , the ï¬‚uorescence of gqds were partially quenched indicating the strong interaction between protein and gqd . the morphology and size distribution of both gqds and complexe were determined by afm. the cytotoxicity of different concentrations of, trail â€“ s-layer fusion protein was investigated by mtt assay .the results showed that fusion protein had a well cytotoxic effect on ht29 cells. tracking of the complex analyzed by fluorescence microscopy technique .

Conclusion

In this present study we applied a novel trail â€“ s-layer fusion protein conjugated gqds to improve physicochemical, pharmacokinetic and antitumor properties of trail as well as real time monitoring of delivery. according to the results, our designed nano-complex could be considered as a promising therapeutic potential agent for antitumor biotherapy and an important step forward successful clinical applications .

Keywords

key words: trail â€“ s-layer fusion protein, self-assembly, graphene quantum dot

Factors evaluation of oxidant â€“ antioxidant malondialdehyde, plasma total antioxidant and vitamin c in type 1 diabetes patients

Nasim Amiri kojuri,[1,*] ÙŽÙŽZamirhossein esmaeili,[2]

1. Department of Medical Science, Islamic Azad University, Babol Branch, Babol, Iran
2. Department of Medical Science, Islamic Azad University, Babol Branch, Babol, Iran

Abstract

Introduction

One of the most important diseases which is prevalent and chronic is diabete. the conditions of oxidative stress and missing equilibrium of antioxidants have an important and main role in emerging and development of this disease. evaluating the factors of oxidant â€“ antioxidant malondialdehyde, plasma total antioxidant and vitamin c in type 1 diabetes patients is the main purpose of the present study.

Methods

In the present case â€“ control study, 30 patients suffering from type 1 diabetes were compared with 30 healthy persons. the capacity of plasma total antioxidant was measured with frap method. malondialdehyde was measured as final production of lipids peroxidation based on hadley and draper method and evaluation of vitamin c level using roe and queter method. statistical analysis was done using t statistical test and spss soft ware. p <0.05 was considered as significant level.

Results

The mean and standard deviation of vitamin c level in persons with case 7.43Â±0.67 was Âµmol/l and in persons with control 8.76Â±2.86 was Âµmol/l that statistically was significant (p = 0 .000). the capacity of plasma total antioxidant (tac) and the amount of malondialdehyde as a factor lipids peroxidation have a significant change in the two groups.

Conclusion

In the present research, the level of antioxidant factors of vitamin c in patients suffering diabetes has been significantly less than control group. therefore, it is recommended to consume and use natural antioxidants much more in order to reduce damages originate from free radicals.

Keywords

Type 1 diabetes, malondialdehyde, plasma total antioxidant, vitamin c

Fecal microbiota transplantation (fmt) as a new treatment for clostridium difficile infection (cdi): a literature review

Nastaran Shah sanaie,[1] Mohammad rabbani khorasgani,[2,*]

1. Department of Biology , Faculty of Sciences, University of Isfahan
2. Department of Biology , Faculty of Sciences, University of Isfahan

Abstract

Introduction

During recent decades, clostridium difficile infection (cdi) has expressed increase in severity, morbidity, and mortality. some important challenges such as drug resistance, gut microbiota change, and high expenses, have led scientists to develop fecal microbiota transplantation (fmt) as a new treatment for cdi. at this review, the rationale, methods, and potential applications of fmt especially for treatment of cdi have been discussed.

Methods

This study was conducted using library research method and databases searching.

Results

Fmt is regarded as a suitable method for gut microbiota regulation. improved colon microbial community, deal with c. difficile by different mechanism such as competition for nutrients, producing antimicrobial peptides, prevention of spore germination and vegetative growth by, and activation of immune response. according to some documents, this method has been successful in 90% of patients.

Conclusion

In recent years, the incidence of clostridium difficile infection has increased significantly and antibiotic therapy could not always successful in treatment of patients. fmt has a high potential to be used remedy of recurrent cdi. at this method gut microbiota improved and prevent spore germination. fmt regulates the intestinal microbial population which can be a simple and inexpensive way to deal with other intestinal infections. however, some questions should be answered and clinical use of this method requires further studies.

Keywords

Clostridium difficile infection, fecal microbiota transplantation (fmt), gut microbiota regulation

Fetal hemoglobin induction through the suppressor of lsd1 by using gsk-lsd1 that now is epigenetic drugs

Yadallah Dalvand,[1,*] Mojtaba khayam nekouie,[2] Mohammad hamid,[3] Majid sadeghizadeh,[4]

1. Ù• Researcher in Department of Medical Genetic in MOM Center
2. Faculty of Biological Science, Tarbiat Modares University
3. iotechnology Research Center, Department of Molecular Medicine, Pasteur Institute of Iran, Tehran, Iran
4. Faculty of Biological Science, Tarbiat Modares University

Abstract

Introduction

Introduction: hemoglobinopathies, b-thalassemia and sickle cell disease (scd) together include the most common inherited diseases. the only current therapy for scd is treatment with hydroxyurea (hu). hu induces fetal hemoglobin (hbf) synthesis in about half of treated patients by an as yet unknown mechanism(s), and its long-term effects are largely unknown and in some patients have the bad effect. switch from fetal Î³ globin to Î² globin gene expression occurs at birth, hbf induction is known clinically to reduce organ morbidity and pain in scd patients, and to inhibit sickle polymer formation and consequently the destruction of erythrocytes in vitro. several adult-stage Î³ globin repressors, such as bcl11a, ikaros, gata1 and sox6 have been identified that interact with each other to repress the Î³ globin genes. for the past decade, several adult-stage Î³ globin repressors, such as bcl11a, ikaros, gata1 and sox6 that called dred have been identified that interact with each other to repress the Î³ globin genes. the strong recent results showed one of the modifying enzymes is lsd1, a monoamine oxidase that removes activating chromatin signatures, thereby leading to gene repression. recently result showed that a highly specific inhibitor for lsd1 called tranylcypromine (tc). in human cd34+ hematopoietic stem cells induced to differentiate into erythroid cells in vitro, hbf was induced to therapeutic levels in a tc dosage-dependent manner. filed a novel use patent for tc, which is already fda approved and off patent, and intend to test for cryptic properties (hbf induction) in cells and sickle cell mice.

Methods

Material method: we examined the effects of the gsk-lsd1 inhibitor on cd34+ cells are isolated from cord blood using positive immunomagnetic separation techniques, cells ex vivo. cell number and viability were determined by trypan blue staining. cell morphology was examined by wright-giemsa staining (sigma-aldrich). flow-cytometric analysis showed that hbf was induced in all of the cells in a dose-dependent manner. we treated the cells with 0, 0.5, 1.5, and 5 Î¼m of the gsk-lsd1 inhibitor on days 4 to 14 of the differentiation culture. then we performed an analysis of the expression of lsd1 and Î³ globin genes comparable levels throughout differentiation with real-time pcr using the iq sybr green master mix.

Results

Results: after treatment gsk-lsd1 inhibitor at 0.5, 1.5, and 5 Î¼m did not alter cell proliferation or viability, but 5Î¼m gsk-lsd1 reduced cell proliferation and delayed differentiation without affecting cell viability. in 1.5-Î¼m concentration of the gsk-lsd1 inhibitor, the mean of Î³-globin mrna expression was induced up to 33-fold. we observed a decrease in the lsd1 mrna expression in a 5-Î¼m concentration of the gsk-lsd1 inhibitor.

Conclusion

Conclusion: our results indicated that lsd1 played an important role in Î³-globin silencing in adult erythroid cells. further, the gsk- lsd1 inhibitor increase concentration of hbf induction within the therapeutic plasma concentration. finally lsd1 is thus a promising therapeutic target for Î³-globin induction, and gsk- lsd1 inhibitor lead compound for the development of a new Î³-globin inducer. thus, with continued careful attention to fundamental biological and pharmacologic considerations, there is potential that rational, molecular- targeted, safe and highly potent disease-modifying therapy can be realized for patients with sickle cell disease, with the accessibility and cost-effective properties needed for worldwide effect.

Keywords

Fetal hemoglobin, hemoglobinopathies, lsd1, gsk-lsd1, epigenetic drugs

First time isolation of massilia timonae from eggshells in fars province

Susan Sohrabi,[1] Nima bahador,[2,*]

1. Department of microbiology, College of Science, Shiraz Branch, Islamic Azad university, Shiraz, Iran
2. Department of microbiology, College of Science, Shiraz Branch, Islamic Azad university, Shiraz, Iran

Abstract

Introduction

Eggs with an average annual consumption of 250 per person per year are important foods in the diet of individuals. although egg is considered as an important food additive, it can be one of the causes of food poisoning. egg-level contamination occurs when it is formed in the chicken body when packaged or transmitted to the market. poisoning and common egg-induced contamination occur mainly due to the activity of salmonella, staphylococcus, and escherichia coli. because of the dangers of egg contamination and poisoning by it and its products, reducing the frequency and dose of contamination in these foods has been taken into consideration by manufacturers and health centers. the aim of this study was to determine the microbial contamination of eggshells collected from different factories in fars province and identify the most common isolates using molecular technique.

Methods

the eggs were collected from four companies. bacterial isolation was done using tsb and blood agar. in the next step, identification of the isolates was carried out using differential culture media, gram staining, and biochemical tests. the most common isolates were examined by pcr. in the last stage, antibiotic susceptibility was tested to determine the sensitivity and antibiotic resistance of the bacteria.

Results

for the first time massilia timonae were detected from eggshells. the organism were susceptible to most of the antibiotics, while it was resistant to oxacilline.

Conclusion

because of the nutritional value and high consumption of eggs in different countries, the packaging is different according to the conditions and location of the storage, transportation and packaging systems. as a result, the organisms are different, which is one of the factors involved in the pathogenicity process. therefore, increasing the awareness of the personnel working in the field of egg packing and distribution, the cleaning of related systems can help to reduce the number of microorganisms and consequently reduce pathogenicity.

Keywords

microbial contamination, eggshell, massilia timonae

Formulation and evaluation of fast-dissolving sublingual films of ondansetron succinate by electrospinning method

Samira Kamranpour,[1,*] Shahla mirzaeei,[2]

1. Student Research Committee School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran
2. Pharmaceutical Sciences Research Center, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract

Introduction

Introduction: drug delivery via sublingual mucous membrane is considered to be a promising alternative to the oral route. this route is useful when rapid onset of action is desired as in the case of antiemetics such as ondansetron. in terms of permeability, the sublingual area of the oral cavity is more permeable than cheek and palatal areas of mouth. the drug absorbed via sublingual blood vessels bypasses the hepatic first-pass metabolic processes giving acceptable bioavailability with low doses and hence decreases the side effects. sublingualdrug delivery system is convenient for paediatric, geriatric, and psychiatric patients with dysphagia. ondansetron hydrochloride, a 5 ht3 antagonist is a powerful antiemetic drug which has oral bioavailability of 60% due to hepatic first pass metabolism and has a short half-life of 5 h. to overcome the above draw back, the present study was carried out to formulate and evaluate fast dissolving films of ondansetron hydrochloride for sublingual administration. fast mouth dissolving films have become popular as a new delivery system because they are easy to administer and sudden-onset of drug action is possible as the nanofibers are taken through the sublingual route.

Methods

Nanofibers solutions were obtained upon the composition of 10% (w/v) betacyclodextrine to 20% pva with ondansetron hydrochloride under magnetic stirring at room temperatures. preparation of the nanofibers was carried out using a customized electrospining system. characterized for morphology, thickness, drug content, infrared (ir) spectroscopy, and in vitro drug release. electrospinning, also referred to as electrostatic spinning, is a process of producing fibers with diameters in the range of 100 nm. the process consists of applying a high voltage direct current to a polymer solution or melt to produce a polymer jet. as the jet travels in air, the jet is elongated under repulsive electrostatic force to produce nanofibers.

Results

The nanofibers were prepared from polymers such as polyvinylalcohol and betacyclodextrine in different ratios . sodium saccharin as sweeteners were also included. the ir spectral studies showed no interaction between drug and polymer or with other additives. satisfactory results were obtained when subjected to

physicochemical tests such as uniformity of weight, thickness, surface ph, uniformity of drug content, swelling index. nanofibers were also subjected to in vitro drug release studies.

Conclusion

The aim of this study is to producing sublingual nanofibre of ondansetron in order to rapid onset of action and with due attention to satisfactory results from physicochemical tests, sublingual nanofibre of ondansetron can be an appropriate alternate for conventional dosage form.

Keywords

Ondansetron, nanofibre, electrospinning, polyvinyl alcohol

Frequencies of mefv gene mutations in iranian azeri fmf patients

Saba Dayemomid,[1] Aziz khorrami,[2] Shahin behrouz sharif ,[3] Mahan narjabadifam,[4] Seyyed vahid mohaddes ardebili,[5] Seyyed mojtaba mohaddes ardebili,[6,*]

1. Drug Applied Research Center, Tabriz University of Medical Sciences
2. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
3. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
4. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
5. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
6. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Familial mediterranean fever (fmf), a periodic autoinflammatory disorder with autosomal recessive inheritance, is characterized by abdominal, chest, joints and muscular pains, fever, and arthritis. similar to other chronic inflammatory diseases, amyloidosis is the most severe complication of fmf that leads into renal failure. the responsible gene for this disease (mefv) comprises 10 exons and 781 codons. in the present study, we investigated mefv mutations in iranian azeri fmf patients.

Methods

132 suspected iranian azeri fmf patients with a mean age of 22 years were included in this study who demonstrated clinical features of fmf according to tel-hashomer criteria. exons 2,3,4,5, and 10 and intron-exon boundaries of mefv gene were analyzed using direct sanger sequencing method.

Results

70 individuals demonstrated mutations, of which 25.7% (18/70) were homozygote, 30% (21/70) compound heterozygote and 44.3% (31/70) heterozygote. the most prevalent mutation was m694v (36%), followed by v726a (21%), e148q (19%), m680i (18%), p369s(3%) and r408g(3%). the remaining symptomatic patients showed no mutation in analyzed regions.

Conclusion

The prevalence of m694v mutation in our population indicates its top priority in mutation detection of fmf patients that will be time and cost effective as first step of fmf diagnosis. moreover, the lack of mutation in certain fraction of patients might be due to the fact that our strategy does not encompass the whole sequence of mefv gene and rare mutations in other regions may be involved or other medical complications with similar clinical features might account for misdiagnosis of fmf patients.

Keywords

Fmf, m694v, e148q, sanger sequencing

Frequency evaluation of anxiety and depression symptoms in mother of children who suffer from autistic spectrum disorder

Samira Fereidouny ,[1,*] Arvin hedayati,[2] Ebrahim- moghimi sarani,[3]

1. Shiraz University of Medical Sciences
2. Shiraz University of Medical Sciences
3. Shiraz University of Medical Sciences

Abstract

Introduction

: autistic spectrum disorder has a strong influence on the family life of parents with autistic children, especially mothers are facing numerous problems. therefore, we have designed and conducted the following study with the aim of frequency evaluation of symptoms of anxiety and depression in mothers with autistic spectrum children comparing to mothers with healthy children in shiraz

Methods

This study is a causal - correlation study approved at the shiraz university of medical sciences. two groups of mothers were included , 59 mothers with autistic children (in the sampling method) and 59 mothers with children who had never been diagnosed with any kind of mental or physical disorder therefor, considered healthy in the society (in cluster sampling method) .these two groups were designed to compare in frequency of anxiety and depression symptoms. for collecting the relevant data in this study , beck inventory of depression and anxiety were used .after that data were entered into spss version 22 and were evaluated prior to the statistical analysis for the possible errors resolving . statistical tests whitney mann and chi-squared test were used for analyzing the mentioned data

Results

the average age of mothers of these children was estimated 38 / 39 years old with a standard deviation of 8 /44 years and with range difference of 15 - 64 years old . according to the data 88 % of the women were married and 54 % of the surveyed people lived in the city though 44 % of them in the village . our study findings showed that a higher percentage of mothers with healthy children had no anxiety symptoms compared to the mothers with autistic spectrum disorder children (84%vs. 52%) . similarly , our findings showed that the level of mild to moderate anxiety of mothers with autistic spectrum children were more than mothers with healthy children (20% vs.16%) and results of chi - square test showed significant level of differences (p-value<0.0001) ,thus the value of this relationship is statistically significant , and mothers with autistic children have higher levels of anxiety symptoms . most mothers with healthy children had minor depression or lack of depression and in terms of extreme depression this percentage was zero in these mothers . compared to the mothers of children with autistic spectrum disorder ,28 percent of them suffered from mild and moderate depression . according to the significance level of difference (p - value =

0.002) the difference between these two groups was statistically significant and mother with autistic spectrum child had a higher level of depression comparing to the mothers with a healthy child.

Conclusion

Our study revealed that there is a significant differences between mothers with autistic spectrum disorder children and mothers of healthy children in terms of frequency of anxiety and depression symptoms .mothers with autistic spectrum children have a higher level of anxiety and depression symptoms comparing to mothers with healthy children

Keywords

Depression, anxiety, autistic children, mothers, shiraz

Frequency of gjb2 and gjb6 gene mutations in arnshl patients of northwest iran

Aziz Khorrami,[1] Saba dayem omid,[2] Shahin behrouz sharif ,[3] Mahan narjabadifam,[4] Seyyed vahid mohaddes ardebili,[5] Seyyed mojtaba mohaddes ardebili,[6,*]

1. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
2. Drug Applied Research Center, Tabriz University of Medical Sciences
3. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
4. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
5. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
6. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Autosomal recessive non-syndromic hearing loss (arnshl), as the most common form of hereditary hearing loss, has been reported to be associated with about 60 different loci and almost 30 different genes. mutations of gjb2 and gjb6, as most frequent mutated genes, contribute to alterations in dfnb1/a3 locus at 13q12. gjb2 mutations are comprised of point mutations, however, so far reported two large deletions are responsible for gjb6 mutations. this study was conducted to investigate mutation spectrum of these genes (in both coding regions and splice sites) among 150 arnshl patients from northwest of iran.

Methods

After being diagnosed as arnshl patients, total genomic dna of 150 individuals were studied using gap-pcr and direct sanger sequencing methods for gjb6 and gjb2 mutations analysis, respectively.

Results

Of studied subjects, 49/150 (32.6%) individuals demonstrated overall 10 distinct gjb2 mutations (c.35delg, ivs1+1g>a, c.84t>c, v37i, 167delt, 312del14, v153i, g127v, r127h, and v27i) that contributed to 28/150 (18.6%) homozygous and 21/150 (14%) compound heterozygous genotypes. c.35delg was the most frequent gjb2 mutation (18%) followed by ivs1+1g>a. gjb6 large deletions (d13s1830 and d13s1854) have not been detected among studies subjects.

Conclusion

Our results indicate the significance of gjb2 gene as a first priority for molecular study in arnshl patients of our population that can be of great importance in early diagnosis and genetic counseling; however, gjb6 seems to have very low mutation frequency and hence stands in later priorities.

Keywords

Arnshl, gjb2, gjb6, gap-pcr

Frequency of hla-b15 allele in spondyloarthritis patients

Narges Mohammadi,[1,*] Dr.sina mirzaahmadi,[2] Somayeh gholami,[3] Fateme modhejiyan,[4]

1. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
2. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
3. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
4. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran

Abstract

Introduction

Spondyloarthritis (spa) includes a group of chronic inflammatory diseases that have similar clinical symptoms, radiological findings, hla-b27 dependence and positive family occurance. different type of spondyloarthritis include: 1. anklosing spondylitis(as) 2. reactive arthritis (rea) 3. psoriatic arthritis (psa) 4. arthritis accompanied by bowel inflamation (ibd). in general, the symptoms include inflammation of the spine, side joints, tendons, and ligaments (antsitis) as well as inflammation in the skeletal muscles, skin, mucous membranes, bowel and eyes. hla-b15 has been detected to play an important role in some autoimmune diseases, but the effect of this allele, which is in fact an extensive antigen and divided into several separate antigens is unknown on spa. we are going to study the effect of these alleles on spondyloarthritis.

Methods

A total of 130 people, 100 suffering from spondyloarthritis ,and 30 healthy people with no occurence of the disease in their families were selected. the pcr test was used to identify the hla-b15 allele and the results were analyzed under significance level of 0.05 and using spss software.

Results

The results showed that 18 out of 100 patients (15 female and 3 male) and 1 out of healthy people (male) had hla-b15 allele (p-value = 0.03) and due to the p value, it seems that there is a significant relationship between the disease and hla-b15 allele. also, the sex is associated with existence of this allele and occurence of spa disease and presence of this allele as a predisposing allele is an important factor.

Conclusion

We studied spa patients based on the essg criteria and according to this criteria there was a meaningful relationship between hla-b15 and spa. also, the sex is related with existence of this allele and occurance of the disease, and when the patients show spa symptoms based on the essg criteria, the hla-b15 should be taken into consideration.

Keywords

Spondyloarthritis, hla-b15, essg, pcr

Frequency of the hla-b58 allele in patients suffering from spondyloarthritis

Fateme Modhejiyan,[1,*] Dr.sina mirzaahmadi,[2] Somaye gholami,[3] Narges mohammadi,[4]

1. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
2. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
3. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran
4. Department of Genetic group, Zanjan Branch, Islamic University, Zanjan,Iran

Abstract

Introduction

Spondyloarthritis is a chronic progressive inflammatory disease that results in disorders in spine, socroiliac joints and surrounding soft tissues. this problem is common in men and typically before 45 years old. different types of spondyloarthritis include: 1) anklosing spondylitis 2) psoriatic arthritis 3) reactive arthritis 4) juvenile unknown inflammation of the joints (arthritis). in previous studies, there was a direct correlation between spondyloarthritis and hla-b27 allele. we studied the relationship between spondyloarthritis and hla-b58. this allele plays an important role in steven-johnson syndrome and diagnosis of renal chronic failure.

Methods

A total of 130 people were selected. 100 suffering from spondyloarthritis and 30 were healthy without any family history. pcr test was used to identify hla-b58 and the results were analyzed using spss software.

Results

Data showed existence of hla-b58 allele in 36 out of 100 patients and 5 out of 30 healthy people. according to the p value (0.046) there seems to be a significant relationship between occurrence of the spondyloarthritis and existence of hla-b58 allele as a predisposition allele. also, the sex is related with existence of this allele and occurance of the disease.

Conclusion

According to previous studies, hla-b alleles play an important role in development of autoimmunity diseases, therefore studied the role of hla-b58 allele. the results indicated that the hla-b58 allele was effective in the disease, so in this disease the hla-b58 should be taken into consideration.

Keywords

Spondyloarthritis, hla-b58, pcr, spss, spondylitis anklosing

Fucosyltransferase gene differential expression in esophageal cancer

Zahra Sadeghzadeh,[1,*] Rana najafi,[2] Mona akbari,[3] Fatemeh radnia,[4]

1. Golestan University of Medical Sciences , Gorgan , Iran
2. Golestan University of Medical Sciences , Gorgan , Iran
3. Golestan University of Medical Sciences , Gorgan , Iran
4. Tabriz University of Medical Sciences , Tabriz , Iran

Abstract

Introduction

Fucosylation is one of the most important oligosacharid alteration associated with cancer pathogenesis. fucosyltransferases (futs) are enzymes responsible for fucosetransfer from gdp fucose to glycoconjugates, such as glycoproteins and glycolipids.. different futs (n=13) have been identified in human genome up to date including fut1 -11, protein-o-fucosyltransferase 1 (pofut1), and (pofut2). abnormal fucosylation resulting from the shortage or increase in the expression of futs is associated with a variety of disorders including cystic fibrosis, type 2 leukocyte connective defects, and cancers. considering the role of fucosylation in cancer development, here in this study we aimed to investigate the expression of fut1-5 in esophagus tumor cell and tissue in comparison to normal tissue.

Methods

Esophageal cancer kyse-30 cell line(pasteur institute, iran) was cultured in dmem medium (glutamax + 1g/l d-glucose) supplemented with 10% fetal bovine and antibiotics. the esophagous tumor and marginal normal tissue (n=1) were collected and used for rna extraction by trizol reagent (gibco-brl, gaithersburg, md). the the gene expression of fut1-5 were measured using specific primers by rt-pcr method.

Results

Our findings showed that all fut 1-5 are expressed in kyse-30 cancer cell line. the esophageal tumor tissue express fut 1 and fut 3 ; however the normal esophageal tissue express fut 1-3 but no expression of fut 4 and fut 5 was observed in normal tissue.

Conclusion

Our findings showed differential expression of futs in tumor and normal tissue of esophageal cancer suggesting its potential association with esophagous tumor pathogenesis.

Keywords

Esophageal cancer; fucosyltransferase; kyse-30

Fulvestant as an anti-steroid agent, modifies growth-related gene expression of ovarian cells via selective estrogen receptor down regulator (serd) effects.

Majid Banimohammad,[1,*] Abbas majdi seghinsara ,[2] Danial gholamin,[3] Hamidreza pazoki-toroudi,[4]

1. Medical Student, Physiology Research Center, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran and Young Researchers and Elite Club, Ardabil Branch, Islamic Azad University, Ardabil, Iran.
2. Department of Anatomical Science, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran.
3. School of Pharmacy, Ardabil University of Medical Science, Ardabil, Iran.
4. Physiology Research Center and Department of Physiology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Fulvestrant as a drug with down-regulating effect on estrogen receptors, is used in treatment of hormone receptor-positive metastatic breast cancer in post-menopausal woman. fulvestrant also is an estrogen antagonist that this feature prevents from breast cancer metastases. in the other hand, estrogen as one of the important female hormones, has decisive association in menstrual cycle which effect on intracellular pathways of granulosa cells in adult mammals by expression of some gene such as gdf9. by investigating the effects of this drug on folliculogenesis and differentiation of ovarian cells, it could clarify the use of fulvestrant in pre-menopausal period even when it is associated by poor ovarian reserve (por)

Methods

In present study, samples were collected from the surface epithelium of the ovary from 8 women over 37 years. samples were divided into 2 groups (control group with dmem/f12 ham culture medium; and fulv group with fulvestrant (100 nm/ml) + estradiol (1ng/ml), added to culture medium). then the samples were cultured in medium for 3 weeks. finally, gdf9 expression in cultured cells were measured by rt-pcr and morphology of cells were studied by microscope.

Results

In the control group the folliculogenesis and gdf9 gene expression were significantly different from fulv group that treated with fulvestrant. estradiol caused similarity between cultured cells of control group and real follicle morphology. in the fulv group the gdf 9 gene expression decreased significantly ($p<0.001$) and the cell growth related to folliculogenesis was not in biological situation. the granulosa cells and oocytes have very small size and their shape were different from normal follicular and oocyte cells.

Conclusion

This study demonstrated that the fulvestrant is an antiestrogen agent that prevent estrogen effects via competitive antagonistic effects on estrogen receptors. also fulvestrant could affects estrogen receptors in higher doses whereas other estrogen antagonists have estrogenic effects in higher doses. so it could be concluded that this drug even inhibits differentiation of non-specific cells to follicular cells. finally, fulvestrant could have negative effect in ovarian reserve.

Keywords

Fulvestant, folliculogenesis, ovary, ovarian reserve

Gene expression comparison of myeloperoxidase in lung and liver tissues of septic rats treated with aspirin, celcoxib and indomethacin

Hamideh Salehiyan bahnamiri,[1] Reza hajihosseini,[2,*] Saba miri,[3] Azadeh rasooli,[4]

1. 1Department of Biotechnology, Faculty of Sciences, Payame Noor University, Tehran, Iran
2. 1Department of Biochemistry, Faculty of Sciences, Payame Noor University, Tehran, Iran 2
3. 3Department of Biotechnology, Faculty of Life Science, Alzahra University, Tehran, Iran
4. 1Department of Biochemistry, Faculty of Sciences, Payame Noor University, Tehran, Iran

Abstract

Introduction

Sepsis is a serious clinical condition that represents a patientâ€™s response to a severe infection and has high mortality rate. for early detection of sepsis, biological marker such as myeloperoxidase(mpo)is usefull.non-steroidal anti-inflammatory drugs (nsaids), including aspirin,celcoxib and indomethacin have been frequently used for the clinical treatment of various inflammatory diseases.therefore, the effects of selected drugs on gene expression levels of mpo in lung and liver tissues were investigated.

Methods

Sepsis was induced in male wistar rats by using the cecal ligation and puncture (clp)Â¬. the animals were divided into6 groups. controlÂ¬: wild type, lap: with laparotomy surgery, clp,treatments: with clp and treated withnsaids (2 mg/kg b.w). after 48 hour, the rats were sacrificed,liver and lung tissueswere collected for gene expression comparisonof mpoby real-time pcr.

Results

In lap groupgene expression level of mpo increased compared to control group. in theclp group mpo gene expression increased more significantlycompared to other groups. when drugs was induced, the gene expression was dramatically decreased (p<0/05).aspirin in lung and celcoxib in liverhad milder effect in contrast with other drugs.it may due to asprin is a non-selective inÂ¬hibitor of cyclooxygenase-1, celcoxib is a cyclooxygenase-2 specific inhibitor and indomethacin inhibits prostaglandin e2. as these genes are involved in inflammatory process, it may seem that they also affect on mpo gene expression.

Conclusion

Our study showed that the use of those drugs candecrease lung and liver damages via mpo inhibition.

Keywords

Sepsis, gene expression,myeloperoxidase,non-steroidal anti-inflammatory drugs

Gene expression study of disrupted in schizophrenia 1 (disc1) in schizophrenia and paranoid personality disorder

Maryam Ghorbanzadeh,[1,*] Arvin haghighatfard,[2] Shohreh zare,[3]

1. varamin pishva Branch, Islamic Azad university
2. Tehran North branch , Islamic Azad University
3. varamin pishva Branch, Islamic Azad university

Abstract

Introduction

Schizophrenia (scz) is a psychiatric disorder with no clarify etiology or biological diagnosis.paranoid personality disorder (ppd) is one of the type a personality disorder characterized by paranoia and generalized mistrust. disrupted in schizophrenia 1 (disc1) is a gene located on human chromosome 1 which is involved in development of central nervous system. variations and translocations in this gene were found associated with schizophrenia and other psychiatric disorders. present study aimed to evaluate the expression alteration of disc1 gene in peripheral blood of scz and ppd patients.

Methods

Study was included 50 scz, 50 ppd and 50 non-psychiatric individuals. total blood was collected and expression level of disc1 evaluated by using quantitative real time pcr sybr green. also, to assess psychiatric symptoms severity, positive and negative syndrome scale (panss) was obtained from scz and ppd patients

Results

Results showed significant disc1 gene down regulation in scz and ppd patients vs. non-psychiatrics. disc1 protein levels were significantly decreased in scz and ppd vs. non-psychiatrics. also in scz patients, general and negative symptoms score were associated with down regulation of disc1 mrna level.

Conclusion

Present study revealed disc1 as potential peripheral marker for schizophrenia as well as paranoid personality disorder. correlation between disc1 mrna level reduction and severity of general and negative symptoms side may support the neurodevelopmenthypothesis about etiology of schizophrenia and related personality disorder especially paranoid personality disorder.

Keywords

Schizophrenia; paranoid personality disorder; disc1

Gene therapy by nanoparticles in gastric caner treatment

Anita Alizadeh,[1,*]

1. Higher Education Institute of Rab-Rashid

Abstract

Introduction

Gastric cancer is one of the most commonly diagnosed cancer and the second leading cause of cancer death world wide.current treatment for gastric cancer includes aggrasive number of patients with median survival of optimal treatment rather dismal.failure in conventional treatment for gastric cancer reflects a strong need to develop novel therapeutic approches.reccent advances in gene therapy with nanoparticles offer novel apportunities for treatment.nanoparticles are tiny materials having size ranges from 1 to 100 nm. due to their small size they have various applications in different sciences.

Methods

Data were obtained from searching the scientific resources including pubmed,google scholar,science direct and library resources and related books.

Results

In this study,we find that nano carriers as a non viral vectors in comparision to viral vectors have less cytotoxicity and less stimulate immune.in addition,gene transfer system with nanoparticles are not limited by the size of gene molecules that are introduced into the cell and its also easy to produce and transform this vectors on large scale.these nanoparticles are cationic and have a positive charge that bind with negative charge of dna by electrostatic interaction and forming a stable complex.after the complex targeted to desired tissue,inters in target cell and finally cause to express,restore or inhibit a particular gene in the nucleus and lead to apoptosis or restore tumor cells to the normal modes.

Conclusion

Gene therapy with nanoparticles is an emerging treatment modality and such as many other treatment methods have an advantages and disadvantages that is requires further researchs to evaluate the efficiency of this methods.

Keywords

Gastric cancer,gene therapy,nanoparticles

Gene therapy in treatment of diabetes type 1

Arefe Davoodabadi,[1,*]

1. Alzahra university

Abstract

Introduction

The purposes of writing this review article is the significant role of diabetes in our life, the increasing risk of the onset of diabetes and hoping to treat this important multifactorial disease. the effort for treating diabetes through transplanting pancreatic islet hadnâ€™t been successful. but gene therapy is a useful technique to treat t1dm. gene therapy for t1dm consists of replacing insulin gene in a host as a treatment way and suppressing autoreactive t-cells as a prevention way. as the achievement of gene and cell therapy in t2dm are less evident, in this article, different methods of gene therapy for t1dm was discussed. some gene therapy techniques for t1dm are ectopic gene expression, systemic gene expression, express anti-apoptotic molecules, using core peptide, using immunoregulatory cytokines for inhibiting nk and t-cells activities, preventing of interactions between apc and t-cells and manipulating stem cells for entering hla-g gene into them. ectopic gene expression is a widely used technique. good alternatives to Î²-cells for manipulation into insulin producing cells, include stem cells, hepatocytes, epithelial cells and etc.

Methods

One step in gene therapy is transferring genes into cells. gene transfer techniques that were used in researches for gene therapy are devided into two groups; non-viral vectors and viral vectors. some non-viral vectors are lipofectin, direct microinjection, electroporation and biolistics. viral vectors are retrovirus, adenovirus and lentivirus. the vectors that were used for ectopic gene expression in epithelial cells were retrovirus and lentivirus with cmv promoter or gip promoter; in hepatocytes were adenovirus, lentivirus and adeno-associated vector; in stem cells was retrovirus with cmv promoter. in these researches that iâ€™ve studied, mice and rats were used as an animal models. the results were analyzed by eliza and flow cytometry. epidermal keratinocytes were used as an epithelial cell and murin mesenchymal stem cells were used as a stem cell for ectopic gene expression. dendritic cells were used for expression of core peptide.

Results

All of those techniques have been greatly successful. manipulating stem cells for entering hla-g gene into them, constantly leaded to producing Î²-cells. ectopic gene expression in hepatocytes with lentivirus has leaded immediate reduction of bgls.

Conclusion

All of those techniques have advantages and disadvantages: non-Î²-cells could be modified to secrete insulin but they donâ€™t have the proteases required for producing mature insulin; keratinocytes and hepatocytes are good candidates for ectopic gene expression of insulin; redirection of hepatocytes to islet life function is a possible treatment for t1dm; use stem cells in a correct way, can overcome the autoimmune response; the main disadvantage of retroviral transduction is that they are only able to transduce cells that are currently dividing. they maybe also randomly integrate.

Keywords

Diabetes_gene therapy

Gene therapy, an alternative efficient approach for cancer treatment

Mona Akbari,[1,*] Rana najafi,[2] Zahra sadeghzadeh,[3] Sima ebrahim abadi,[4] Fatemeh radnia,[5] Touraj farazmand far,[6]

1. Golestan University of Medical Sciences , Gorgan , Iran
2. Golestan University of Medical Sciences , Gorgan , Iran

Abstract

Introduction

The cancer is one of the significant reasons for death in the world. up to now, many therapeutic approaches have been developed to deal with cancer which some of those are briefly described in this review. at the moment, the cancer treatment mainly contains surgery, chemotherapy, radiotherapy, and multimodality therapy. given that progress in cancer is still uncontrollable, attention to gene therapy has been increased. in gene therapy, viral and non-viral vectors are commonly used. in non-viral vectors, safety is an advantage and inefficiency is a defect. in contrast, for viral vector, efficiency is an advantage, and immunogenicity, pathogenesis and carcinogenesis are known as disadvantages. one of the techniques used in gene therapy is the faulty gene modification. one of the mechanisms of gene modification is the replacement of the region with undesirable changes to the correct part, which can be performed by the homologous recombination. in this mechanism, the two molecules of dna are connected to each other through their homologous sequences, leading to the replacement of the genetic components. this regenerative mechanism is widely used in genetic engineering, especially gene editing. the displacement between non-homologous chromosomes (translocation) is one of the most common molecular mechanisms for the development of an acute lymphocytic leukemia cancer. lentiviral vectors have improved the efficiency of gene transfer to non-divided cells. in the early stages of clinical testing, these safe and effective vectors have been used to transduction of autologous hematopoietic stem cells. oncolytic viruses are promising tools in cancer treatment. these viruses can specifically infect cancer cells and destroy them as well as alerting immune systems to attack cancer cells. when a virus infects the tumor cell, the virus replicates and make a plenty copies of itself until the tumor cell bursts. meanwhile, the dying cells release some materials like debris and tumor antigens that attract the immune system attention. recently, the genome-editing technique has been developed that are based on engineered or bacterial nucleases. in contrast to viral vectors that can only act as a gene importer, genome editing methods provide a precision tool for adding, deleting and correcting the genes which are expected to be explored in the decade ahead. a bacteria immune system has recently been recognized as a crisper/cas9 system. in this system, the efficiency and accessibility of genome editing have been significantly improved. this bacterial immune system has been restored and has created a new revolution in the field of genome technology. recently, for the first time, the modified cells by crisper/cas9 have been used to treat human cancers. the chimeric antigen receptor (car) engineered t cell technology was expanded as an adoptive cell therapy technique that was mhc-independent. the car receptor consists of three segments: 1-extracellular region usually containing an antibody-derived single-chain variable fragment (scfv). 2-transmembrane region. 3-the intracellular region contains the signal transduction domain of cd3z, and co-stimulatory molecules like cd28, 4-1bb, cd27 and ox40. in 2017, two car-t cell received fda approval, one for the treatment of

children with all (acute lymphoblastic leukemia) and one for adult advanced lymphoma. but car-t cells for treating solid tumors, such as breast cancer and colorectal cancer, are not very effective for several reasons including: 1) specific tumor antigens are limit. 2) t-cells cannot effectively penetrate into the cancerous tissue. 3) if the car-t cells can penetrate the tumor, their function is lost by the tumor immunosuppressive microenvironment.

Methods

The newest cancer gene therapy methods that are expected to be effective and significant in the coming decades and accelerate the process of disease progression include homologous recombination, the use of viral and non-viral vector, car-t cells therapy andâ€¦.

Results

According to the methods described in this article, non-viral vectors are safer but less efficient than viral vectors. the homologous recombination method for the treatment of leukemias has been much considered by researchers, and car-t cell therapy has not been successful in treating solid tumors as leukemia.

Conclusion

The routine therapies in cancer treatment almost have a low efficiency and high side effects, the use of the above-mentioned methods may be a good alternative to cancer treatment in the future.

Keywords

Cancer treatment, gene therapy, gene targeting, vectors, genome editing.

Generation of hek-girk stable cell line as an applied model for optogenetic study

Hoda Shams najafabadi,[1] Zahra-soheila soheili,[2,*] Shahram samiei,[3] Ehsan ranaei pirmardan,[4] Ali kashanian,[5] Reza salmanipour,[6]

1. Department of Molecular Medicine, National Institute of Genetic Engineering and Biotechnology
2. Department of Molecular Medicine, National Institute of Genetic Engineering and Biotechnology
3. Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences
4. Department of Molecular Genetic, Faculty of Biological Sciences, Tarbiat Modares University
5. Department of Molecular genetics, Islamic Azad University of Damghan
6. Department of Molecular Medicine, National Institute of Genetic Engineering and Biotechnology

Abstract

Introduction

Optogenetic is a biological technique that uses light to restore neuronsâ€™ function in neurological disorders or to fix vision in visual impairment. novel optogenetic tools belong to the gpcr protein family that activate k+ channels in neural cells stimulating pathway. g protein-coupled inwardly-rectifying potassium channels (girks) are a family of potassium ion channels which are activated via this optogenetic tools. therefore hek293 cell line that stably express girk channel can be a model for studying these principal optogenetic tools. this study aims to generate stable girk expressing hek293 cell line as a noteworthy optogenetic tool.

Methods

Pcdna3-girk1 and pcdna3-girk2 were obtained as a gift from dr. terry hebert, recovered from filter paper and were transformed to xl10 e.coli. plasmid mini preparation and subsequently sequencing experiment were performed, killing curve assay developed and optimal dose of g418 for hek293 cell line was determined. hek 293 cells were cotransfected with pcdna3-girk1 and pcdna3-girk2, maintained under g418 selection, and g418-resistant single cells were isolated. girks expression in hek-girk stable cell lines were assessed by real time pcr.

Results

Girk1 and girk2 sequences were confirmed. 600 ug/ml were determined as an optimal dose for g418 treatment. girk1 and girk2 plasmids efficiently co-transfected to hek 293 cell line and resistant cells were detected. through single cell isolation and expansion, the expression of girk1 and girk2 were confirmed.

Conclusion

Hek-girk stable cell line was generated as an applied model for our future optogenetic study

Keywords

Girk1 and girk2 channel, hek-girk stable cell line, optogenetic study

Genetic analysis of pediatric patients in an autosomal recessive leukodystrophy cohort

Ehsan Ghayoor karimiyani,[1,*] Mehran beiraghi toosi,[2] Farah ashrafzadeh,[3] Mohammad doosti,[4] Paria najarzadeh,[5] Javad akhondian,[6]

1. Next Generation Genetic Polyclinic, Mashhad, Iran
2. Pediatric Neurology Department, Ghaem hospital, Mashhad University of Medical Sciences, Mashhad, Iran
3. Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
4. Next Generation Genetic Polyclinic, Mashhad, Iran
5. Next Generation Genetic Polyclinic, Mashhad, Iran
6. Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Introduction

Leukodystrophies are disorders that result in white matter abnormalities in the central nervous system (cns). in this cohort study we aim determined to perform exome sequencing (es) on the patients with autosomal recessive (ar) leukodystrophies, in 62 patients. the broad research aim is to further understanding of brain function in the identification of genes with inherited novel variants in patients with ar leukodystrophy.

Methods

The team contributed to the discovery or identifies the extremely rare disorders of more than 10 different disease genes using exome sequencing technique followed by comprehensive bioinformatic analysis.

Results

Many of these genes are the subject of novel and unexpected genetic pathways crucial for normal brain function such csf1r, mfsd2a, etc.

Conclusion

The current focus of our research is in rare mendelian disorders, especially autosomal recessive to further understanding of brain function with next generation technologies, using several cellular tools including animal models.

Keywords

Pediatric; leukodystrophy; exome sequencing

Genetic analysis of polyketide synthase (pkss) genes with antimicrobial activity in terrestrial cyanobacteria of the lavasan

Roghayeh sadat Hosseini,[1,*] Abbas akhavan sepahi,[2] Bahareh nowruzi,[3]

1. Science and Research Branch, Islamic Azad University, Tehran
2. Islamic Azad University, Tehran North Branch, Tehran, Iran.
3. Science and Research Branch, Islamic Azad University, Tehran

Abstract

Introduction

Cyanobacteria are considered a promising source for new pharmaceutical lead compounds. to date, the majority of bioactive metabolites isolated from cyanobacteria have either been polyketides (pkss) or non-ribosomal peptides.

Methods

The dna sequences of the 16s rrna region were determined and the strains were named and have been deposited in genbank for getting the accession numbers. morover, computer modeling and phylogenetic analysis was conducted to analysis of polyketide synthase. lastly, to show that the presence of this gene correlates with natural product synthesis, we conducted biochemical assays to detect the presence of antimicrobial effects in organic extracts.

Results

The extract of scytonema sp. ft11 showed more potent activity against bacillus cereus and no inhibitory effect was found against escherichia coli. moreover, antifungal activity was only seen against candida albilancs in calothrix sp. f6 and scytonema sp. ft 11. the different pattern of inhibition in the bacterial and fungal bioassays indicated that various antimicrobial substances are involved.

Conclusion

According to these results, it is concluded that the antibiogram bioassay and molecular detection of polyketide synthase genes may be useful techniques for the assessment of natural product -producing species and possible role of polyketide synthase enzyme complexes in the biosynthesis of biologically active compounds.

Keywords

Polyketide synthase , soil cyanobacteria, antimicrobial

Genetic and cytogenetic aspects of globozoospermia: a mini review

Sama Amiri samani,[1,*] Fatemeh montazeri,[2] Rozhia zangane,[3] Neda roknadini,[4] Samira hodjati firoozabadi,[5] Hamed hosseinian,[6]

1. Biology department, Faculty of science and engineering, Science and Arts University, Yazd, Iran
2. Abortion Research center, Reproductive Science Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
3. National institute of genetic engineering and biotechnology, Medical biotechnology, Tehran, Iran
4. Biology department, Faculty of Science, Ashkezar Branch, Islamic Azad University, Yazd, Iran
5. Biology department, Faculty of science and engineering, Science and Arts University, Yazd, Iran
6. Biology department, Faculty of science and engineering, Science and Arts University, Yazd, Iran

Abstract

Introduction

Micrornas (mirnas) are short non-coding rnas (15-25 nt) which play essential regulatory roles through interaction with messenger rnas.

Methods

Among male diseases, globozoospermia (also called circle-headed sperm syndrome) recognized as a rare type of teratozoospermia that is responsible for <0.1% of male infertility. absence of acrosome, which is an event resulted in spermatogenesis, and round sperm head are its major features.

Results

The acrosomeless spermatozoon is not able to cross the zona pellucida and attach with the oolemma of the oocyte, and fertilization failures have been attributed to a deficiency in oocyte activation capacity, even when intracytoplasmic sperm injection (icsi) is attempted. pathogenesis of this illness is not discovered yet but genetic factors are possibly involved in this process.

Conclusion

Using markers of acrosome in globozoospermic cells, has depicted a lack or highly distorted acrosome. the compaction of chromatin seems to be deformed but is not consistently over-condensed or under-condensed. in some cases, escalation of the number of cells comes with dna fragmentation. the analysis of the cytogenetic compounds in some cases showed an increase in aneuploidy rate. although in pregnancies conceived after icsi, there was no increase in number of spontaneous abortions or congenital defects. the globozoospermia pathogenesis most likely originates from spermatogenesis, especially in acrosome establishment sperm head elongation.

Keywords

Globozoospermia, male infertility, acrosome, pathogenesis

Genetic diversity and naturally acquired immune responses to plasmodium vivax thrombospondin-related adhesive protein (pvtrap) in patients from area of an unstable malaria transmission of iran

Saeed Nazeri,[1,*] Sedigheh zakeri,[2] Akram abouie mehrizi,[3] Navid dinparast djadid,[4]

1. pasteur institute, Biotechnology Research Center, malaria and vector research department
2. pasteur institute, Biotechnology Research Center, malaria and vector research department
3. pasteur institute, Biotechnology Research Center, malaria and vector research department
4. pasteur institute, Biotechnology Research Center, malaria and vector research department

Abstract

Introduction

The thrombospondin-related adhesion protein is one of the major sporozoite antigens that plays an important role in the invasion of hepatocytes by sporozoites. to design a broadly protective vaccine for elimination of plasmodium vivax, it is critical to have adequate information on genetic diversity and the natural immune responses to a particular antigen in diverse populations with different genetic background.

Methods

For this purposes, 50 iranian pvtrap genes were sequenced and then the most prevalent haplotype of pvtrap gene was expressed in escherichia coli rosetta (de3) and applied as an antigen in elisa. the igg and itâ€™s subclasses antibodies to pvtrap, as well as the association between anti-pvtrap antibody responses with host age were evaluated in patients from malaria-endemic areas of iran (n = 116).

Results

The nucleotide sequence analysis of pvtrap gene in comparison with the sal-1 sequence showed 12 amino acid substitutions, resulting in 10 haplotypes, that all of them were detected in ectodomain of pvtrap. moreover, the results revealed that only 42.24% of patients infected with p. vivax had positive anti-pvtrap igg. furthermore, the positive responses of antibody responses to pvtrap revealed no significant correlation with age ($p > 0.05$). moreover, the dominant subclasses to rpvtrap in iranian patients who were infected with p. vivax, was igg1 and igg3 and had high to intermediate avidity against rpvtrap antigen.

Conclusion

In conclusion, the present study has shown that genetic diversity in the pvtrap exhibits low-level diversity and individuals exposed to vivax malaria in iran are able to produce antibodies to the trap antigen at all ages in response to p. vivax infections that could help to understand the interactions between the host and p. vivax parasite in developing and testing a trap-based vaccine.

Keywords

Plasmodium vivax, genetic diversity, naturally acquired immune responses, trap

Genetic factors and preterm delivery

Behnaz Hezarkhani,[1,*] Seyad abolhassan shahzadeh fazeli,[2] Maryam moshfrghi,[3] Mansooreh farhangnia,[4]

1. Departments of Molecular and Cellular Biology, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and Culture
2. Departments of Molecular and Cellular Biology, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and Culture, Iranian Biological Resource Center (IBRC)
3. Royan Institute,, Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center,ACECR
4. Iranian Biological Resource Center (IBRC)

Abstract

Introduction

Preterm delivery (ptd) is one of the most significant contributors to neonatal morbidity and mortality. the etiology of preterm delivery is unclear. it is thought to be a multifactorial, complex disorder,, genetic and environmental factors. methylenetetrahydrofolate reductase gene is one of the genetic factors in women with preterm delivery. this study aimed to investigate the association between the methylenetetrahydrofolate reductase (mthfr) c677t polymorphism and preterm delivery susceptibility.

Methods

A total of 40 preterm delivery cases and 40 term delivery cases were studied for mthfr c677t polymorphism. statistical analysis was perforformed using spss software. the relevant risk of preterm delivery was represented by odds ratios (ors) with 95% confidence intervals (95% cls).

Results

Based on the results of this study, ct gene type frequency of c677t was higher in cases than controls (p.value=0.003). whereas, tt gene type had a lower distribution in cases than the controls (p.value=0.27). in addition, there was no significant relationship between t allele and preterm delivery. in addition, there was no significant relationship between t allele and preterm delivery (p.value=0.069).

Conclusion

The results of this study demonstrated that gene type ct of mthfr c677t polymorphism might make preterm delivery risk rise in iranian women.

Keywords

Mthfr polymorphism; preterm delivery

Genetic variations of il-19 at position rs2243191 in patients with h. pylori

Mohammadreza Hadipourfard,[1,*] Sirous naeimi,[2]

1. Department of Microbiology, Shiraz branch, Islamic Azad University, Shiraz, Iran.
2. Department of Genetics, Colleague of science, Kazerun branch, Islamic Azad University,Kazerun, Iran.

Abstract

Introduction

Helicobacter pylori (h.pylori) is a flagellated, spiral- shaped, microaerophilic gram negative bacterium that colonizes stomach mucosa and causes upper gastrointestinal diseases, such as gastric inflammation, chronic gastric ulcers and gastric carcinoma. chronic inflammation plays an important role in the pathogenesis of autoimmune diseases, allergies and cancer. inflammatory cytokines, such as il-19 play an important role in the pathogenesis of diseases caused by h. pylori. since helicobacter infection is very important and effects many subjects for a long period, and since it has the potential of converting into cancer, we attempted to examine the role of il-19 cytokine in induction and continuation of this disease.

Methods

In this case-control study, blood samples of 100 patients and 100 healthy individuals was examined for gene polymorphisms of il-19 at rs2243191 position in patients with h. pylori infection. genotype of this polymorphism was determined by pcr- arms method. statistical data analysis of genomic was carried out by the x 2 (chi square).

Results

In this investigation, data shows that there is no significant different in genotype and allele frequency at rs2243191 position between patients and control subject. (p = 0.65 or = 0.65 (ci; 0.35-1.28)).

Conclusion

It seems that there is no relationship between il-19 gene polymorphism at position(rs2243191) and susceptibility to h.pylori infection.

Keywords

helicobacter pylori, polymorphism, il-19, rs2243191

Genotyping of human papillomavirus in cervical samples with cancerous and precancerous diagnosis

Shabnam Nemati,[1,*] Masume aslanimehr,[2] Taghi naserpour-farivar,[3] Fatemeh samiee-rad,[4] Dariush hamedi asl,[5]

1. Department of Microbiology, Faculty of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran
2. Medical Microbiology Research Center, Qazvin University of Medical Sciences, Qazvin, Iran
3. Medical Microbiology Research Center, Qazvin University of Medical Sciences, Qazvin, Iran
4. Department of pathology, Qazvin University of Medical Sciences, Qazvin, Iran
5. Department of Molecular Medicine, Faculty of Medical Sciences, Qazvin University of Medical Sciences, Qazvin, Iran

Abstract

Introduction

Cervical cancer is the second most incident cancer in women especially in developing countries and also one of the main leading causes of womenâ€™s death worldwide. considering the high incidence and geographical distribution of human papillomaviruses and the correlation between hpv and cervical cancer, genotyping of high-risk human papillomaviruses in precancerous and cancerous patients by real-time pcr is the aim of this study.

Methods

totally, non-duplicated 111 formalin-fixed paraffin-embedded cervical samples during 1999-2015 were obtained. for primary detection of hpv genome, first, dna of biopsies were extracted, then samples subjected to real time pcr by using one type of specific primers for hpv16, 18, 31, 33, 45, and 52.

Results

Hpv genome were detected in 92.23% of samples. according to hpv genotyping data, generally, 67.36% of samples were infected by hpv16, 49.47% were infected by hpv45. generally, 77.89% of samples were reported as multiple hpv infection.

Conclusion

Our analysis revealed high incidences of hpv16 and other high risk types among cervical disorders and malignancies. our data are suggesting that the vaccine programs and prevention strategies should be developed and improved.

Keywords

Cervical cancer, high-risk human papillomavirus, genotyping, real-time pcr

Geographic analysis of leishmania variation in phlebotomus papatasi from large geographical scales of zoonotic cutaneous leishmaniasis foci, iran

Narmin Najafzadeh,[1,*] Roozbeh taslimian,[2] Parviz parvizi,[3]

1. Molecular Systematic Laboratory, Parasitology Department, Pasteur Institute of Iran, Tehran, Iran.
2. Molecular Systematic Laboratory, Parasitology Department, Pasteur Institute of Iran, Tehran, Iran.
3. Molecular Systematic Laboratory, Parasitology Department, Pasteur Institute of Iran, Tehran, Iran.

Abstract

Introduction

phlebotomus papatasi is the main vector of zoonotic cutaneous leishmaniasis (zcl) in iran. the molecular typing of leishmania parasites among p. papatasi, along with their molecular variation including haplotypes are ambiguous in large geographical scale of zcl foci.

Methods

Sandflies were sampled, dnas extracted and fragments of its-rdna, kdna and microsatellite genes of leishmania were amplified by pcr. rflp, sequencing and phylogenetic analyses were employed to accurately identify leishmania and any haplotype of its-rdna gene.

Results

Leishmania infections were found within female p. papatasi in four well known different endemic zcl foci (81 / 1083). l. major (70/81) with more variation of its-rdna (nine haplotypes) and l. turanica (5/81) with no molecular variation with one haplotype were identified firmly.

Conclusion

L. major had a high frequency and more molecular variation whilst, l. turanica was found and characterized with low frequency and no variation in p. papatasi. this is important in realizing the distributions of leishmania parasites in p. papatasi in iran and elsewhere. although l. turanica was found in sandflies, reservoir hosts and human; its role in zcl cycle is yet unknown. more studies are designed for understanding the conceivable role of l. turanica as mammals leishmania.

Keywords

Phlebotomus papatasi- leishmania variation-zoonotic cutaneous leishmaniasis- haplotypes- iran-

Germ cells markers were detected in premature ovarian failure modeling in mice: hope to fertility

Fatemeh Abedi,[1] Rouhollah fathi,[2,*] Naeimeh abtahi,[3] Farideh eivazhkani,[4] Elham abedheydari,[5] Khadijeh bahrebar,[6]

1. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
2. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
3. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
4. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
5. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
6. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.

Abstract

Introduction

Ovary is one of the endocrine organs of female reproductive system which produces necessary steroids and peptide hormones for puberty and the menstrual cycle. chemo/radiotherapy leads to premature ovarian failure (pof) due to reducing follicles, ovulation and fertility. cyclophosphamide used in the treatment of cancer is one of the usual chemotherapy and alkylating agents which causes dna break in different types of the cells. this study focused on cyclophosphamide and busulfan effects on mouse ovary to produce pof model for the next studies on fertility preservation.

Methods

Nmri female mice were treated with daily intraperitoneal injection of 75 mg/kg (group 1) and 100 mg/kg (group 2) cyclophosphamide,100 mg/kg cyclophosphamide first day, 20 mg/kg daily for 13 days (group3), 100mg/kg cyclophosphamide first day, 50 mg/kg busulfan daily for 13 days (group 4), 75 mg/kg cyclophosphamide and 30 mg/kg busulfan daily for 14 days (group 5) kept in separate specific cages for each group for 14 days and control group which received no chemotherapy drugs. change body weight, smear test and histology assessment were evaluated for all experimental and control groups before and after chemotherapy. estradiol(e2), follicle stimulating hormone(fsh) and real time pcr for oct4, blimp1, dazl and gdf9 for the best group of pof model were evaluated.

Results

The percentage of vital primordial follicles in all experimental groups was significantly lower than control group ($p < 0.001$). in the second experimental group, the percentage of vital follicles in different stages of primordial, pre antral and antral was significantly decreased ($p < 0.01$) compared to the control group. alterations of body weight demonstrated notable decrease in groups 1and 2 as compared to control group ($p<0.05$). the irregularity of the estrous cycle, remarkable increase of fsh and significant reduce of estradiol secretion in the second group compared to the control group was shown ($p < 0.05$), which confirmed the creation of the pof model successfully in second group. also, the result of real time pcr showed significant increase of oct-4 and dazl in the second group compared to control group ($p < 0.05$).

Conclusion

According to these results, treatment of 100 mg/kg cyclophosphamide for 14 days caused a powerful damage on ovarian activity and reduce follicular reservation as compared to all of experimental groups. further, lack of corpus luteum in second group showed folliculogenesis disrupt and approved creation of mouse premature ovarian failure model. this study showed, in regard to damage of ovarian tissue by chemotherapy drugs, there are still germ cells in the pof model and showed a hopeful and certain future for treating infertility in cancer patients after chemotherapy.

Keywords

Premature ovarian failure, ovarian reserve, folliculogenesis, chemotherapy.

Glutamine, an important metabolic target in cancer cells

Amir Abrishami,[1] Fatemeh b. rassouli,[2,*]

1. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad
2. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad., Institute of Biotechnology, Ferdowsi Univers

Abstract

Introduction

Metabolic alterations, which are necessary for survival and aberrant growth of cancer cells, are mediated by oncologic changes during carcinogenesis. glutamine, the most abundant amino acid in the blood and tissues, is necessary for proliferative neoplastic cells, and marked changes in its metabolism are characteristic of the host with cancer.

Methods

Number of articles included key words glutamine, metabolic alterations, cancer cell targeting, were extracted from databases pubmed, scopus, and web of science

Results

The high rate of glutamine uptake in malignant cells results from its vital role as a nitrogen donor in nucleotide and amino acid biosynthesis. glutamine also assists atp production and refills mitochondrial tricarboxylic acid cycle (tca) carbon pool to support citrate and fatty acid synthesis. in addition, glutamine provides glutamate that is a precursor for master antioxidant glutathione in cancer cells. to prevent apoptosis in malignant cells, glutamine facilitates the import of essential amino acids to maintain activation of mammalian target of rapamycin complex 1 (mtorc1) which regulates cell growth and survival. more interestingly, glutamine may be a source for 2 hydroxyglutarate that causes histone methylations and finally induces expression of stem cell markers in cancer cells.

Conclusion

Since human cancer cells have shown sensitivity to glutamine starvation, such as lung and pancreas carcinoma, glioblastoma and leukemia cells, various anticancer approaches have been recommended to target glutamine metabolism, for instance suppression of its uptake and inhibition of tca and mtorc1, to name a few. all together, there is a great hope that metabolomics lead us to new targets for therapeutic intervention.

Keywords

Glutamine, metabolic alterations, cancer therapy.

Glycosylation in rhgm-csf and its effect on pharmacological properties

Roghayeh Shirvani,[1,*] Mohammad barshan tashnizi,[2] Maryam shahali,[3]

1. Department of Life Science Engineering, Faculty of New Sciences and Technologies, University of Tehran
2. Department of Life Science Engineering, Faculty of New Sciences and Technologies, University of Tehran
3. Production and Research Complex, Pasteur Institute of Iran

Abstract

Introduction

Glycosylation is one of the most common post-translational modifications occurring in more than 50% of eukaryotic proteins. glycosylation affects the properties of pharmaceutical proteins, including pharmacokinetics, in-vivo half-life, immunogenicity and toxicity. granulocyte macrophage-colony stimulating factor (hgm-csf) or csf2 is a type of cytokine produced by recombinant dna technology. this glycoprotein is naturally secreted as a growth factor from the immune cells by stimulating the bone marrow stem cells. gm-csf causes the differentiation of white and red blood cells and platelets. studies conducted so far have revealed the biological and therapeutic importance of this protein for the treatment of cancer and immunodeficiency diseases. the human gm-csf protein has 127 amino acids and the final weight is 23kda. the protein has o-linked glycosylation in the amino acid residues of 22,24,26,27, also has two n-linked glycosylation at positions of 44 and 45. in recombinant production, depending on the expression system and the bioprocess aspects, glycosylated forms of varying molecular weight can range from 14 to 60 kda. the lowest molecular weight is e. coli derived form that is non-glycosylated. the 16 isoforms of this protein have been observed by cho expression while the molecular weight is between 14.5 and 35 kda, due to differences in sugar content. the recombinant yeast derived forms are glycosylated and sometimes hyperglycosylated so have higher molecular weight than natural gm-csf.

Methods

Data obtained from research articles by search on sciencedirect, pubmed, scopus and google scholar search engines. the results of the papers from 1978-2017 were reviewed with a comparative approach on the effect of glycosylation on the pharmacological properties of the recombinant human gm-csf.

Results

In the early years studies by donahue et al in 1986, it has been proven that different levels of glycosylated protein exhibit different kinetics of plasma distribution. for example, gm-csf with high molecular weight secreted in far from infected area is more effective than smaller forms because it has more stability in the pathway of the bloodstream to reach the bone marrow and ultimately leads to more neutrophils production. elimination of n-linked oligosaccharides from yeast and cho derived recombinant gm-csf with deglycosylation enzyme treatment, increased the immunoactivity about, 4 and 8 folds, respectively. it was

also found that the glycosylated form has 6 times less effect on immune cell proliferation. the protein expressed by pichia pastoris expression system was seen from 28-35 kda. hyperglycosylated forms of 38-76 kda were observed in the expression of this protein with yarrowia lipolytica. the biological activity of 17 kda was 9 times higher than the hyperglycosylated forms.

Conclusion

Increasing immune activity after removing glycosylation suggests that carbohydrates seem to prevent protein interactions with specific immunoglobulins. also, receptor binding studies showed that the receptor had a lower affinity for hyperglycosylated molecules. it seems that the sugar units would interfere with the interaction of this protein with its receptor. this may be the cause of bioactivity reduction in glycosylated forms. despite the negative effects of glycosylation on activity, based on protein stability studies, it was assumed that the glycosylation level of this protein may be involved in increasing the half-life in the serum. plasma pharmacokinetic studies have shown that different forms of this protein are distributed differently in the body, so the stability of this protein affects the drugs reach to the target cells population. nowadays, sargramostim (leukine) as yeast derived recombinant hgm-csf is the only commercially available form of this pharmaceutical protein. therefore the glycoproteins with a molecular weight 15.5-20 kda are preferred to the non-glycosylated e.coli derived rhgm-csf. it can be concluded that due to the pharmacokinetic advantages of this glycoprotein, such as protection against proteolysis, increased serum half-life, improved stability and solubility, its biological activity reduction compared with non-glycosylated form, have been ignored.

Keywords

rhgm-csf, glycosylation, glycoproteins, cytokine, bioactivity assay

Green approach to fight cancer: peganum harmala inhibitory effect in cell growth

Newsha Mortazavi,[1] Mahboubeh heidari,[2] zohreh rabiei,[3,*] Sattar tahmasebi enferadi,[4]

1. Department of Energy and Environmental Biotechnology, National Institute of Genetic Engineering and Biotechnology
2. Department of Energy and Environmental Biotechnology, National Institute of Genetic Engineering and Biotechnology
3. Department of Energy and Environmental Biotechnology, National Institute of Genetic Engineering and Biotechnology
4. Department of Energy and Environmental Biotechnology, National Institute of Genetic Engineering and Biotechnology

Abstract

Introduction

Cancer is the second leading cause of death all over the world that causes serious health problems. since chemotherapy produced a number of undesired and toxic side effects, natural therapies, such as the use of plant-derived products in the treatment of cancer, may reduce adverse and toxic side effects(bournine et al., 2017). peganum harmala l. as a medicinal plant that commonly used in folk medicine, includes phyto-chemical molecules such as quinazoline alkaloids, beta-carboline alkaloids and flavonoids(wen et al., 2014). it has gained great interest due to its important anti tumoral properties.

Methods

In this study we aimed to extract and characterize the active component of peganum harmalaâ€™s seed via ftir and lcmss, as well as to evaluate the in vitro anticancer effect of its extract against two different human breast cancer cell lines: mcf-7 cells and mda-mb-231 cells.

Results

Results showed that the method of extraction could isolate alkaloids with high purity and the main alkaloid that detected by lc-ms was harmine which is the main betacarboline intercalates through the dna strands and suppresses topoisomerase enzymes. mtt assays represent that 30 Î¼g.ml-1 of extract could inhibit cell growth of both mcf-7 cells and mda-mb-231 cells in a 24h treatment.

Conclusion

Acid-base extraction of p. harmalaâ€™s seeds alkaloids, demonstrated anti-tumoral impact on both breast cancer lines, confirming its anti-cancerous properties.

Keywords

Harmine, anti-tumoral, peganum harmala.

Green synthesis of zince oxide nanoparticle for evaluation cytotoxicity on dental pulp cells

Faezeh Keshavarzian,[1,*] Ali niapour,[2] Aziz habibi-yangjeh,[3] Mohsen arzanlou,[4] Hadi peeridogaheh,[5]

Abstract

Introduction

Due to the increasing use of nanoparticles, researchers have devised a novel method to eliminate the disadvantages of previous procedure called green synthesis.the aim of this study was synthesis zinc oxide nanoparticle from nontoxic and biocompatible chemicals and to assess its cytotoxicity

Methods

To make zinc oxide nanoparticle , zinc nitrate hexahydrate is used as a zinc source as well as water is used as solvent.naoh (0.2 m) was used as reducer. the solvent was sonicated for 60 min.preparing of pulp cells: tissue pulp were extracted. it was breaked into small pieces. collagenase was used to tissue digestion and for 6 hours was placed in the incubator. dental pulp cells were treated with a wide range of nanoparticle concentrations (1,2,4,8,16,32,64,128,256,512,1024Âµg/ml).after 24 hours ,mtt test was performed. for this test , the 180 Âµg of culture medium without fbs and the 20 Âµg of mtt solution (0.5 Âµg/ml) was added to each well.after 4 hours, the cell culture medium was removed and 200 Âµg dmso was added to the wells, and after the 10 min styling of its attraction was read by eliza reader

Results

The survival rate of dental pulp cells did not decrease to 16 Âµg/ml concentration of zinc oxide nanoparticle and cytotoxicity detected in 32 Âµg/ml concentration of zinc oxide nanoparticle

Conclusion

The green synthesized zinc oxide nanoparticles can be used in low concentration in medicine

Keywords

Green synthesis , pulp cells , zinc oxide nanoparticle, cytotoxicity

Hair cortisol and chronic stress in iranian women healthcare workers

Mojgan Firouzbakht,[1] Roghie pourbagher,[2] Aram tirgar,[3,*] Mousa mohammadian-afrozi,[4]

1. Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran. Babol Islamic Azad University, Babol Branch/ Iran.
2. Cellular and Molecular Biology Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R.Iran
3. Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran
4. Cellular and Molecular Biology Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R.Iran

Abstract

Introduction

Healthcare professions are among the first six most stressful ones. being exposed to stress for too long, may lower a personâ€™s efficiency and could trigger negative consequences on oneâ€™s health or family and social life. workplace stress can influence healthcare professionalsâ€™ physical and emotional well-being by curbing their efficiency and having a negative impact on their overall quality of life. however, according to a systematic review, the evidence on associations between work stress and diurnal cortisol levels is mixed. cortisol assessments in saliva, serum or urine, which are affected by the temporal and situational variability of cortisol secretion and issues of non -compliance. in contrast, cortisol assessments based on hair are considered to be less affected by these methodological limitations. another advantage of hair cortisol concentrations (hcc) is that they reflect patterns of long-term cortisol secretion thereby capturing exposure to the stress hormone cortisol cumulatively over long time periods. the aim of this study was evaluated the relationship between hcc and perceived stress in women healthcare workers.

Methods

This cross-sectional study was conducted in 190 women healthcare workers in babol iran in 2017. socio-demographic, perceived stress scale (pss), were collected by questionnaires. participants provided one or two hair strands with a diameter of 2â€”3 mm each. hair strands were taken as close to the scalp as possible from a posterior vertex position and extraction hair cortisol based on recommended protocol (washing in isopropanol, grinding, methanol incubation and a portion of the methanol evaporated until dry and then reconstituted and analyzed in the elisa). all statistical analysis was performed using the spss statistical software version 21 with a significance level of less than 0.05, and all tests were performed for two sides.

Results

The results of the study showed that 71% of participants had a high perceived stress level. the hair cortisol concentration was 21.74(19.11) pg/mg. there was a significant relationship between the stress score and hcc (p= 0.042).

Conclusion

The results of this study showed that, there was a significant relationship between perceived stress and hcc. although, cross sectional study to determine causality is week and the relationship between self-reported stress and stress biomarkers remains unclear. larger, prospective cohort studies with follow-up of disease end-points would help to determine the relative predictive power of hcc and perceived stress, and the role of hcc as a physiological predictor of stress-related physical and mental health conditions in the general population.

Keywords

Stress, cortisol, hair, women workers, iran

Heterologous expression of human ifnÎ³ in leishmania tarentolae promastigote

Arian Karimi rouzbahani,[1] Farnaz kheirandish ,[2,*] Mojgan bandehpour ,[3]

1. Lorestan University Of Medical Sciences, Khorramabad, Iran
2. Lorestan University Of Medical Sciences, Khorramabad, Iran
3. Shahid Beheshti University Of Medical Sciences,Tehran, Iran

Abstract

Introduction

Leishmaniasis is a hygienic issue which the number of affected people to all kinds is surging in the world. until now there are no affordable vaccines which can be used. at economical view vaccine should be easy accessed and simple produced with no complications and can be done without advanced equipment. in cutaneous leishmaniasis in result of th1 activation, il12 will be secreted which activates macrophages to secrete interferon Î³ (ifnÎ³). ifnÎ³ activates macrophages to eliminate phagocyted parasites and also it could activate cytotoxic responses similar to no induction and tnf Î± secretion in macrophages so that they kill parasites. in result of ifnÎ³ increasing in cutaneous leishmaniasis leisure is capable of immunologic response escalation will be efficacious in parasite inhibition. the aim of this research was to provide promastigote of leishmania tarentolae (l. tarentolae) transgene including of ifnÎ³ gene.

Methods

IfnÎ³ gene sequence has been determined and synthetized in expression plasmid. recombinant plasmid was confirmed by pcr and restriction enzyme. then l. tarentolae was transfected with the recombinant plasmid by electroporation and confirmed by pcr. in order to evaluate ifnÎ³ expression in promastigote of leishmania tarentolae, rt-pcr and elisa were used.

Results

Recombinant plasmid was well designed and approved. attachment of the gene to promastigote genome was confirmed by restriction enzyme. then expression and production of ifnÎ³ confirmed.

Conclusion

Expression system of l. tarentolae was able to produce and secrete ifnÎ³. culture simplicity, being cheaper and the ability of glycosylation in this system are the advantages. also it can be used to for leishmanisation and help in the treatment of patients with cutaneous leishmaniasis lesion after complementary studies.

Keywords

IfnÎ³ , leishmania tarentolae , recombinant plasmid , eukaryote expression system

Histopathological and clinical characteristics in patients with triple-negative breast cancer from 2012 to 2016, tehran: a cross-sectional study

Hesam adin Atashi,[1,*] Mohammad hadizadeh,[2]

1. School of Medicine, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran
2. Department of Surgery, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Breast cancer (bc) is the most common cancer in women within the world. according to estimate of american cancer association, approximately 246,660 invasive bc will diagnose and 40,890 deaths occur in 2017. one of aggressive type of bc is triple-negative breast cancer (tnbc) that defined as without estrogen receptors, progesterone receptors, and human epidermal growth factor (her2). this study was performed to determine the histopathological and clinical characteristics of tnbc patients in hospitals in tehran.

Methods

This analytic cross-sectional study has performed in 5 educational and private hospitals in tehran since 2012 to 2016. this study conducted 100 consecutive tnbc patients that our data were collected from their medical records in hospitalsâ€™ archives such as immunohistochemistry (ihc) report, demographic characteristics, and metastatic information. inclusion criteria for this study were patients with primary invasive breast carcinoma with triple negative pathological samples. p-value â‰¤ 0.05 was considered statistically significant.

Results

The mean age of patients was 49.7 (Â±12.2) years and the mean age of patients with positive and negative metastasis was 52.06Â±13.25 and 49.16Â±12.01 years respectively. 78 (81.3%) of patients were type of invasive ductal carcinoma with negative metastasis. there were significant relationship between family history (p=0.001) and lymphatic involvement (p<0.001) with metastasis. negative metastatic lymphatic involvement (44-95.7%) was more than positive one (16-29.6%). the number of patients with stage iia, iib, iiia, iiib, and iiic were 32, 14, 12, 1, and 3 respectively, that were negative in metastasis. hence, the patients with type iv were 18 with positive metastasis. the number of patients with grade ii and iii were 53 and 47, respectively.

Conclusion

: in this study revealed involved characteristics were age, family history, types, stage, and grade of tumor. negative family history was significantly more than positive one (p=0.001). about stages, iia and iiib were significantly more and less than other stages (pË,0.001), respectively.

Keywords

Histopathological, triple-negative breast cancer, tehran

How could poly glycerol sebacate be utilized as a drug delivery system more efficient?

Sana Pirmardvand chegini,[1,*] Jaleh varshosaz,[2]

1. Department of Pharmaceutics, Faculty of Pharmacy, Isfahan University of Medical Sciences, Iran
2. Department of Pharmaceutics, Faculty of Pharmacy, Isfahan University of Medical Sciences, Iran

Abstract

Introduction

One of important part in success a new drug delivery system is choose an appropriate carrier. poly (glycerol sebacate) (pgs) is a new biodegradable elastic polymer that has tunable mechanical properties, to match the requirements of intended applications by controlling curing time, curing temperature and reactants concentration. also this polymer have good bio-compatibility, and proper surface degradation profile. both glycerol and sebacic acid are endogenous components, thus, the degradation products of pgs are often naturally metabolized in the body. biocompatibility analysis in vivo indicates that pgs has a favorable tissue response with little inflammation a widely utilized biomaterial .

Methods

Pgs in drug delivery system: applications of pgs are being expanded to drug delivery. numerous studies have demonstrated that drugs which loaded in pgs are sustain release system which provide continuous maintenance of target drug concentration within the therapeutic window and reduced toxicity. some study have reported pgs geometries system was kept during the degradation period of 30 days in pbs and was released for 7 days.

Results

shortcoming of pgs as a carrier and improvment: for water soluble drugs loading into this polymer there are some challenges and pgsâ€™s hydrophobic character alone is not good choice for them. pgs has some advantages and disadvantages. hydrophobic systems although exhibit a sustain release profile for water soluble drugs but donâ€™t have sufficient capability of encapsulation and this is because of variation in physicochemical properties with each other during drug loading process refused the drugs. in order to achieve desire physical-chemical properties of pgs, using of its combination with an appropriate hydrophilic polymer could be effective. due to combination of hydrophilic-hydrophobic system could highlight these benefits and overcomes the shortcoming of pgs as drug delivery system. using of pgs combination with other polymer in drug delivery coating of pgs surfaces with biocompatible and natural base molecules such as laminin, fibronectin, fibrin, collagen types i/iii, gelatin and elastin and creating water soluble pgs with an amphiphilic nature by chemical interactions are some of improving the properties of pgs. these molecules are natural components of the cellular environment and coating with such molecules along with improving the characteristics as drug deliver system, will provide an additional

impetus for improving the materialâ€“cell interactions and should expand the application potential of pgs .

Conclusion

In order to achieve desire physical-chemical properties of pgs, using of its combination with an appropriate hydrophilic polymer could highlight its benefits and overcomes the shortcoming of pgs as drug delivery system. using of pgs combination with other polymer in drug delivery coating of pgs surfaces with biocompatible and natural base molecules such as laminin, fibronectin, fibrin, collagen types i/iii, gelatin and elastin and creating water soluble pgs with an amphiphilic nature by chemical interactions are some of improving the properties of pgs.

Keywords

Pgs, poly (glycerol sebacate) , drug delivery, polymer improvement, nano-carriers

How to overcome pseudomonas aeruginosa drug resistance by new multi drug therapy protocol: docking insight

Zeinab Norouzi tabrizi nejad,[1,*] Mohammad reza dayer,[2]

1. Shahid chamran Univercity of Ahwaz
2. Shahid chamran Univercity of Ahwaz

Abstract

Introduction

Drug resistant infectious of pseudomonas aeruginosa bacteria comprise serious issues against human health. the bacteria play important role primarily in hospital acquired infections of bloodstream and urinary with consequent pneumonia. nowadays p. aeruginosa become a multi drug resistant infection with about 10-20 percent of frequency among life threatening infectious. the enzyme of verona integron-encoded of metallo -beta- lactamase or briefly, vim-11, by hydrolyzing antibiotics of beta lactams renders them ineffective against this infectious. beta lactams are the major antibiotics used for such cases. the possibility of beta lactamase encoding plasmid transfer to other bacteria as, enterobacter spp. leads to pathogen resistance to beta lactam antibiotics. the metalloenzyme of vim-11, ec 3.5.2.6 with two metal ions of zn in its active site with molecular weight of 26 kd and optimum ph of 7.5 has no crystal structure in pdb bank (www.rcsb.org) for drug design and docking experiments.

Methods

The sequence of vim-11 enzyme with accession:aat36613.1 was retrieved from ncbi website (www.ncbi.nlm.nih.gov/protein) in fasta format. the modeling and energy minimization experiment were performed on swiss-model server (https://swismodelexpacy.org) and gromacs software respectively. from sixteen models extracted here the best one was selected based on rampage analysis and used for further experiments. this structure then equilibrated at ph7 and 1 atmosphere of pressure by performing a short simulation of 10ns of duration. the structure then refined for blind docking experiments in hex (version 8.0.0). the docking experiments were done using different available antibiotic to study their interactions and to survey their bind sites. coordinate structures of antibiotics of amikacin , aztreonam, ceftazidime, ciprofloxacin, cephalosporin, gentamicin, imipenem, meropenem, penicillin, tazobactam, ticarcillin and tobramycin were obtained from pubchem website (www.pubchem.ncbi.nlm.nih.gov) in sdf format and converted pdb format by openbable software and optimized in hyperchem8 software. docking results were analyzed in raswin, weblab viewer and excell software.

Results

Our docking results show that based on binding sites of candidate drugs and their distance to enzyme active site and zink ions, penicillin, ceftazidime, aztreonam, cephalosporin and ciprofloxacin among tested drugs bind in near vicinity to enzyme active site and by the way we hypothesize that they could compete with enzyme natural substrate and deactive the enzyme and help to overcome drug resistance of

the bacteria. binding energy and binding orientation of these five antibiotics indicate that ceftazidime express more binding potency with suitable orientation that resiste against hydrolysis of its beta- lactam ring by vim-11 enzyme.

Conclusion

Based on our findings we expect that ceftazidime could be used as the base antibiotic for p.aeruginosa interaction in multi drug treatment.

Keywords

Pseudomonas aeruginosa, ceftazidime, vim-11, docking

How we assess founder effect in patients with factor xiii deficiency in southeast iran

Hojat Shahraki,[1,*] Akbar dorgalaleh,[2] Marzieh shakouri,[3] Majid fathi,[4] Mahla mir,[5] Omolbanin sargazi-aval,[6]

1. Cellular and Molecular Research Center, School of Allied Medicine, Zahedan University of Medical Sciences, Zahedan, Iran
2. Department of Hematology, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
3. Department of Hematology, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
4. Department of Medical Biotechnology, School of Allied Medicine, Iran University of Medical Sciences. Tehran- Iran
5. Department of Hematology, School of Allied Medicine, Kerman University of Medical Sciences, Kerman, Iran
6. Faculty of Allied Medical Sciences, Zabol University of Medical Sciences, Zabol, Iran

Abstract

Introduction

Introduction (background): congenital factor xiii (fxiii) deficiency is an extremely rare bleeding disorder (rbd) with estimated prevalence of 1 per 2 million in the general population. this rbd causes different clinical manifestations such as intracranial hemorrhage (ich), recurrent miscarriage and umbilical cord bleeding (ucb). iran with more than 500 patients with fxiii deficiency has the highest global incidence of disease. sistan and baluchestan province in southeast of iran with 410 patients and with a rate of 1 per 7000 persons has the highest number of patients with fxiii deficiency not only in iran, but also in all over the world. our goal in the present study is diagnostic methods, especially to understand how founder effect influences on high rate of fxiii deficiency in southeast iran.

Methods

Materials and methods: in this study, suitable library sources like â€œcongenital factor xiii deficiencyâ€• , â€œfounder effectâ€• , â€œmolecular diagnosis of factor xiii deficiencyâ€• , â€œclinical presentation of factor xiii deficiencyâ€• and â€œrare bleeding disordersâ€• were searched in databases like pubmed, google scholar, science direct and medline and finally 73 articles were selected for study out of 312.

Results

Results: high incidence of this disease is possibly due to founder effect because consanguineous marriage is common in this area and p.trp187arg (c.559t> c) was observed as the only causative mutation of fxiii deficiency in this province. in suspected individuals to fxiii deficiency, haplotype analysis is an important

step. for haplotype analysis, suitable and reliable genetic markers such as microsatellites (hum fxiii01 and humfxiiia02) and single nucleotide polymorphisms (snp) are suggested. for assessment of founder effect if: 1) candidate microsatellites and snp were meaningfully different in patient and control groups and 2. a unique haplotype was observed in the majority of patients, these can indicate genetic linkage between microsatellites and polymorphisms with causative mutation in southeast iran (trp187arg (c.559t> c). finally by analysis and comparison of attained haplotypes in patients and healthy individuals and checking of their similarities and differences, we can evaluate founder effect in patients with fxiii deficiency in southeast iran.

Conclusion

Discussion and conclusion: in the current study we tried to present a diagnostic method in order to evaluate present of founder effect in patients with fxiii deficiency in southeast iran via haplotype analysis using suitable genetic markers to make an effort in diagnosis, screening and genetic consultation of fxiii deficiency.

Keywords

Factor xiii deficiency,, founder effect, haplotype analysis, consanguineous marriage

Human adenovirus_36 improves insulin sensitivity, lipid profiles and increases inflammatory markers in wistar rats

Fatemeh Shirani dastjerdi,[1,*] Ali teimoori,[2] Mohammad rashno,[3] Mehdi zarei,[4] Seyed mahmoud latifi,[5] Majid karandish,[6]

1. Student Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Infectious and Tropical Diseases Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. Department of Immunology, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Food Hygiene, School of Veterinary Medicine, ShahidChamran University, Ahvaz, Iran.
5. Department of Statistics and Epidemiology, Faculty of Public Health, Diabetes Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
6. Nutrition and Metabolic Diseases Research Center, Ahvaz Jundishapur University, of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Obesity, as excess body fat accumulation, is a major public health epidemic in the world. recent evidence has shown a positive correlation between obesity and viral infections. human adenovirus 36 (ad-36), is a possible cause of obesity through increasing adiposity and metabolic inflammatory cytokines though paradoxically improves glycemic control and lipid profile; the results, however, are not consistent. in the present study, the effects of ad-36 infection on insulin resistance, lipid metabolism and inflammatory markers in wistar rats was investigated.

Methods

Sixty male wistar rats (eight-week-old, weighing 170-240 gram) were randomly divided into two groups, infection group (48 rats) and a control group (12 rats). ad-36 virus suspension (50% cell culture infective dose (5 Ã— 105 ccid50)) was injected in the left hind paw of the experimental group rats. all rats were given free access to a chow diet and water and were weighed weekly. blood samples were collected at beginning of the study and 3 months later in both groups. routine measurement of metabolic indices and inflammatory markers were performed.

Results

The mean Â± sd of body weight was not significantly different between the infected and control groups at the baseline and 12 weeks after infection. at the beginning of the study, there were no significant differences in glucose, lipid profiles and inflammatory markers between groups. after 12 weeks, fasting blood glucose (95.3 Â± 17.4 vs. 107.5 Â± 13.6 mg/dl, p = 0.013), and fasting serum insulin (55.2 Â± 21.3 vs. 73.6 Â± 24.6 Î¼u/ml, p = 0.016) were significant lower in the infected group compared with the

control group. the homa index showed significantly higher insulin sensitivity in the infected group (p = 0.002). serum triglycerides (51.4 Â± 16.1 vs. 60.2 Â± 10.8 mg/dl, p = 0.026) and total cholesterol concentrations (46.5 Â± 8.9 vs. 53.6 Â± 14.8 mg/dl, p = 0.036) were significant lower in the infected group than the control group at 12 weeks after infection. tumor necrosis factor-Î± (p = 0.034) interleukine-6 (p = 0.071) and monocyte chemoattractant protein-1 (p = 0.022) were significant higher in the infected group compared with the control group.

Conclusion

In the present study, ad-36 had no significant effect on weight gain but had a favorable effect on glycemic and lipid control in infected rats. a significant increase was observed in the inflammatory markers in the infected group. the mechanism of change in glucose and lipid metabolism attributable to ad-36 has not yet been fully understood. ad-36 infections could be a potential new way of developing novel anti-diabetic and anti-hyperlipidemic therapeutic agents. further investigations are required.

Keywords

Adenovirus-36, glucose, lipid metabolism, inflammatory markers, wistar rats.

Hybrid gelatin/poly (glycerol sebacate)(pgs) electrospun membrane as a potential wound dressing

Parisa Shirazaki,[1,*] Anooshe zargar kharazi,[2] Jaleh varshosaz,[3]

1. Department of Advanced Medical Technology, Biomaterials Group, Isfahan University of Medical Sciences
2. Department of Advanced Medical Technology, Biomaterials Group, Isfahan University of Medical Sciences
3. Department of pharmaceutics, school of pharmacy and Isfahan pharmaceutical science research center, Isfahan University of Medical Sciences

Abstract

Introduction

When the skin as a physical barrier is damaged, pathogens have a direct route to infiltrate the body, possibly resulting in infection. therefore our task is primarily treatment the wounds to prevent the infections and stimulate the skin to repair is in second grade. nowadays biodegradable materials are gaining extensive attention in the field of soft tissue engineering gelatin is a biodegradable and non-antigenic polymer, which provide hemostasis and facilitates cell adhesion and proliferation during healing process. poly(glycerol sebacate)(pgs) is a synthesis polyester which is biocompatible, biodegradable, inexpensive and generally has soft and flexible mechanical properties. in this study we fabricated the gelatin / pgs blend scaffold with ciprofloxacin as an antibiotics drug by electrospinning method for preventions the infections and skin tissue engineering

Methods

Sebasic acid and glycerol combined in 1:1 ratio at 120Â°c under nitrogen gas and high vaccum for 24 hours to prepare the pgs synthesis polymer. after synthesis process gelatin added to pgs in 3:1 ratio and %25 (w/v) of polymers solved in %80 (v/v) acetic acid in 37~ 40Â°c stirring for 3 hours. at the end 0.025 gr of ciprofloxacin added to the solution. for the electrospinning process, a 5 ml syringe was used to inject the polymer solution by flow rate of 0.5 ml/h and 12cm distance between the needle and collector of device, while the voltage was kept at 18 kv. finally scaffolds crosslinked by n,n-(3-dimethylaminopropyl)-n0-ethyl-carbodiimide hydrochloride (edc) and n-hydroxysuccinimide (nhs) in 2.5:1 ratio in %90 ethanol which is less cytotoxic compared to glutaraldehyde. the surface morphologies, fiber diameter, prosity and inter connectivity of the electrospun scaffold, before and after crosslinking process, were characterized using scanning electron microscopy (sem) and fourier-transform infrared spectroscopy (ftir) being used to verify the chemical composition of the scaffold and study the specific interactions between gelatin and pgs. for antiobiotic test we done the disk diffusion method and for cell viability of the scaffold we handle colorimetric 3-(4,5-dimethylthiazol-2-yl)-2,5-diÂ¬phenyltetrazolium bromide (mtt) assay. all the resulte about the rate of drug releasing obtaned by uv-visible spectrophotometry.

Results

The fiber size after crosslinking increase from 178Â±60 to 872Â±90 nm which might be due to swelling of the fibers during the crosslinking process. prosity of crosslinked membrane increased from 80.49Â±0.32 to 87.92Â±0.05 and three prosity layer of scaffold showed the interconnectivity before and after crosslinking process which determined by matlab software. ftir analysis showed the characteristic peaks of gelatin, pgs and ciprofloxacin without any additional peaks of infections before and after crosslinking process. the antimicrobials test demonstrated different degrees of antimicrobial activity against both negative and positive bacterial species evaluated and cell viability assay in 24-well culture plate showed the reduction of mtt. the spectrophotometry results showed the %50 percent of drug releasing in first 24 h after soaking in pbs(buffer phosphate salin) and %70 in first 72 h.

Conclusion

Our results showed that crosslinked gelatin/pgs membrane with controlled release of ciprofloxacin, could be a promising biodegradable membrane for wound dressing and regenerative medicine by prevention of wound infections in first stage.

Keywords

gelatin, poly (glycerol sebacate), ciprofloxacin, skin tissue engineering, drug delivery

Hypoxia induced with cobalt chloride could protect mesenchymal stem cells from harsh environment: an in vitro study

Marziyeh Pooladi,[1,*] Amaneh mohammadi roushandeh,[2] Zohreh alizadeh,[3] Iraj amiri,[4] Mehryar habibi roudkenar,[5] Yusef abbasi,[6]

1. Anatomical Sciences Department, Medicine Faculty, Isfahan University Of Medical Sciences, Isfahan, Iran
2. 1. Anatomical Sciences Department, Medicine Faculty, Gilan University of Medical Sciences, Gilan , Iran
3. 1. Anatomical Sciences Department, Medicine Faculty, Hamadan University of Medical Sciences, Hamadan, Iran
4. 1. Anatomical Sciences Department, Medicine Faculty, Hamadan University of Medical Sciences, Hamadan, Iran
5. 3. Medical Biotechnology Research Center, Paramedicine Faculty, Guilan University of Medical Sciences, Rasht, Iran.
6. 2. Anatomical Sciences Department, Medicine Faculty, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Background: using stem cells faced some problems, including low viability and apoptosis after transplantation in the body because of unsuitable conditions like hypoxia, oxidative stresses, and thermal shock. preconditioning of mesenchymal stem cells (mscs) with these can improve their output, although the mechanism is not clear. in this study, the effectiveness of preconditioning with cobalt (ii) chloride on mscs was investigated.

Methods

Materials and methods: mscs were preconditioned with doses of 0, 5, 10, 20, 50, 70, 90, 100, 120, 150 and 200 Î¼m cobalt (ii) chloride for 6,12,24 and 48 hours, then treated with 300 Î¼m for 24 hours. cell viability was evaluated by using the trypan blue test. , tunel test was used to study apoptosis. spss software with one way anova was used for analysis.

Results

results: exposure to cocl2 did not influence cell morphology. we found that preconditioning dose-dependently affected the mscs, as 120 Âµm after 6, 20Âµm after 12 and 24hr significantly increased cell viability compared to the control group. the rate of viable cells did not change significantly, compared to the control group ($p > 0.05$) in longer exposure time. moreover, treatment of 5Âµm cocl2 significantly decreased apoptosis rate after 48 hours ($p < 0.05$), although this decrease in apoptosis was not remarkable in other groups.

Conclusion

Preconditioning by cocl2 can improve the cell survival and reduce the rate of apoptosis. the hypoxia could mimic some genes and regulate another involved in cell survival, proliferation, migration and increasing cell antioxidant capacity. therefore preconditioning might provide cellular resistance.

Keywords

Stem cells, cell survival, hypoxia, apoptosis

Hypoxia-inducible bidirectional shrna expression vector delivery using pei/chitosan-tba copolymers for colorectal cancer gene therapy

Bita Javan,[1,*] Fatemeh atyabi,[2] Majid shahbazi,[3]

2. Department of Pharmaceutics, Faculty of Pharmacy, Nanotechnology Research Centre, Tehran University of Medical Sciences,
3. Department of Molecular Medicine, School of Advanced Technologies in Medicine, Golestan University of Medical Sciences,

Abstract

Introduction

Aims: gene therapy has been considered a promising approach for colon cancer therapy. this investigation was conducted to construct a hypoxia/colorectal dual-specific bidirectional short hairpin rna (shrna) expression vector and to transfect it into the colon cancer cell line ht-29 with pei/chitosan-tba nanoparticles for the simultaneous knock down of Î²-catenin and bcl-2 under hypoxia.

Methods

Main methods: to construct a prna-biphre-cea vector, the carcinoma embryonic antigen (cea) promoter designed in two directions and the vascular endothelial growth factor (vegf) enhancer were inserted between two promoters for hypoxic cancer specific gene expression. to confirm the therapeutic effect of the dual-specific vector, Î²-catenin and bcl-2 shrnas were inserted downstream of each promoter. the physicochemical properties, the cytotoxicity, and the transfection efficiency of these pei/chitosan-tba nanoparticles were investigated. in addition, the antitumor effects of the designed vector on the expression of Î²-catenin and bcl-2, cell cycle distribution, and apoptosis were investigated in vitro.

Results

Results: the silencing effect of the hypoxia-response shrna expression vector was relatively low (18%â€“25%) under normoxia, whereas it was significantly increased to approximately 50%â€“60% in the ht-29 cell line. moreover, the cancer cells showed significant g0/g1 arrest and increased apoptosis due to gene silencing under hypoxia. furthermore, mts assay, fluorescence microscopy images, and flow cytometry analyses confirmed that the pei/chitosan-tba blend system provided effective transfection with low cytotoxicity.

Conclusion

Conclution: this novel hypoxia-responsive shrna expression vector may be useful for rna interference (rnai)-based cancer gene therapy in hypoxic colorectal tumors. moreover, the pei/chitosan-tba copolymer might be a promising gene carrier for use in gene transfer in vivo.

Keywords

Bcl-2 Î²-catenin rna interference pei/chitosan-tba hypoxia

Identification microrna s13-17 and 133 as biomarkers non-invasive diagnosis of circulating and prognostic marker in patients with gastric cancer

Parisa Zia sarabi,[1] Faezeh ghasemi,[2,*]

1. 1- Molecular and Medicine Research Center, Department of Biotechnology, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
2. Blood Transfusion Research Center, High Institute for Research and Education in Transfusion Medicine,Next to Milad To

Abstract

Introduction

Gastric cancer (gc) is among the most common cancer types in the world and one of the most lethal gastrointestinal cancers. micrornas (mirnas) can be of great importance in the early detection of gc. this study aimed to investigate some mirnas compared to the control group.

Methods

Total rna was extracted from the paraffin tissue of gc patients and healthy volunteers. the expression levels of mirna â€“ 17, mirna - 25 and mirna -133 were assessed using real time rt-pcr with specific primers

Results

Our data showed that mirna â€“ 17, mirna - 25 were up -regulated in gc patients compared to the control group. mir-133b expreesion was not different between patients and control group.

Conclusion

It appears that the expression of mirnas and genes expression pattern in iranian patients with gastric cancer are similar to the other populations. we can use these mirnas as a strong tool for the diagnosis of gc in the early stages.

Keywords

Micro rna, gastric cancer, helicobacter pylori, rt-pcr

Identification of a novel mutation in col6a2 gene in a patient with ullrich congenital muscular dystrophy

Aziz Khorrami,[1] Shahin behrouz sharif,[2] Saba dayem omid,[3] Mahan narjabadifam,[4] Seyyed vahid mohaddes ardebili,[5] Seyyed mojtaba mohaddes ardebili,[6,*]

1. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
2. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences
3. Drug Applied Research Center, Tabriz University of Medical Sciences
4. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
5. Department of Genetics, Faculty of Natural Sciences, University of Tabriz
6. Department of Human Genetics, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Ullrich congenital muscular dystrophy is a progressive condition with typically autosomal recessive inheritance pattern that mainly affects skeletal muscles. severe muscle weakness soon after birth, developing contractures in knees and elbows, and hypermobility in wrists and ankles are main manifestations. most patients are unable to walk or walk for only a short period of time, usually before puberty. mutations in the col6a1, col6a2, and col6a3 genes have been reported as underlying causes. here in we report a case with a new pathogenic mutation in col6a2.

Methods

A 7-year-old symptomatic female result of a consanguineous marriage of first cousin parents with muscular weakness and possible diagnosis of hereditary muscular disease, due to the positive history of similar conditions in her cousins, was subjected to next generation sequencing. detected variations were then validated using targeted sanger sequencing. the initial investigation for suspected smn1 gene defects was negative.

Results

One homozygote mutation (c.714+2t>c) on col6a2 gene has been detected although it has not been reported previously. heterozygous and homozygous statuses for this mutation were also validated in parents and affected individuals, respectively.

Conclusion

C.714+2t>c point mutation alters the splice donor site of intron 3 in col6a2 gene with possible contribution to aberrant splicing and ultimately defected protein. this unprecedentedly reported mutation on col6a2 gene has pathogenic effects which seems to culminate directly with ullrich congenital muscular dystrophy.

Keywords

Ullrich congenital muscular dystrophy, col6a2, c.714+2t>c

Identification of antimicrobial effects of water and alcoholic extract of thymes

Mohammad Movagharnezhad,[1,*] Behnam ghorbani,[2]

1. Faculty of Basic Sciences, Islamic Azad University Kazerun, Kazerun, Iran
2. Faculty of Animal Sciences, Agriculture and Natural Resources University of Gorgan, Gorgan, Iran

Abstract

Introduction

Considering the antibiotic properties of thymes and the fact that various species of this plant are available in western regions of iran, therefore, the use of thymes extract as an antimicrobial agent is widely used today. the aim of this study was to identify the antimicrobial effects of the water and alcoholic extract of thymes.

Methods

In the methods of extraction with water, at first, 100 g of thymes were immersed in 1000 ml of water and for 72 hours in erlen and at the laboratory temperature, were used to make soaking and the thymes were completely out of it by heated over a flame for 2 hours. in the alcohol extraction method, at first, 100 g of thymes with 1000 ml of 70% alcohol were combined and placed in a 50 Â° incubator for 24 hours to remove all alcohol. the solutions were dried after filtering the extract. well assay method was used to measure the medicinal effects of thymes extract.

Results

Based on the results obtained and measurement of the diameter of the non-growth field, the water extract of thymes prevented the growth of escherichia coli and certain concentrations of its alcoholic extract inhibited the growth of salmonella, bacillus and streptococcus bacteria.

Conclusion

Although thymes is not iranian and does not go to iran automatically, it has a lot of use because of its antimicrobial effects and its high value in the pharmaceutical industry.

Keywords

Antimicrobial-extract-thymes

Identification of heterozygote mutations in exon 1 of nkx2.1 gene in patients with congenital hypothyroidism

Seyed ali Madani manshadi,[1,*] Mohammad mehdi heidari,[2] Mehri khatami,[3]

1. Yazd University
2. Yazd University
3. Yazd University

Abstract

Introduction

Introduction: congenital hypothyroidism (ch) is a most common congenital endocrine disorder, affecting 1 in 3000 to 4000 newborns. congenital hypothyroidism (ch) is defined as thyroid hormone deficiency present at birth. thyroid hormone deficiency at birth is most commonly caused by a problem with thyroid gland development (dysgenesis) or a disorder of thyroid hormone biosynthesis (dyshormonogenesis). nkx2.1 (thyroid transcription factor-1; also known as ttf-1) is an essential homeodomain-containing transcription factor for the morphogenesis and differentiation of the various tissues such as thyroid, lung and ventral forebrain. ttf-1 controls the expression of select genes in the thyroid, lung and the central nervous system.

Methods

Methods: analysis of relationship between nkx2.1 gene mutations and congenital hypothyroidism was performed using pcr and single-stranded conformational polymorphism technique and dna sequencing in 35 patients and 25 control subjects. furthermore, we analyzed mutation effect on the protein structure using pymol software, sift and psipred database.

Results

Results: in the present study, we report a new mutation (s26g) in exon 1 of the nkx2.1 gene in one cases with congenital hypothyroidism. results from pymol software demonstrate that this mutation caused to disappear hydrogen bonds between amino acids in the protein structure. the results of sift predict scores equal 0 and the results obtained from psipred shows the change in the secondary structure of the protein

Conclusion

Conclusion: this mutation is probably related to ch. infants who are clinically suspected of having ch should be evaluated thoroughly. computational biology tools have advantages and disadvantages, and their results are predictions that require confirmation.

Keywords

Congenital hypothyroidism, nkx2.1, mutation, structure prediction

Identification of lysogenic phages in the native strain of bacillus subtilis

Shakiba Darvish alipour astaneh,[1,*] Morteza miri,[2] Shamsozoha abolmaali,[3] Nasrin shojaie,[4]

1. Semnan University
2. Dep. of Biotechnology, Semnan University, Semnan, Iran
3. Dep. of Biology, Faculty of Basic Science, Semnan University, Semnan, Iran
4. Dep. of Biotechnology, Semnan University, Semnan, Iran

Abstract

Introduction

Bacteriophages, lysogenic, show a high potential for the production of peptidoglycan hydrolyse peptides which lyse and destruct the cell wall of bacteria. therefore, they are effective tools in the treatment of bacterial infections.

Methods

To obtain the lysogenic(s) from ddbcc47; a native bacillus subtilis from semnan soil, six primer pairs were designed based on the genome of siphoviridea family- lysogenic for bacillus subtilis - using virus-host db database. the genome of bacteriophages was amplified with the primer pairs. the phages with positive amplicons were selected for further study. on the other hand, the antibacterial activity of ammonium sulfate purified endolysin obtained from ddbcc47 was measured by agar diffusion method.

Results

Based on our bioinformatics studies, the phage's blastoid, phage glittering, phage phi3t, phage riggi and phage vbbhas171 were distinguished as lysogens with no endolysin production. bacillus phage phi105, bacillus phage spbc2, bacteriophage spp1, and bacillus phage pm1, lysogenic in bacillus subtilis were found to produce endolysin. the results of the pcr reactions showed that the bacillus subtilis ddbcc47 was lysed by bacteriophage spp1 with the product of 816 bp endolysin gene.

Conclusion

Based on our bioinformatics studies, the phage's blastoid, phage glittering, phage phi3t, phage riggi and phage vbbhas171 were distinguished as lysogens with no endolysin production. bacillus phage phi105, bacillus phage spbc2, bacteriophage spp1, and bacillus phage pm1, lysogenic in bacillus subtilis were found to produce endolysin. the results of the pcr reactions showed that the bacillus subtilis ddbcc47 was lysed by bacteriophage spp1 with the product of 816 bp endolysin gene.

Keywords

Bacillus subtilis, lysogenic phages, endolysin, n-acetylmuramic-l-alanine amidase, siphoviridea

Identification of specific biomarker binding to breast cancer cell line using phage display peptide library

Maryam Darvish,[1,*] Marrad mohammad davoudi,[2] Maryam islami,[3]

1. Arak university of medical science
2. Arak university of medical science
3. Alborz university of medical science

Abstract

Introduction

Breast cancer is a common heterogeneous cancer among women population. therefore, it reveals numerous efforts to select specific biomarker binding peptide for early detection and treatment through high-throughput methods.

Methods

To screen breast cancer-specific binding biomarkers, randomized cyclic 7-mer peptide library was used against mcf-7 cell line to identify specific targeting peptides. binding assay such as the elisa was performed to evaluate the binding strength and specificity of the screened biomarker to mcf-7 compared to other cell lines.

Results

Positive phage clones were identified by enzyme-linked immunosorbent assay after four rounds of biopanning. among 40 selected clones, 2 clones showed specific binding to her-2 positive cells. selected peptides were further validated using enzyme-linked immunosorbent assays (elisas).

Conclusion

To characterize the biological effects of these peptides further studies are needed. specific peptides against breast cancer cells may be used as potential agent for targeting therapy or early detection of breast cancer.

Keywords

Breast cancer, phage display library, mcf-7

Identifying potential mirsnps in alzheimerâ€™s disease: a bioinformatics approach

Fatemeh Radnia,[1,*] Zahra bahmanpour,[2] Mona akbari,[3] Babak emamalizadeh,[4] Rana najafi,[5] Zahra sadeghzadeh,[6]

1. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
2. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
3. department of medical biotechnology, golestan university of medical science
4. assistant professor, department of medical genetics, faculty of medicine, Tabriz university of medical science
5. student research commitee,golestan university of medical science
6. student research commitee, golestan university of medical science

Abstract

Introduction

: single nucleotide polymorphisms (snp) serve as genetic markers along the genome. snps in coding genes or target sites of mirnas known as (mir-snps) have gained great attention since any alterations in mirna function or expression, may lead to altered mrna and protein expression and susceptibility to common diseases. currently, there are many articles confirming the possible associations between mir-snps and diseases. however, the role of mir-snps has not been completely assumed in the progression of alzheimerâ€™s disease (ad). our purpose was to predict mir-snps which might be significantly involved in ad through bioinformatics approach

Methods

In a broad study, mirnas and related genes were examined from previous studies and gad database, respectively. on the other hand, snps spoted in target site of mirnas were achieved from polymirts and mirdsnp databases. the results were investigated according to mirna: mrna: snps relation to evaluate their involvement in ad.

Results

Consequently, through in silico analysis some mir-snps such as mir-125b: abl1:rs115261107, mir-342-3p: abl1: rs1064153, mir-125b:srf: rs9395 were recognized which might be functional in pathogenesis of ad. noteworthy, rs1064153 was previously reported as a functional snp in cml and here we could confirm it as an ad-associated snp either, which makes it as a valuable choice for further studies.

Conclusion

In this study, bioinformatics methods could classify a number of novel snps within mirna binding sites of ad-related genes, which are predicted for the first time in association to ad and provides a potential direction for following experimental and verification research

Keywords

Mir-snps, in silico, alzheimerâ€™s disease

Imaging studies of primary hepatic cancer

Niloofar Mirzaei,[1,*] Mohammad hossein jamshidi,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Primary hepatic cancer is the fifth most common cancer worldwide and the third leading cause of cancer mortality in the united states, after lung and stomach cancer. an estimated 24,120 new cases from liver and intrahepatic bile duct cancer in the united states are expected to occur during 2010, resulting in approximately 18,910 deaths. hepatocellular carcinoma (hcc) is a highly vascular tumor, receiving the majority of its blood supply from branches of the hepatic artery, as opposed to the liver parenchyma that receives 70% of its supply from the portal vein. this â€œarterializationâ€• of the vascular supply to the tumor accounts for its classic imaging hallmark: enhancement in the arterial phase and washout of contrast media in the portal venous phase. imaging modalities used in diagnosis include ultrasound, computed tomography (ct), magnetic resonance imaging (mri), and angiography.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english

Results

Contrast-enhanced studies allow for the diagnosis of hcc without necessitating biopsy; four-phase helical ct and multiphase dynamic contrast-enhanced mri are the most reliable imaging tests for hcc. ultrasound is the preferred test in screening for hcc. however, imaging quality is dependent both on the operator and patient body habitus. neoplastic lesions less than 3 cm in size are typically hypoechoic, well circumscribed, and homogenous. as tumor size exceeds 3 cm, the appearance on ultrasound is more heterogenous, isoechoic, or hyperechoic, and central hypoechoic regions representing fibrous septae may be observed. ultrasound can also reveal vascular patency or intrahepatic thrombosis, and color doppler ultrasound can provide an estimate of mean velocity blood ï¬,ow of the hepatic vessels. contrastenhanced ultrasonography is not widely utilized in the united states, but has been shown in several studies to have superior accuracy to standard ultrasound. four-phase helical ct consists of unenhanced, hepatic arterial, portal venous, and delayed phases, and it is often carried out after detection of an abnormality on ultrasound. the typical ct findings of hcc during the arterial phase 25 seconds after contrast injection are increased enhancement of the tumor as compared with nontumoros liver parenchyma. seventy seconds

after contrast injection, during the portal venous phase, the lesion is either isodense or hypodense; 300 seconds later, during the delayed phase, hcc is typically hypodense due to the early â€œwashoutâ€• of contrast. mri has been shown to be more accurate than ct in the detection of neoplastic lesions. gadolinium-enhanced mri demonstrates a hyperintense image of the tumor in the arterial phase, isointensity in the portal phase, and hypointensity in the delayed phase. t2-weighted images typically demonstrate hyperintensity; t1-weighted images reveal variable intensity.

Conclusion

Sensitivity of mri and ct in detecting hcc has been noted to be 81% and 68%, respectively, and specificity of mri and ct is 85% and 93%, respectively. mri can more reliably differentiate hcc from regenerating or dysplastic nodules as compared with ct.

Keywords

Hepatic cancer, carcinoma, imaging.

Immunization balb/c mice against leishmania major through lactococcus lactis bearing sp15 antigen derived from phelebotomus papatasi

Elaheh Davarpanah,[1] Negar seyed,[2] Reza safaralizadeh,[3] Sima rafati,[4] Jesus valenzuela,[5] Tahereh taheri,[6,*]

1. Department of Biology, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
2. Department of Immunotherapy and Leishmania Vaccine Research, Pasteur Institute of Iran, Tehran, Iran.
3. Department of Biology, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran.
4. Department of Immunotherapy and Leishmania Vaccine Research, Pasteur Institute of Iran, Tehran, Iran.
5. Vector Molecular Biology Section, LMVR, National Institute of Allergy and Infectious Diseases, National Institutes of H
6. Department of Immunotherapy and Leishmania Vaccine Research, Pasteur Institute of Iran, Tehran, Iran.

Abstract

Introduction

Lactococcus lactis (l. lactis) as a nonpathogenic expression system can be used to delivery live vaccines. furthermore cytoplasm, proteins expression into extracellular or attached on the cell wall is possible, if the desired gene is cloned downstream of the relevant peptide signal. here, sp15 gene isolated from phlebotomus papatasi (sand fly vector for leishmania major (l. major)) alone or along with the enhanced green fluorescent protein (egfp) expressed on the cell-wall of l. lactis. then, the immunization potential of recombinant bacteria was evaluated against l. major on balb/c mice.

Methods

The codon optimized both sp15-egfp and egfp (as a control) genes were cloned in downstream of prtp signal peptide in pnz8121 vector and transformed into mc1061 as an intermediate host. the final constructs were electrotransformed into l. lactis (strain nz9000) and induced using the nice system. to confirm the cell-wall attached expressed proteins, membrane of bacteria were separated, precipitated and applied to analysis through western blotting and whole cell elisa methods using anti-gfp antibody. the several balb/c mice groups were immunized with different regimens. after challenging of immunized mice with l. major plus sgh, footpad swelling was measured weekly, and parasite load in lymph nodes were estimated using real-time pcr and limiting dilution at two different timepoint.

Results

Both western blot and elisa analysis recognized a specific 42-kda band and high absorbance related to expressed sp15-egfp in membrane of bacterium. moreover, immunized mice with recombinant l. lactis-sp15-egfp have shown less swelling size in footpad and also lower parasite load in lns in comparison with immunized mice with wild-type bacteria or no vaccinated groups ($p<0.05$).

Conclusion

The expression of sp15-egfp on the cell-wall of l. lactis can proposed as a suitable candidate live vaccine for leishmaniasis.

Keywords

Lactococcuslactis, leishmania major, sgh, sp15, vaccine.

Immunohistochemical expression of ki67 and her2 in patients with colorectal cancer compared to adenomatous and non-neoplastic tissue samples

Enam alhagh Charkhat gorgich,[1] Zahra heidari,[2,*] Hamidreza mahmoudzadeh-sagheb,[3] Mehdi jahantigh,[4]

1. Department of Anatomical Sciences, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
2. Infectious Diseases and Tropical Medicine Research Center, Zahedan University of Medical Sciences, Zahedan, Iran
3. Infectious Diseases and Tropical Medicine Research Center, Zahedan University of Medical Sciences, Zahedan, Iran
4. Department of Pathology, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran

Abstract

Introduction

Colorectal cancer (crc) is one of the most common cancers worldwide. due to the high rate of mortality in advanced metastatic stages, finding new detecting techniques seems to be necessary. this study aimed to investigate the immunohistochemical expression of ki67 and human epidermal growth factor receptor 2 (her2) in colorectal cancer compared to adenomatous and normal samples. colorectal cancer (crc) is one of the most common cancers worldwide. due to the high rate of mortality in advanced metastatic stages, finding new detecting techniques seems to be necessary. this study aimed to investigate the immunohistochemical expression of ki67 and human epidermal growth factor receptor 2 (her2) in colorectal cancer compared to adenomatous and normal samples.

Methods

This case-control study was conducted to evaluate ki67 and her2 protein immunohistochemical (ihc) expressions in 137 colorectal formalin fixed paraffin-embedded tissue blocks. the blocks were classified into 3 groups; normal (n = 36), adenomatous (n = 38), and adenocarcinoma (n = 63). all tissue blocks were selected through convenience sampling method from the archive of pathology in ali-ebne-abitaleb hospital, zahedan, iran from 2010 to 2015. the sections were evaluated, using semi-quantitative scoring. ki67 and her2 expressions were reported as negative and positive. clinicopathological characteristics were also assessed. the data was analyzed by kruskal-wallis and chi-square or fisher tests. the significance level set as $p < 0.05$.

Results

The expression of ki67 in crc, adenomatous, and normal colorectal tissues were 79.30%, 44.80%, 25.00%, and in her2 were 54.00%, 36.80%, and 19.40%, respectively. ki67 and her2 overexpressions were significantly higher in crc than the adenomatous and normal tissues ($p < 0.05$). ki67 overexpression was significantly correlated with differentiation grade of tumor ($p = 0.0002$) and also her2 expression was significantly associated with tumor type ($p = 0.003$).

Conclusion

Considering the significant overexpression of ki67 and her2 in crc, it seems that these biomarkers can be used as useful predictors in primary screening and identifying of crcs.

Keywords

Colorectal cancer, ki67, her2, immunohistochemistry, biological markers

Importance and application of anti-cancer peptides in cancer therapy

Mohammad bagher Naser,[1,*] Navid musazadeh ,[2] Muhammad javad muhammadi,[3] Seyed sadegh eslami,[4] Hamed rezaei,[5]

1. Department of Medical, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran
2. Department of Medical Biotechnology, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran.
3. Student Research Center, Zanjan University of Medical Sciences, Zanjan, Iran.
4. Department of Medical Biotechnology, Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
5. Department of Clinical Biochemistry, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran

Abstract

Introduction

Introduction cancer is one of the leading causes of death in the world, which millions of people die every year from the disease. in 2013, 14.9 million types of cancer were caused by 8.2 million deaths (1,2). traditional chemotherapy drugs have a serious defect, such as non-specific toxicity and side effects, and drug resistance of cancer cells against current medications lead to that we looking for a new method to treatment (3,4). for example, chemotherapy resistance in metastasis of breast cancer shows that chemotherapy agents are not effective in controlling breast cancer (5). peptides are a linear short chain of amino acids with a length of less than 50 amino acids (6). anticancer peptides (acps) have been used as anti-cancer drugs because of features such as: small size, high activity and low immunogenicity (7). acps are naturally cationic so that they interact with the anionic cell membrane components of the cancer cells and selectively destroy the cancerous cells. in other words, there is electrostatic attraction between the negatively charged cancer cell membrane with positively charged anticancer peptides (8,9) therapeutic peptides are composed of natural amino acids that they have lower side effects (10). classification of therapeutic peptides in three groups based on boohaker and his colleagues research (11): a. antimicrobial/pore-forming b. cell penetrating peptides c. targeting peptides the advantages of peptides as drug are: low accumulation in tissues, high potency, and high selectivity and disadvantages of peptides are: susceptibility to proteases, short-half-life, poor metabolic stability, high production cost, and rapid clearance (12,10). in designing and modifying acps to improve their action we can use methods such as: amino acid substitution, cyclization (7), hybridization, fragementization. in the designing of acps, we also use in silico methods. (13)

Methods

In this review article we searched the anticancer peptides and therapeutic peptides keywords in data base pubmed, google scholar, science direct and select suitable articles.

Results

In a study by suttmann and colleagues in 2008, showed that two peptides of cecropin a, b in bladder cancer cells were anti-proliferative and cytotoxic selective (14). another study conducted by hilchie and colleagues in 2011 showed for the first time that the pleurocidin-family caps nrc-03 and nrc-07 are cytotoxic for breast cancer cell lines (15). in 2006, lehmann and colleagues investigated the antitumor activity of the maganon2 antimicrobial peptide against bladder cancer cell lines and showed that maganin2 inhibited the cellular proliferation of bladder cancer cells (16). another study conducted by valero and colleagues in 2011 showed that peptide Î±5-Î±6 bax peptide acts as a potent inducer of apoptosis in cancer cells (17). in a research conducted by chen and colleagues, a new antimicrobial peptide called ranatuerin-2plx. suggested by them which had therapeutic potential and inhibition of the proliferation of cancer cells (18). in a study by zhu and colleagues in 2013, they showed that anoplin is antimicrobial peptide caused necrosis in mel cancer cells (19). the discovery of a new generation of peptide-based vaccines is another feature of the development of therapeutic peptides (20)

Conclusion

According to the studies we can say anticancer peptides are more important than older anticancer drugs and introduced as a novel method in treatment of cancer. now some of therapeutic peptides are in the preclinical and clinical trial phase.

Keywords

anti-cancer peptides,cancer therapy, therapeutic peptides

Importance of parents characteristics of the embryo donator: male patients opinion

Kobra Khajavi shojaie,[1,*] Zahra jouhari ,[2] Ashraf pirasteh,[3] mohammad tayyeb,[4]

1. Shahed University
2. Shahed University
3. Shahed University
4. Shahed University

Abstract

Introduction

Introduction: embryo donation is one of the technologies associated with infertility treatment. indications for embryo donation include the possibility of transmission of genetic diseases to the next generation and the inability to use the gamete donation. the aim of this study was to determine importance of donor parents characteristics of embryo of opinion of male patients in shaheed mostafa khomeini hospital.

Methods

Material and methods: this study was a descriptive cross-sectional survey that was conducted in 2018 in shaheed mostafa khomeini hospital. the participants included 225 male patients when received the questionnaire.

Results

Results: the mean age of participants was 39.62 Â± 11.66, the lowest was 20 and the highest was 75, most of them were 32 years of age. from the participants point of view, parents characteristics of the embryo donator were: beauty, age, ethnicity and race, university education, physical health, mental health and religion. mental health and physical health of the donors parent were ranked first and second respectively (70.2%, 67.6%). and academic education and religion had the least importance, respectively (19.6%, 28.4%). the attitude of the participants according to their level of education and level of knowledge showed a significant statistical difference with regard to the results of the anova test, respectively (p = 0.007) (p<00.01).

Conclusion

Conclusion: based on the results, it is concluded that the attitude of male patients about embryo donation has a significant relationship with level of education and level of knowledge.

Keywords

Keywords: attitude, embryo donation, assisted reproductive technology, male.

Important role of the microbiome in intestinal diseases

Shahrbanoo Asgarian,[1,*]

1. kohgiloyeh & boyer ahmad - yasuj - yasuj - faculty of medical science

Abstract

Introduction

The vast majority of microbial species give rise to symbiotic host-bacterial interactions that are fundamental to human health. for example changes in the composition of the gut microbiota or dysbiosis may be associated with several clinical conditions, including obesity and metabolic diseases, autoimmune diseases and allergy, acute and chronic intestinal inflammation, irritable bowel syndrome, allergic gastroenteritis, and necrotizing enterocolitis. for example, one recent quasi-experimental study was done which gave the mixture of l. acidophilus, l. casei and l. rhamnosus to all patients receiving antibiotics at two hospitals over time and found a significant reduction in the incidence of cdi cases and recurrences at these facilities. other papers, randomized, controlled trials of good quality will be pooled to assess probiotic strains for primary and secondary prevention of cdi. stool transplant infusing donor stool into the intestine of the recipient to re-establish normal bacterial microbiota has shown promising results in preliminary studies. an association has been made between recurrent disease and intestinal dysbiosis, and an inability of certain individuals to re-establish their normal intestinal bacteria is thought to play a leading role in recurrence.

Methods

This search was performed to identify studies focused on evidence supporting by searching the biomedical electronic databases ovid medline, the cochrane library, ovid embase, google scholar, pubmed and international journal of probiotics. one reviewer identified studies and abstracted database on outcomes and relationship between the microbiota and the predisposition to disease as associative, correlative, or causal. inclusion criteria included randomized controlled trials, blinded or open trials, in pediatric or adult populations, published in peer-reviewed journals or on clinical trial websites, or as meeting abstracts. exclusion criteria included pre-clinical studies, safety, kinetic studies, case reports or case series, duplicate reports, trials of unspecified types of probiotics, non-randomized trials, incomplete or outcomes reported, or if translation could not be obtained. articles published in abstract form for missing significant data in full articles, further information was sought by contacting authors or by the company manufacturing the probiotic product. using a standardized data extraction form, the following data was systematically collected: authors, year of publication and journal, population data, study aims and outcomes by demographics, etc. statistical analysis was performed using stata software version 12 to calculate pooled relative risks, univariate analysis results were analyzed using x2 test or fisherâ€™s exact test for small cell sizes (<5) with a significance level of $p < 0.05$.

Results

This review obtained which recently advances; modulation of gut microbiota with probiotics, prebiotics, or fermented dairy products has been suggested as a treatment of, or prevention for, different disorders such as ibs, infectious diarrhea, allergic disease, and necrotizing enterocolitis. mechanisms have been identified that suggest the microbiota may play a role in obesity development and propagation. evidence of studies showed that the microbiota in harvests energy, host gene functions, metabolic endotoxemia, aggravation of inflammatory mechanisms, and metabolic dysfunction. among the pathogenic bacteria, clinical isolates have been studied, such as their role in prevention and treatment clostridium difficile infections. i would disagree with this hypothesis, as different probiotic strains can have different mechanisms-of-action and resulting degrees of efficacies.

Conclusion

The microbiome makes very important biochemical functions. disorders of the microbiome are associated with many human disease processes. the microbiome should be described by tools and observations used in the study of ecology. microbiome activities are essential for future strategies of healthcare and producing the drugs. more well-done trials need to be done by testing the same types of probiotics. four different types of probiotics were found to be effective for primary prevention of cdi (s. boulardii, l. casei dn114001, the mixture of l. acidophilus and bifid. bifidum and the mixture of l. acidophilus, l. casei, and l. rhamnosus. more clinical experience with these four probiotics might be recommended to confirm if they are effective in larger populations of patients.

Keywords

Microbiome, drugs, dysbiosis

In silico allergenicity and cross reactivity assessment of recombinant drugs based on sequence identity algorithm, epitope mapping, and 3d structure studies

Seyed mohammad amin Shafiei,[1,*] Najaf allahyari fard,[2]

2. NIGEB

Abstract

Introduction

The word allergy organization (wao) has announced that about 30 percent of world population suffers from allergy types . allergen is a protein or glycoprotein identified by immunoglobulin e (ige) in the immune system of susceptible individuals. due to the rapid growth of allergy information, bioinformatics methods for allergen information management and accurate analysis of sequences, structures, functional and allergenic properties are under development.

Methods

In this research, all recombinant drug were investigated using drugbank and chembl databases. among all investigated medications, 108 drugs sequences and 17 drugs structures were obtained. sdap, algpred, allergenonline databases in sequence based and ellipro in 3d structure were used for allergenicity assessment.

Results

Our results indicate some drugs as pancrelipase amylase, albiglutide, thrombin alfa, becaplermin, and chorionic gonadotropin have allergenicity effects.

Conclusion

This research is scientific effort to determine recombinant drug allergies, cross reactivity, and to obtain new perspectives on reducing or eliminating allergenicity based on in silico investigations. allergenicity and cross reactivity assessment of recombinant drugs performed based on sequence based algorithm, structural based, and epitope studies. also in this research attempts have been made to reduce or eliminate allergenicity of recombinant drugs by altering some of the amino acids in epitope areas. it is necessary that the recombinant proteins drug are examined for allergenicity before use. also, allergenicity reduction of recombinant proteins should be considered prior to their production.

Keywords

In silico allergenicity, cross reactivity, recombinant drugs.

In silico analysis of harmine anti-tomural activity against p53 through molecular docking approach

Farzaneh Nobakht,[1,*] Hassan mohabatkar,[2]

1. Department of Microbial Biotechnology, University of Isfahan, Isfahan, Iran
2. Department of Microbial Biotechnology, University of Isfahan, Isfahan, Iran

Abstract

Introduction

Cancer remains one of the most important causes of mortality worldwide. treatments such as chemotherapy can put patients under a lot of strain and further damage their health. therefore, there is a focus on using alternative treatments and therapies against cancer. natural therapies, such as the use of plant-derived compounds in cancer treatment, are considered to reduce adverse side effects compared to current treatments such as chemotherapy, radiotherapy and chemically derived drugs. peganum harmala commonly known as syrian rue is a widely used medicinal plant from the family nitrariaceae. some of the reported pharmacological effects of p. harmala may be attributed to its Î²-carboline alkaloids, mostly harmine. the fundamentals of structure-based drug designing rely on protein-ligand interactions, which play a significant role to development of potential drugs. in this study, in-silico strategy was adopted to show anti-tumoral activity of harmine against p53 that play a vital role in lung cancer pathogencity.

Methods

3d structure of p53 generated by swiss-model showed 65.81% sequence identity with 3q05.1 and z-score of -0.14. molecular docking was performed by autodock4, using ligand harmine retrieved form pubchem compound database available at ncbi.

Results

Blind docking revealed that p53 involves glu186 as the most interacting residue. the free energy of protein-ligand binding interactions was -6.04 that showed anti-tumoral activity of this ligand.

Conclusion

It is assumed that this study will play a contribution to design potential drug inhibitor by utilizing most interactive residue information with harmine ligand to restrain the interaction between p53 pathways and epidermal growth pathways. structural based receptor-ligand interactions likely to be used against anti-cancer therapy.

Keywords

P53, harmine, lung cancer, molecular docking,

In silico analysis of single nucleotide polymorphisms in the regulatory and coding region of e-cadherin encoding gene.

Sogand Kalantari,[1] Majid tafrihi,[2,*]

1. Molecular & Cell Biology Research Lab 2, Department of Molecular and Cell Biology, Faculty of Sciences, University of Mazandaran
2. Molecular & Cell Biology Research Lab 2, Department of Molecular and Cell Biology, Faculty of Sciences, University of Mazandaran, Babolsar, Mazandaran, Iran.

Abstract

Introduction

E-cadherin is known as a tumor suppressor protein and is a critical protein involved in cell adherens junctions and maintenance of epithelial tissue integrity. mutations in cdh1 gene may dysregulated e-cadherin function, leading to disturbed cell-cell adhesion of epithelial tissues and infiltrative metastatic ability of cancer cells. in this study, by using publicly available computational tools, we performed in silico analyses to examine the effects of three nssnps in the coding region of the e-cadherin protein and a single nucleotide polymorphism in the promoter region of the e-cadherin encoding gene.

Methods

Three nssnps rs876658932 (r74g), rs878854691 (m1i), rs786202785 (e758k) in the coding region and rs16260 snp in the promoter region of the e- cadherin encoding gene were selected for in silico analysis. we have used online servers such as sift and polyphen, further analyses were performed using provean, snps & go, phd-snp, panther, pmut, hope project, cfssp servers and also chimera software, alpha version 1.12 to analyze the effect of nssnps on the structure of e-cadherin protein. at first, we wanted to find out the effects on protein function and stability. then, we used prediction tools snpinspector and matinspector to examine possible effects of rs16260 snp on the regulatory region of the cdh1 gene and transcription factor binding sites.

Results

Our primary analyses performed by provean, snps & go, phd-snp, panther, pmut showed that m1i substitution is neutral, but r74g could be possibly damaging and e758r substitution was found to be highly damaging. structural analysis using cfssp, hope project and chimera software showed that m1i and r74g substitutions are neutral or may have minor effects on the protein structure but e758k substitution has somewhat noticeable effects on the protein structure (including hydrogen binding). our analysis on regulatory snp using snpinspector showed that rs16260 snp resulted in deletion of two and generation of one transcription factor binding site but matinspector did not confirm the primary results.

Conclusion

We surveyed and compared available databases such as ncbi and dbsnp along with in silico prediction programs to assess the effects of deleterious functional variants on the protein functions. analyzing deleterious nssnps by both sequence and structure level has the added advantage of being able to assess the reliability of the generated prediction results by cross-referencing the results from both approaches. these results indicate that our approach successfully allowed us in selecting the deleterious snps that are likely to have functional impact on the cdh1 gene and contribute to susceptibility to cancer.

Keywords

Cdh1, e-cadherin, snp, in silico, cancer

In silico analysis of single nucleotide polymorphisms in the regulatory and coding region of mmp-7 encoding gene.

Mahbube Golbabaei,[1,*] Majid tafrihi,[2]

1. Molecular & Cell Biology Research Lab 2, Department of Molecular and Cell Biology, Faculty of Sciences, University of Mazandaran, Babolsar, Mazandaran, Iran; P.O.
2. Molecular & Cell Biology Research Lab 2, Department of Molecular and Cell Biology, Faculty of Sciences, University of Mazandaran, Babolsar, Mazandaran, Iran; P.O.

Abstract

Introduction

Introduction: matrix metalloproteinases (mmps) are one of the main group of enzymes degrading collagen and other protein degradation in extracellular matrix (ecm). mmp-7 (or matrilysin) is the smallest mmp, localized on chromosome 11q21-q22, which can degrade elastin, proteoglycans, fibronectin and type iv collagen. in this work, we explored the potential of structure according to in silico analyses to investigate the impact of two missense mutations, rs372470873 (l246r) and rs763277489 (w104r) on the structure and function of mmp-7. also we explored the possible effect of single nucleotide polymorphism in the promoter region of the mmp-7 encoding gene.

Methods

Materials and methods: in this work we used the ncbi and uniprot databases to get information about snps including snp id, amino acid position. we used online prediction servers such as sift, polyphen 2.0, i-mutant 3.0 and provean. in addition, we used snp&go, phd snp, pmut, align gv-gd, panther and netsurfp servers. to predict effect of nssnps on structure and function of protein we used cfssp, hope project online tools and chimera software, alpha version 1.12. we have used snpinspector and matinspector tools to analyze the effects of rs11568818 on tfs binding site of promoter region mmp-7 encoding gene.

Results

Results: analyses using sift, polyphen 2.0, i-mutant 3.0 ,provean, snp&go, phd snp, pmut, align gv-gd and panther demonstrate that rs372470873 (l246r) and rs763277489 (w104r) snps are deleterious and could be disease-related. the netsurfp show that class assignment for these snps does not change. structural analyses using cfssp, hope project and chimera did not show significant changes in the local structure of the protein. in another step, the snpinspector predicted one lost tf site in the + strand of the promoter region, but the matinspector did not show any evidence for this change.

Conclusion

Conclusion: we analyzed the effect of two snps evaluated their impact on the structure of the mmp-7 using online tools. analyzing deleterious nssnps by both sequence and structure level has the added

advantage of being able to assess the reliability of the generated prediction results by cross-referencing the results from both approaches. these results demonstrate that that are likely to have functional impact on the mmp-7 gene and contribute to susceptibility to different diseases including cancer.

Keywords

Keywords: matrix metalloproteinase, mmp-7, single nucleotide polymaorphism, cancer, in silico analys

In silico analysis ompa and bam antigens of acinetobacter baumannii as a potential immunogen

Zahra Davoudi,[1] Amirhossein taromchi ,[2] Nariman mosaffa,[3] Mojgan bandehpour,[4,*]

1. Department of medical Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences
2. Department of Medical Biotechnology and Nanotechnology, School of Medicine, Zanjan University of Medical Sciences
3. Department of Immunology, School of Medicine, Shahid Beheshti University of Medical Sciences
4. Department of Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences

Abstract

Introduction

Acinetobacter baumannii is one of the most successful nosocomial pathogens which resistant to almost all conventional antibiotics. its resistance to various antibiotics gives rise to the need of vaccine development against it. reverse vaccinology is a new method that explore proteome for novel vaccine candidates. outer membrane protein a (ompa) and Î²-barrel assembly machine (bam) proteins are the most promising vaccine candidate against, a. baumannii.. in this study, we attempted to analysis ompa and bam protein of a. baumannii as a potential vaccine candidate by using various online tools and programs

Methods

Amino acid sequence ompa and bam proteins of a. baumannii were retrieved and multiple sequence alignmented (uniprot, clustalx2). ompa and bama amino acide sequence analyzed for determaind various criteria to be a vaccine candidate (http://www.violinet.org/vaxign). epitope prediction and docking was performed using (iedb, cluspro v.2 online server). the results were clustered according to their binding energies. finally secondary and tertiary structure of the best proteins were predicted (i-tasser).

Results

Multiple sequence alignment of ompa and bam proteins sequence revealed the high conservation regions. vaxign analysis showed that ompa and bam has no trans-membrane helix, no similarity to human & mouse proteome. antigenicity and outer membrane localization predict that ompa and bam offers appropriate epitopes for immunity development against all species of acinetobacter. further, docking showed stable binding with low energies.

Conclusion

A protein must have certain properties to be an ideal vaccine candidate. an outer membrane protein has strong affinity to elicit immune response in host. protein should have less than two transmembrane

helices. also, the presence of more than one trans-membrane helix often results in failure of recombinant protein isolation and purification. a protein with many t cell epitopes is preferred and it must not have similarity with host. these epitopes can be used as to make an epitope based sub-unit vaccine for broad range of acinetobacter species.

Keywords

Acinetobacter baumannii, in silico, reverse vaccinology, ompa, bam

In silico comparison of binding of lactoferrin from different species to receptors involved in the development of cognitive function in infants

Ali Javadmanesh,[1,*] Marjan azghandi,[2]

1. Department of Animal Science-Faculty of Agriculture-Ferdowsi University of Mashhad
2. Department of Animal Science-Faculty of Agriculture-Ferdowsi University of Mashhad

Abstract

Introduction

Mothers milk is recommended for all newborn children. nonetheless, in some cases, breastfeeding is insufficient or unsuccessful or harmful for some medical reasons, or the mother decides not to bosom feed either at all or for a time. infant feeding formulas have been developed for these circumstances. immediate feeding formulas are widely used today to provide supplemental or sole source nutrition. recently, studies shown that breastfeeding may provide cognitive advantages. however, the connection between breast feeding and cognitive development is unclear. it was shown that lactoferrin (lf) might have a significant role as a contingent nutrient for the brain development and development of cognitive function in infants. thus, it was hypothesized that lf crosses the blood-brain barrier through a high affinity brain lactoferrin receptor (lrp) pathway. other studies suggested that lactoferrin might bind to a specific receptor on the brush border membrane, intelectin, to modulate autonomic nervous activity. lactoferrin is a glycoprotein with a molecular weight of about 80 kda, which binds to two iron atoms with high affinity. lf is found in mucosal secretions, including tears, saliva, vaginal fluid, semen, nasal and bronchial secretions, bile, gastrointestinal fluids, urine and most highly in milk and colostrum. this glycoprotein is one of the innate immune system components with broad range of antimicrobial activates comprising antiviral, antibacterial, antifungal and also anti-cancer and immunomodulatory actions. the objective of this study was to compare binding of different lf to brain lactoferrin receptors and intelectin by protein-ligand docking.

Methods

The crystal structures of human, horse, cattle, goat, buffalo and single-humped camel lactoferrin were retrieved from the uniprot (www.uniprot.org). the protein structure of sheep, zebo cattle and double-humped camel lf were predicted by the i-tasser server, and then the results were validated using saves v5.0 server. the crystal structures of lrp and intelectin receptors obtained from protein data bank (www.rcsb.org) then the pdb files prepared for docking calculation. cluspro server was used for protein docking. all of parameters were considered as their default values, and in all docking studies, ligand was allowed to be flexible.

Results

In this study, we showed that the lf can bind to specific receptors involved in the development of cognitive function, thus lactoferrin might have an effect on development of cognitive function in infants

through direct interaction with these receptors. the result of this study showed that the full-length sheep lf had the highest binding energy (-1627.8 and - 1051.7 kcal/mol for lrp and intelectin receptors, respectively) among other studied lfs. the second highest binding energy belonged to goat lf (-1551.7 and -1001.4 kcal/mol for lrp and intelectin receptors, respectively) and the lowest energy belonged to horse lf (-1190.1 kcal/mol) and single-humped camel lf (-920.9 kcal/mol) for lrp and intelectin receptors, respectively.

Conclusion

In summary, this study was the first attempt to examine the ability of the binding of lactoferrin from different origin to receptors involved in development of cognitive in infants. the results showed the lf may effect on the development of cognitive function, constitute a promising approach for supplemental or sole source nutrition for infants. in addition, our results suggested that the sheep lactoferrin is more effective than other lfs. it is also clear that the action of the sheep lf and its lobes on the cognitive function cannot be completely understood without experimental evidence.

Keywords

Lactoferrin, in silico, brain, cognitive function, infants

In silico investigation of angiogenesis in multiple sclerosis

Vajiheh Eskandari,[1,*]

1. University of Zanjan, University Blvd., 45371-38791, Zanjan, I. R. Iran

Abstract

Introduction

Multiple sclerosis (ms) is a complex disease of unknown etiology. myelin basic protein is essential for the formation of functional myelin. disorder in mbp synthesis and/or autoimmunity are the major cause of ms. angiogenesis plays a significant role in the ms lesion, perpetuating disease progression; however, its role and beings time in multiple sclerosis (ms) is unclear. thus it is assumed, treatment strategies that inhibit angiogenesis may decrease clinical and pathological signs of disease. angiostatin, an endogenous angiogenesis inhibitor, is a fragment of plasminogen. angiostatin have significant identity with myelin basic protein (mbp), which implies the similarities in their 3-d structures. so we hypothesize autoimmunity take place against both protein and result in demyelination and angiogenesis.

Methods

The amino acid sequence of target proteins: myelin basic protein and angiostatin were retrieved from the uniprotkb/swiss-prot database. the clustalw was used for pair wise sequence alignment. the consensus secondary structural elements of the proteins were obtained through the sopm, gor iv, phd and simpa96 servers. ssea server was used for proteins secondary structure alignment. generation of the 3d model for mbp was performed by modeller 9v20 based on the crystallographic structure of angiostatin.

Results

Protein primary sequence alignment is a way of arranging the sequences protein to identify regions of similarity that may be a consequence of functional, structural, or evolutionary relationships between the sequences. however, the degree of sequence identity between mbp and angiostatin was too low to allow the angiostatin to be detected as template for modeling of mbp using basic modeling method. in another attempt, the consensus secondary structural elements of the proteins were predicted using appropriate server and aligned with ssea server. the result showed 74% identity between secondary structures of two proteins. as we know that the 3-d structure is based on the secondary structure, therefore we used 3-d structure of angiostatin (pdb id: 4dur) as tempelate for mbp modeling. the mbp model was created using modeller 9v20. the model was validated using procheck and prosa ii-web server.

Conclusion

We hypothesize the structural similarity between angiostatin and myelin basic protein cause autoimmunity take place against both protein and result in demyelination and angiogenesis.

Keywords

Angiostatin, angiogenesis, myelin basic protein and multiple sclerosis

In vivo study of the role of mesenchymal stem cells on liver fibrogenesis

Atoosa Gitiara,[1,*] Sogol mazhari,[2] Kaveh baghaei,[3] Behzad hatami,[4] Ali asadi rad,[5] Afshin moradi,[6]

1. Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2. Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3. Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
4. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
6. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Liver fibrosis has been affected by excessive accumulation of extracellular matrix (ecm) proteins such as Î±-sma, collagen i and iii result in liver failure. besides viral infections and alcohol consumption as the common causes of liver fibrosis, non-alcoholic steatohepatitis (nash) is one of the main cause which can present as pre-stage of cirrhosis and hepatocellular carcinoma (hcc). the process of liver fibrosis has been leading up to the secretion of many pro-inflammatory factors. mesenchymal stem cells (mscs) represent a population of adult stem cells, which have a fibroblast-like shape. mscs are capable of secretion immunomodulatory cytokines causing anti-inflammatory effects liver fibrosis. in current study we aim to study the role of these cells on liver fibrosis by using induced fibrosis animal model.

Methods

5 male sprague dawley rats, approximately 8-10 weeks old weighing 200Â±50g prepared and were utilized to induce liver fibrosis by twelve intraperitoneal injection of ccl4 for six weeks. 24 hours after the last dose of ccl4, rats were treated by the single-injected form of mesenchymal stem cells in tail vein. at the end of the 6-week treatment period, all the rats were sacrificed. the blood was collected for measuring the serum markers. specimens were cut out from the liver for evaluation of histopathological observation and molecular marker tests.

Results

Determination of alanine aminotransferase (alt), aspartate aminotransferase (ast), and alkaline phosphatase (alp) as hepatic enzymes is a solution to diagnose liver health. the mscs treated rats, confront to the reduction amount of alt, ast and alp in comparison with ccl4 treated group. furthermore, the amount of fibrosis-related genes such as procollagen i and iii, laminin and Î±-sma, decreased in mscs treated

group in real-time pcr analysis. pathological observations by h&e staining showed less pseudolobule forms and less collagen fibers due to the decrease of liver fibrosis by mscs

Conclusion

The result of serology test, real-time pcr and histopathology analysis demonstrated that fibrotic factors were reduced effectively in mscs treatment in comparison with ccl4 group. according to the broad activities of mscs, the administration of mscs can salvage patients with fibrotic liver by improving hepatocytes function.

Keywords

Liver fibrosis, ccl4, mesenchymal stem cells, histopathology analysis, real-time pcr, serum markers.

Increasing risk of breast cancer in ivf cases

Mohammad Keykhaei,[1] Shaghayegh zokaei,[2] Dariush d. farhud,[3,*] Marjan zarif yeganeh,[4]

1. School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
2. School of Advanced Medical Sciences, Islamic Azad University, Tehran Medical Branch, Tehran, Iran
3. School of Public Health, Tehran University of Medical sciences, Tehran, Iran
4. Cellular and Molecular Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Since the birth of the first â€˜test-tubeâ€™ baby, in the early 1980s, ivf have been used as a method for solving infertility problems. according to global statistics, due to fertility problems of millions of couples, a large number of them annually visit ivf centers to carry out infertility treatment, and also ovulation-inducing drugs have been used for various types of infertility. by using some methods, such as assisted reproductive technology (art), surgery and medication, or intrauterine insemination, infertility problems can be cured. studies conducted in netherlands and the united states show the high consumption of fertility drugs and gonadotropin and sudden increase in fertility health care between the 1980s and 90s. for a long period of time, many studies, especially historical cohorts, have been focused on the future effects of assisted reproductive technologies (art) in women under these treatments and their offspring. based on the studies, infertility and non-breastfeeding can affect the risk of breast cancer and gynecologic cancers, but with regard to research on the effects of ivf treatment, these methods can increase the risk of developing breast cancer. there is an association between ovulation induction and a significant increased risk of breast cancer. in a study of 43,313 women, the association of ovulation stimulant drugs in infertility treatment with mammographic density was investigated. they came to the conclusion that these people have more dense tissue in their breast, which can affect the risk of breast cancer. furthermore, womens age, known as a risk factor for breast cancer, at the onset of ivf is also highlighted in another study, so that women over the age of 30 significantly increase the risk of breast cancer by initiating ivf cycles, although another study in western australia has reported a different outcome. it has pointed to an increase in breast cancer in young women who have taken ivf compared to those of other ages or those who did not have ivf .breast cancer is a process that is highly related to hormonal effects. as the ovary affects the function of the breast by producing steroid hormones, any doses of gonadotrophin hormones and fertility drugs that affect ovary to multiply ovulation, has an influence on breast, too. in infertility treatment processes to stimulate the growth of multiple follicles and induce ovulation, gonadotropins, like hcg and hmg, and clomiphene citrate have been used, and this stimulation of ovary can affect the levels of endogenous estrogen, which may cause cancer risk. it should be noted that the probability of this cancer is also greater in women whose ivf cycles are more than 6 or last more than 6 months because they have a longer exposure to the effects of human menopausal gonadotropin (hmg).

Methods

This is a review article and we are referring and collecting more than one hundred articles worldwide, which followed the hypothesis that the use of ivf drugs could lead to breast cancer, and our findings completely confirm this.

Results

With this in mind, mothers who are going to have infertility treatments, should be evaluated â€œpersonalized medicineâ€• and family history of breast cancer, prior to treatment.

Conclusion

In summary, infertility treatment methods, like ivf, that are now popular can be effective in increasing the risk of breast cancer. breast cancer can be largely hereditary and affected by hormones. drugs used in ivf, such as clomiphene citrate and gonadotropins increase level of lh and fsh. which in turn raises estrogen levels. increasing estrogen, which is an important female sex hormone, can increase the expression of genes and following that the risk of breast cancer. according to studies with a large sample size, women with a long term treatment in ivf, especially more than a year, are more likely to be exposed to fertility drugs and the repeated therapeutic cycles can probably raise the development of breast cancer in future. it should also be taken into consideration that women with family history of breast cancer or susceptible to it are more likely to develop breast cancer after being treated with in vitro fertilization than normal people. so whatâ€™s important is the awareness of the treatment process, probable risks and the â€œpersonalized medicineâ€• of the patients.

Keywords

Breast cancer, ivf, clomiphene citrate, gonadotropins, personalized medicine

Indirect molecular diagnosis of congenital factor Î§Ð†Ð†Ð† deficiency by candidate microsatellites and single nucleotide polymorphisms

Hojat Shahraki,[1,*] Akbar dorgalaleh,[2] Omolbanin sargazi-aval,[3] Marzieh shakouri,[4] Majid fathi,[5] Maryam daneshi,[6]

1. Cellular and Molecular Research Center, School of Allied Medicine, Zahedan University of Medical Sciences, Zahedan, Iran
2. Department of Hematology, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
3. Faculty of Allied Medical Sciences, Zabol University of Medical Sciences, Zabol, Iran
4. Department of Hematology, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
5. Department of Medical Biotechnology, School of Allied Medicine, Iran University of Medical Sciences. Tehran- Iran
6. Msc of hematology, Department of laboratory sciences, School of Allied Medicine, Arak University of Medical Sciences, Arak, Iran

Abstract

Introduction

Introduction (background): congenital factor xiii (fxiii) deficiency is one of the rare bleeding disorders (rbd) with a prevalence of 1 per 2 million individuals with different clinical presentations such as intracranial hemorrhage, umbilical cord bleeding and recurrent spontaneous miscarriage. according to inheritance pattern (autosomal recessive) of the disease, the prevalence of the disorder is significantly high in areas with high rate of consanguineous marriage. purpose of current study is comprehensive and precise analysis of indirect molecular diagnosis of congenital factor Î§Ð†Ð†Ð† deficiency and provide a diagnostic method especially in developing countries.

Methods

Materials and methods: in this study, by searching suitable keywords like â€œcoagulation factor xiii deficiencyâ€• , â€œrare bleeding disorderâ€• , â€œmolecular diagnosis of factor xiii deficiencyâ€• , â€œindirect moleculardiagnosis in databases like pubmed, google scholar, science direct , medline and ultimately, 69 articles were selected for study from 293.

Results

Results: in developed countries utilization of direct molecular diagnosis method (direct sequence analysis) make detection of mutation possible but in developing countries, in addition to direct mutation detection, more cost-effective methods such as indirect molecular diagnosis can be used. this indirect molecular diagnosis by candidate microsatellites and single nucleotide polymorphisms (snp) can be used for prenatal diagnosis (pnd) and carrier detection. establishment of informative and intragenic markers is required to

elevate the probability of co-segregation with pathogenic mutations. we can use polymorphic genetic markers associated to fxiii gene in these methods like humfxiii01, humfxiiia02, humfxiiib and candidate short tandem repeat (str) and snp (like rs7740009, rs3024405). finally by comparing patients polymorphic markers versus healthy individuals, prenatal diagnosis and carrier detection can be made.

Conclusion

discussion and conclusion: it seems that indirect molecular diagnosis is a relatively reliable and cost-effective method for diagnosis of congenital fxiii deficiency in countries with low economical resources.

Keywords

Coagulation factor xiii deficiency, clinical presentations, rare bleeding disorder, diagnosis

Induction of apoptosis by silymarin in human colon cancer cells

Zeinab Kamrani,[1] Masoumeh heshmati,[2,*] Sadegh babashah,[3]

1. Pharmaceutical Sciences Research Center, Tehran medical Sciences, Islamic Azad university,Tehran ,Iran
2. Department of Molecular and Cellular Sciences, Faculty of Advanced Science & Technology ,Tehran med
3. Department of Molecular Genetics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

Abstract

Introduction

Silymarin is a unique flavonoid complex isolated from milk thistle (silybum marianum) and has been widely used as anticancer agent against human carcinoma cell lines and therefore it is considered as potential inhibitors of cellular proliferation and induced apoptosis. in the present study, the cytotoxicity and apoptotic effect of silymarin was assessed on human colon cancer sw480 and hek cell lines.

Methods

Cell lines were purchased from the pasteur institute of iran and were plated in rpmi culture medium supplemented with fbs10%. cytotoxicity effect of silymarin was evaluated by mtt assays at various concentrations 6.25-250Âµg/ml and apoptotic effect was examined by annxexin v-fitc apoptosis detection kit (apoaf-50tst) at concentrations 50 100 and 250 Âµg/ml.

Results

Loss of cell viability was time and dose dependent and ic50 was observed at concentration 190 , 91 ,45 Î¼g/ml for 24,48,72h respectively and no cytotoxicity recorded at hek normal cell lines .the increased of apoptosis in sw480 cell lines was observed for 4.5 fold at concentrations 50 and 100 Î¼g/ml and 4.8 fold at concentration 250 Î¼g /ml compare to untreated cells at 48h in sw480 cell lines.

Conclusion

These finding indicated that silymarin have main role in suppressor sw480 colon cancer cell line by inducing apoptosis pathways therefore silymarin can be used for phytomedicin because of safe and plant-based characteristics

Keywords

Colon cancer, silymarin, apoptosis colon cancer, silymarin, apoptosis

Influence of vitamin c on the viability, colony formation and migration ability of ciprofloxcacin-resistant a375 melanoma cells

Jamileh Gholami,[1] Razieh jalal,[2,*]

1. Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

: malignant melanoma is a type of skin cancer which is caused by occurrence of mutations in dna of the epidermisâ€™ basal layers. according to warburg theory, the growth of cancer cells is dependent on the aerobic glycolysis. glycolysis pathway has been reported to increase in cancerous cells significantly. vitamin c, a water-soluble vitamin, acts as a potent glycolysis inhibitor by targeting glyceraldehyde-3-phosphate dehydrogenase and depleting the nad pool. recent studies showed that a high dose of vitamin c can be prescribed as a supplementary medicine in order to increase the cytotoxicity of the chemotherapeutic drugs against some types of cancers.

Methods

In this study, human melanoma a375 cells were treated with ciprofloxacin (cip) at a concentration of 5 Î¼g ml-1 for two weeks. exponentially grown cells in medium containing 5 Î¼g ml-1 of cip were designated as ciprofloxacin-resistant a375 cells and named a375-cip5. mtt assay was used to investigate the cytotoxicity of vitamin c on a375-cip5 and parental a375 cells. the potential of colony formation and migration of a375-cip5 and a375 cells were also evaluated at serum concentration of vitamin c (0.05 mm) by colony formation and wound healing assays, respectively.

Results

The ic50 values of vitamin c on a375 and a375-cip5 cells at 48 h were 0.53 and 0.16 mm, respectively. the migration ability of a375-cip5 cells was significantly lower than that of a375 cells. at serum concentration, vitamin c could markedly decrease the mobility of a375 cells while no changed in the potential of a375-cip5 cells to close the scratch wound was observed at 72 h after wound incision. moreover, a375-cip5 exhibited higher colony formation potential as compared to that of parental cells. the plating efficiency of a375-cip5 and a375 cells were decreased at serum concentration of vitamin c.

Conclusion

Taken together, for the first time, we report that vitamin c at a concentration present in serum seems to have anti-proliferative and anti-migration activity against melanoma a375 cells. the short-term anti-proliferation potential of vitamin c on cip-resistant a375 cells was higher than that of parental cells while

the influence of vitamin c on colony formation capacity of cip-resistant a375 cells was the same as that of a375.

Keywords

Melanoma, ciprofloxacin, colony formation, cytotoxicity, migration, vitamin c

Inhibiting notch activity in liver cancer stem cells by functionalized gold nanoparticles with gamma-secretase inhibitor dapt and vitamin c

Maryam Ghanbarimovahed,[1] Mostafa shourian,[2,*]

1. University of Guilan
2. University of Guilan

Abstract

Introduction

Liver cancer is one of the most common malignancies and the second leading cause of cancer-related death worldwide. hepatocellular carcinoma (hcc) is the most common type of primary liver cancer cases and it is characterized by a high recurrence rate and heterogeneity. these pathological properties may ï¬‚ow from cancer stem cells (cscs), which are capable of self-renewal and differentiation responsible for tumor progression, metastasis, and chemotherapy-resistance. notch signaling has been implicated to regulate the csc population, where it has been shown to be critical for maintenance and self-renewal of cscs. notch is linked to aggressive metastatic growth and therapy resistance and one method of effectively blocking notch activity is preventing its cleavage at the cell surface with Î³-secretase inhibitors. another novel therapeutic strategy for hcc treatment is vitamin c (vc). vc kills cancer cells and preferentially kills cscs via svct-2. the nanomaterials are used as beneficial tools for targeting different types of therapeutic agents, including carbon nanotubes, quantum dots, liposomes, micelles, polymeric, graphene, gold nanoparticles (au nps), ferroferric oxide nanoparticles and so on. recently, among the various types of nanomaterials, the biomedical consumption of metallic nanoparticles, especially gold nanoparticles, has attracted a lot of attention because of their unique properties. these days, gold nanoparticles due to their nontoxicity, biocompatibility, ease of synthesis and surface functionalization have been chosen for different kinds of biomedical applications such as molecular imaging, drug carriers, biosensing, killers of cancer cells by hyperthermia treatment and etc. the conjugation of gold nps-drug in comparison to the free drug was shown to increase drug availability in circulation. on the other hand, most of the studies dedicated to cancer treatment have shown that angiogenesis plays an important role in growth and metastasis of solid tumors.

Methods

Utilizing these csc features, au nps were synthesized according to previous method with little modifications by addition of tri-sodium citrate solution to aqueous solution of haucl4 for reduction of chloroauric acid. we made the gold nanoparticles (gnps) suspension using a reference method, by adding 2 ml of trisodium citrate 1% to 50 ml of aqueous solution of 1% haucl4. following that, their surface was self assembled by cystamine. after that, we functionalized au nanoparticles covalently, by using the activation of carboxyl groups of dapt and vc for binding to amine group of cystamine, mes buffer containing edc/nhs were used.

Results

We functionalized au nanoparticles, carrying gamma-secretase inhibitor, dapt, with vc to efficiently deliver notch signaling inhibitors to cscs via svct-2. the vc and dapt were co-immobilized on surface of gold nanoparticle. uv-vis spectroscopy as the most basic and appropriate method was used to evaluate the size of gnps and gnps-dapt/vc in suspension. the diameter of the au nps and gnps-dapt/vc were figured out by dls approximately under 20 nm.

Conclusion

We aimed to enhance particle uptake in cscs by utilizing the machinery for cellular import of vc. our data reveal that speciï¬• c csc characteristics can be utilized in nanoparticle design to improve csc targeted drug delivery and therapy.

Keywords

Gamma-secretase inhibitor, dapt, gold nanoparticles, vitamin c, liver cancer

Inhibitory effects of combination nano-curcumin, berberine and 5-fu on invasion of mcf-7 breast cancer cell line

Parisa Zia sarabi,[1] Amirreza hesari,[2] Malieh bagheri,[3] Faezeh ghasemi,[4,*]

1. 1- Molecular and Medicine Research Center, Department of Biotechnology, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
2. 1- Student Research Committee, Faculty of Medicine, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
3. 1- Student Research Committee, Faculty of Medicine, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
4. 4- Blood Transfusion Research Center, High Institute for Research and Education in Transfusion Medicine,Next to Milad To

Abstract

Introduction

Breast cancer is the second leading cause of cancer related death in women. berberin and nano-curcumin are two natural compounds discovered with anti-cancer properties and extremely low side effects to normal cells. the aim of this study was to investigate the synergistic effects of combination these two compounds with 5-fu on invasion of the mcf-7 breast cancer cell line in five treatment groups.

Methods

Mtt test was used to obtain the ic50 doses of combining berbine, nano-curcumin and 5-fu on mcf-7 cell line. evaluating the inhibitory effects of drugs on invasion of the mcf-7 cell line, performed by trans well chamber technique, colored with gimsea. it should be noted that groups of treatments were a (cell control) b (nano-curcumin) c (berberine) d (standard drug) e (combination of nano-curcumin and berberine) f (nano-curcumin, berberine and standard drug combinations). analyzing the statistical results done using one-way anova and tukey multiple range tests. (p-values < 0.05).

Results

With knowing the fact that, the more the cells pass from the interstitial pores and reach from the chambers to the wells, the more invasive they are, we took pictures from the bottoms of the wells and we detected decrease in all 5 groups of drug treatments, but the most decline in invasion was detected in last group that belonged to the combination of nano-curcumin, berberine and the standard drug, the next declines were seen in e, d, c, b groups, respectively.

Conclusion

The analysis of the results showed that the combination of nano-curcumin, berberine and 5-fu had synergistic inhibitory effects on invasion of mcf-7 breast cancer cell line. therefore, combination of these

two natural compounds with standard drugs emphasizes on their potency for improving breast cancer outcomes.

Keywords

Nano â€“ curcumin, berberin, breast cancer, mcf-7

Insight to crimean congo haemorrhagic fever virus

Saman Hakimian,[1] Hossein vazeh,[2] Shaghayegh yazdani,[3,*]

1. Department of Microbiology, Faculty of Advanced Science and Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
2. Department of Virology, Golestan University of Medical Sciences
3. Department of Microbiology, Faculty of Advanced Science and Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Abstract

Introduction

The cchf(crimean congo haemorrhagic fever) virus was first identified in the crimean autonomous republic of crimea in 1944, a type of illness that was known as a bleeding fever due to a blood febrile victim. twelve years later, the same virus was found in africa and in the country of congo, which was why the name of the disease was placed on the congo fever.criemean congo haemorrhagic fever is found in eastern europe, particulary in the former soviet union, throughout the mediterranean, in northwestern china, central asia, southern europe, africa, the middle east, and the indian subcontinent. it has now been several years since the start of the heat season, from late spring until end of the summer as the mites grow and mature, congo fever disease has also been seen in iran, and some have been sacrificed . the cchf virus is a member of the genus nairovirus in the family bunyaviridae with the ambisense genome and characterized by a tripartite helix symmetry rna genome and enveloped .

Methods

The shepherds and those operating in slaughterhouses and meat processing centers are in the first group of people who are exposed to cchf virus. one of the most important ways of transmitting this virus is the infected tick bite, and of course any contact with contaminated blood such as cattle, sheep, goats and even dogs can cause transmission of the disease. slaughter, slicing, cleaning the meat and separating the skin from meat can also lead to the transmission of the disease, and rodents, such as mice, rabbits, and even rats, can cause the disease. any contact with blood, skin and body fluids , a patient with congo fever and even breathing air in the oven room leads to the disease.

Results

It is not easy to diagnose the disease at an early stage that is similar to some diseases, including influenza and cold, but if the disease is detected in such a situation, treatment is easy, after the first stage and entering the second stage of the disease, symptoms it is much more intense and more obvious, including coagulation of blood clots under the skin, and sometimes helping some patients who are in the acute phase of the disease is useless. laboratory tests that are used to diagnose cchf include antigen-capture elisa, rt-pcr, virus isolation attempts, and detection of antibody by elisa igg and igm. laboratory diagnosis of a patient with a clinical history compatible with cchf can be made during the acute phase of the disease

by using the combination of detection of the viral antigen elisa antigen capture, viral rna sequence rt-pcr in the blood or in tissues collected from a fatal case and virus isolation. immunohistochemical staining can also show evidence of viral antigen in formalin-fixed tissues. later in the course of the disease, in people surviving, antibodies can be found in the blood. but antigen, viral rna and virus are no more present and detectable.

Conclusion

An inactivated, mouse-brain derived vaccine against cchf has been developed and is used on a small scale in eastern europe. however, there is no safe and effective vaccine currently available for human use. further research is needed to develop these potential vaccines as well as determine the efficacy of different treatment options including ribavirin and other antiviral drugs.

Keywords

Cchf, haemorrhagic fever, tick

Interaction of ethylenethiourea with dna using circular dichroism (cd)

Soudabeh Askari,[1] Sadegh hasannia,[2] Soheila kashanian,[3,*] Zohreh shariati,[4] Zahra hemati,[5]

1. Biochemistry department, Biology faculty, Tarbiat Modares University, Tehran, IRAN
2. Biochemistry department, Biology faculty, Tarbiat Modares University, Tehran, IRAN
3. Faculty of Chemistry, Razi University, Kermanshah, IRAN
4. Biology department, Razi University, Kermanshah, IRAN
5. Amoozesh and Parvaresh, Khanmirza area, Chaharmahal and Bakhtiari

Abstract

Introduction

Pesticides have been extensively applied in recent decades in agriculture throughout the world. they are powerful toxicants, which are easily absorbed and tend to accumulate onto the soil, plants, foods, ground and surface waters therefore, they can cause damages to human or animal dna. ethylene thiourea can be used as a biomarker of exposure to ethylenebisdithiocarbamates(ebdtcs), which are frequently employed as fungicides in agriculture, mainly on fruits, vegetables and ornamental plants. this compound has been reported to have carcinogen, teratogen and goitrogen effects. however, lack of in vitro studies and inadequate information about the mode of etu interaction with dna led us to conduct a study on the interaction of etu with ct-dna.

Methods

The interaction of native calf thymus dna with ethylenethiourea (etu), in 10 mm hepes aqueous solutions at neutral ph=7.2, has been investigated by circular dichroism (cd), technique.

Results

It is found that etu molecules interacted with dna and caused induced cd spectral changes from a b-like form to a more a-like conformation.

Conclusion

Pure ct-dna produced a characteristic positive band around 275 nm and a negative band around 245 nm. these bands are modified when ct-dna is allowed to interact with etu. the 245 nm band loses its intensity and is shifted to zero level, while the positive band at 275 nm is increased to positive values. this increase at the ellipticity values of dna, suggesting some changes in the stacking style or orientation of the base pairs of dna and etu induces conformational changes from a b-like to a more a-like form. according to our results and pervious reports, we proposed that the etu interact with o6 of guanine by hydrogen bonding. therefore, etu is able to cause conformational changes in dna structure that may lead to dna damage.

Keywords

C-dna, ethylenethiourea, circular dichroism, conformational change

Introducing a genomic risk architecture for autism spectrum disorder.

Romisa Moslemi,[1,*]

1. Science faculty, Department of Biology, Central Tehran Branch, Islamic Azad University.

Abstract

Introduction

Autism spectrum disorder (asd) contains broad range of conditions such as poor social skills, deficiency of immune system, gastrointestinal obstacles, and speech difficulties, etc. the diagnosis rate of asd is growing in industrialized countries rapidly. therefore, different etiological aspects of this disorder have been the research target of many scientist globally. in this article, different genome wide association studies (gwas) have been reviewed and the results were analyzed from system biology point of view. finally, a new set of genes has been proposed as a new risk architecture to detect the disease in newborn children

Methods

In order to increase the confidence of this study, the results of all gwas studies related to autism and every paper with autism genetic keyword have been gathered and reviewed. after data gathering and extraction from different studies, a reliability score has been given to every candidate gene. then, a novel bioinformatic pipeline has been designed to analyze and find the genes with common feature such as similarity in interactions, functional domain, biochemical pathways, expression regulatory process, or same biological process, and etc.. finally, selected genes have been sorted based on reliability and relativity scores

Results

After analyzing all candidate genes through the novel pipeline, 56 genes have been selected as new risk factors of asd. different mutations in these genes could cause neurological disfunctions, immune deficiencies, optic disabilities, and etc.. additionally, all the genes have been divided in two different group based on kind of mutation (somatic or germline).

Conclusion

Utilizing proposed risk architecture, detection of asd in early months of pregnancy could become a reality. additionally, we propose more molecular studies are necessary to finalized this detection method.

Keywords

Autism spectrum disorder, asd, detection, gwas

Introduction of cf dna to predict in vitro fertilization outcomes

Shiva Ebrahim,[1,*] Ahmad ebrahimi,[2]

1. shiva ebrahim, master of sience,yas medical genetic center tehran, iran
2. Ahmad ebrahimi, molecular genetics, phd, yas medical genetic center tehran, iran

Abstract

Introduction

Infertility is one of the stressful and critical problems in the individual, marriage, family and the social life. one of the routine methods of infertility in iran is ivf which is a method of art technic. usage of extracted cell free dna from plasma and follicular fluid in this study as a genetic biomarker illustrated a solution for infertile couples who want to know their victory and failure (efficiency) in-vitro fertilization before zygote transport. in this study, we investigated if cfdna levels in follicular fluid (ff) samples from in vitro fertilization (ivf) patients, could be related to ivf outcomes.

Methods

. in this research cfdna isolated from 50 samples of both the follicular fluid and the blood samples by nucleospin kit. two housekeeping genes which called gap dh and albumin studied by sybr green method in real-time pcr. studies on the extracted cfdna in both groups of successful and unsuccessful in ivf, statistical analysis and their meaningful level achieved.

Results

According to the nonparametric hypotheses, on the one hand the h0 theory which is based on similarity of variables such as ctp, ctf, delta ct and ct average from the plasma and the follicular fluid rejected in both group. on the other hand, base on Ï‡2 statistical test there is no meaningful difference on those variables in the groups.

Conclusion

Potential prediction range of follicular fluid cfdna is extremely higher than the numbers of embryos which are qualified base on morphological standards, indeed this prediction model can be a complementary tool for identification of the chance of successful ivf.

Keywords

Infertility, ivf, cfdna, housekeeping gene, real-time pcr.

Introduction to nanomaterial and green chemistry in drug delivery

Seyedehparisa Mohaghegh motlagh ,[1,*] Yasamin ghaffari,[2] Neda esfandiari,[3]

1. Faculty of life sciences and biotechnology, Shahid Beheshti University
2. Faculty of life sciences and biotechnology, Shahid Beheshti University
3. Faculty of life sciences and biotechnology, Shahid Beheshti University

Abstract

Introduction

in recent years, the use of compounds has grown spectacularly, and has affected all aspects of human life. the 1-100 nanometer scale has seen a vast increase vastly in research activity. one of the aspects of nanotechnology is nano drug delivery for disease treatments, especially cancer. this has opened huge possibilities for drug release, size and proliferation control of tumor cells. cancer is the second most common cause of death in developed and the third in developing countries. at the moment 12% of worldwide deaths are due to cancer and this number is only expected to rise in the future. it is predicted to be 16 million people in few years, around 60% in less developed regions. changes in life style, control of infectious disease, increasing factors of environmental hazards, and population aging are some of the reasons of rising cancer rates in recent decades. green nano materials are promising to be less problematic to humankind and the environment. among them, biological particles, such as microorganisms and plants were the most promising options. in recent years drug delivery based on green chemistry derived from natural materials was greatly welcomed. thus, green chemistry which produces renewable materials is highly resource efficient and reduces waste.

Methods

A group of metal nanoparticles and magnesium have drastic applications in medicine. for example y-ã€–feã€—_2 o_3 nano particles and magnetic ã€–feã€—_3 o_4 nano particles in drug delivery, treatment and cancer tissue photographing lead to targeted loaded drug release as well as tgn peptides and qsh-d-enantiomer. they are functionalized in nanostructures to alzheimer damage specific cohesion. genoxal-pm micelle (formulation based on mpeg-mpegpdlla) is used for lung and breast cancer treatments. cso-pei along with sirna and ha have been used as an unthreatening drug. carbon dots, due to their special compatibility and surface properties, were considered and manufactured in different ways.

Results

Using iron, magnesium, silver and micelle nanoparticles for some cancer treatments has established affirmative results.due to some anti-bacterial properties, they are also used as wound dressing, ointment, disinfectant and as coatings on medical tools. they have improved the healing process due to their metalloprotease activities and increase in neutrophil leucocyte activity . also, their dielectric characters in biosensors have facilitated the diagnosis of disorders. adding peg (polyethylene glycole) to nanoparticles has elevated their half-life, access to target tissue and improved the treatment process overall. carbon dots

are known as an efficient probe in bioanalysis research due to their low toxicity and high potentials. they are also highly capable of inhibiting tumor growth and while decreasing side effects.

Conclusion

Nano polymers, low-weight molecules and aforementioned biomacromolecules are among the best candidates of nano drug delivery systems synthesized using green chemistry. all of the evolutions via green processes lead to producing low-toxicity and highly biologically potent materials which are manufactured with herbal extracts and biomaterials such as lipids and proteins. green chemistry has opened the possibility of reducing environmental impact of the synthesis of drug systems and the toxicity of said systems toxicity.

Keywords

Cancer, green chemistry, drug delivery, nanoparticles

Investigating antibacterial effect of satureja bachtiarica against coagulase-negative staphylococci (cons)

Niloofar Shadalooei,[1,*]

Abstract

Introduction

Given the inappropriate use of antibiotics and prevalence of resistant bacteria, there is urgent need for antibacterial drugs that have fewer side effects than antibiotics. satureja bachtiarica is a medicinal plant which had many uses in traditional medicine. in this study, ethanol leave extract of this plant is tested on coagulase negative staphs.

Methods

In this experimental study, after collecting and drying the plant extract, the ethanolic extract of the plant was extracted by soxhelet method. then, the antibiotic resistance pattern of cons strains to cefoxitin, tobramycin, kanamycin, amikacin, gentamicin, was assessed. to evaluate the antibacterial effects, the mic test performed by using micro dilution broth method.

Results

The results of this study showed that the antimicrobial effect of satureja extract is concentration dependent. the results of the antimicrobial effects of extracts, indicate that alcoholic extract in all dilutions have an antimicrobial effect on the cons bacteria also, antibacterial effect of satureja bachtiarica extract compared with common antibiotics. the results show that cons have highest resistance against cefoxitin and highest sensitivity to gentamicin. however, in 200 and 100 mg/ml concentrations the extract have higher antibacterial effect.

Conclusion

According to the results of this study, ethanol extracts had growth inhibitory effect on coagulase negative staphs. therefore, this plant has the potential to be evaluated as an alternative or adjunct to antibiotics to treat coagulase negative staph infections.

Keywords

Satureja bachtiarica, coagulase-negative staphylococci, antimicrobial resistance

Investigating the antimicrobial effects of nanoparticles bacteria isolated from agricultural territorys of ,investigating the antimicrobial effects of nanoparticles bacteria isolated from a

Mohammad Asadi,[1,*] Elnaz abedini,[2]

Abstract

Introduction

The use of microorganisms in the synthesis nanoparticles is known as an eco-friendly method. moreover, because of the ability of microorganisms to synthesize nanoparticles of various sizes, shapes and morphologies, this method has gained extreme attentions in recent years. the aim of this study was, therefore, to investigate the antimicrobial effects of nanoparticles synthesized by bacteria isolated from agricultural territorys of qazvin, iran.

Methods

This study was carried out in 2017. nanoparticles were characterized by sem, eds and xrd analyzes. the antimicrobial effects of nanoparticles were also assessed against some pathogenic bacteria.

Results

Of the 40 nanoparticle producing bacteria, the strains that were able to produce nanoparticles with high antimicrobial activity yielded under different environmental conditions, were selected. the results of scanning electron microscopy (sem) confirmed the presence of nanoparticles with a spherical shape. eds analysis showed that silver content of the particles was about 60 wt %. sequence alignment and phylogenetic tree results showed that m9 and b7 strains are closely related to bacillus cereus and pseudomonas argentinensis, respectively, with 99% homology.

Conclusion

The results showed that the m9 and b7 strains can synthesize nanoparticles with high antimicrobial effects under different environmental conditions.

Keywords

Biosynthesis, nanoparticles, bacillus cereus, antimicrobial effect

Investigating the association of polymorphism of rs157580 of tomm40 gene in patients with alzheimers disease with late-onset

Rana Hajilou,[1] Dariush d.farhud,[2,*] Marjan zarif yeganeh,[3] Sharare sadeghian firouzabadi,[4]

1. Masters of cellular and molecular sciences, Islamic azad university tehran-East, Tehran, Iran. Farhud Genetic Clinic,Tehran, Iran.
2. Farhud Genetic Clinic,Tehran, Iran. School of Public Health, Tehran University of Medical Sciences, Tehran, Iran. Department of Basic Sciences / Ethics, Iranian Academy of Medical Sciences Tehran, Iran.
3. Farhud Genetic Clinic,Tehran, Iran. Cellular and Molecular Endocrine Research Center, Research Institute for Endocrine science , Shahid Beheshti University of Medical Sciences, Tehran ,Iran.
4. Masters of cellular and molecular sciences, Islamic azad university tehran-East, Tehran, Iran. Farhud Genetic Clinic,Tehran, Iran.

Abstract

Introduction

Alzheimer's disease is the most common type of dementia "dementia" in aging. the incidence increases with age and is associated with brain attrition and focal neurological degeneration, especially in hippocampus and the forehead.. alzheimer's disease is classified according to its onset : early onset (less than 65 years) and late onset (over 65 years) type. alzheimer's is a multifactorial disease that both genetic and environmental factors contribute to its demographic distribution. the gene is located in 13q 19 area which is about 15 kilobase closer to apoe gene

Methods

In this study of control- test blood were taken from 117 patients and 130 control. dna extraction was contribute by salting iout /protenase k method and study on base arms-pcr method.

Results

Dna was extracted from blood samples of the healthy and patients , and their absorption (od) were determined then pcr was performed for all patient and control samples. pcr product was electrophoresed with10% polyacrylamide gel.

Conclusion

In rs 157580 those with ag genotype are protective against those of the genotype aa and the chance of getting the disease decreases by 0.255 times . or :0.255 pvalue :0.05 by controlling the effect of this snp showed that being a female has no significant effect on the emergence of this disease .

Keywords

alzheimer's disease, polymorphism, mutation, pcr, tomm40 gene

Investigating the derivatives of artemisia annua l in the treatment of cancer

Maryam Etemadi,[1,*] Samareh gooshki,[2]

1. university of Zabol
2. university of Zabol

Abstract

Introduction

Many medicinal herbs have pharmacological activity and can be introduced as a source of new therapeutic strategies. one of the plants is used to treat cancer is artemisia annua l or qinhao, sweet wormwood or, a.annua , it is native to europe but is cultivated in central a;sia, africa. the inability of most cancers in response to, appropriate stimuli to apoptosis, is one of the main reasons of failure in treatments. evasion of apoptosis is one of the most prominent features of human cancers that causes tumor formation and development. artemisia based medications have therapeutic effects on cancer. artemisinin(ars) and artesunate are artemisia annuas active ingredients that not only used as antimalarial drug but ars-type drugs also used in cancer therapy.

Methods

Review

Results

Natural products have been used for thousands of years to source anticancer compounds. the heterogeneous bioactivities effects from different parts of a.annua have been observed. methanol extract from its leaves was found to be the most effective. anticancer effects of medicinal herbs, such as a.annua, on veterinary tumors can be a suitable model for determining the effect of these plants before testing its potential in the human model and using it as a drug to treat animal tumors. scopoletin, one of the most abundant cytotoxic compounds of the artemisia, has shown anticancer effect. studies have shown that indigenous iranian species of a.annua also inhibit the proliferation of cancer cell lines. artemisinin and its other derivatives have shown cytotoxic effects on hela cells and cloned murine ehrlich ascites tumor (eat) cells. the new anti-cancer derivatives of artemisinin effect on g1 phase of the cell cycle. artemisinin derivatives including cyano and aryl groups showed potent anti-proliferative effects on cells. a.annua inhibitory effect was observed in the accumulation of cells in the g1 phase due to induction of apoptosis. in an investigation on 55 cell lines, to find ic50 of artesunate, leukemia and colon cancer have shown the inhibitoriest effect. breast cancer, ovarian, prostate, and kidney cancer cells have shown middle inhibitory effect.

Conclusion

Natural compounds can effect blocking apoptotic pathway, in human cancer, these compounds may provide new opportunities for the development of cancer drugs. artemisin and its drivatives induce apoptosis by activating caspase although initial target(s) of artemisinin radicals are unknown. studies have identified candidate genes that may play a role in the sensitivity and resistance of tumor cells to the, medicinal plant artemisinin. ars acts in different ways against tumors. ars and its derivatives cellular response toward cancer cells included: oxidative stress response by reactive oxygen species and nitric oxide, and repair for dna damage, various cell death modes, inhibition of angiogenesis and tumor-related signal transduction pathways (e.g. wnt/Î²-catenin pathway, ampk pathway, metastatic pathways, and others) and signal transducers. even though artemisinin biosynthesis pathways production has been identified in some organisms, the availability of biotechnological tools to achieve artemisin massive scale (why massive scale in capitals?) remains a challenge. whethe artemisinin drived-drugs couse drug resistance or not, should be investigated. artesunate, which acts by inhibiting wnt/b-catenin pathway, has showed an anticancer effect in many cancers and causes significant apoptosis in treated cells in comparison to control cells. the accompaniment of a.annua with chemotherapy or alternative chemiothrapy should be investigated. it is important to investigate whether artemisinin derived-drugs cause drug resistance or do not. other plants that are effective in the treatment of cancer should be identified. the quality of their extracts and their appropriate dosage, composition and toxicity should be investigated. these agents should be also combined with chemotherapy and radiation therapy to determine the synergism effects or antagonist effect in cancer treatment. development of a new model from modern pharmacology based on traditional drugs and herbs, is needed to treat cancer.

Keywords

Artemisia annua l, cancer, apoptosis, treatment

Investigating the effect of pegylation of nano-liposomes containing mentha piperita essential oil on the pattern of essential oil release in temperature and ph of cancerous cells

Mohammad Majdizadeh,[1,*] Bibi fatemeh haghiralsadat,[2] Elyas sharifi,[3]

1. MSc. Cellular and Molecular Biology, Nano-Biotech Foresight Company Biotechnology Campus, Science & Technology Park of Yazd, Yazd, Iran
2. Department of Advanced Medical Sciences and Technologies, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
3. MSc. Biophysics, Department of Biology, Taft PNU, Yazd, Iran

Abstract

Introduction

Herbal compounds have fewer side effects than chemical drugs but conventional prescribing of them faces serious challenges such as; digestive system low absorption, oxidizing some of the essential oil active ingredients along the way, and undesirable effect on non-target organs, etc. therefore identifying new strategies for the purpose of improvement of the drug delivery system of medicinal herbs is essential. one of the common pharmaceutical strategies to overcome these challenges is to use liposomal nano-carriers. in this study, a slow-release liposomal system containing peppermint essential oil was prepared and the effect of polyethylene glycol on the release of essential oil in cancerous cell conditions was investigated.

Methods

Liposomal vesicles were prepared using phosphatidylcholine, cholesterol and peg by thin-film method. mentha piperitaâ€™s essential oil were loaded into the liposomes using inactive loading method. then using the zeta sizer device the size and potential of zeta nano-carriers were measured and at the end essential oil release amount was calculated in healthy and cancerous cells condition (37Â° c, ph=7.4 and 42Â° c, ph=5.4)

Results

Liposomal vesicles containing mentha piperitaâ€™s essential oil showed the size of 221nm, 63.22% essential oil encapsulation efficiency, -45.77mv of zeta potential. the maximum release rate of the drug for this nano-carrier pegylated in healthy and cancerous cells condition was 41.46% and 45.16% respectively and the maximum release rate of the drug for this nano-carrier non pegylated in healthy and cancerous cells condition was 44.35% and 51.13% respectively.

Conclusion

In the present study, mentha piperitaâ€™s essential oil encapsulated in liposomal carriers. the result of this study showed that liposomal system containing menthaâ€™s essential oil is slow-released in healthy and cancerous cells condition. also specified the use of polyethylene glycol in the manufacture of nano-liposomes containing essential oil of mentha piperita causes the release of essential oil from nano-liposomes to be reduced. the analysis of the drug release profile shows that in healthy and cancerous conditions, the essential oil release pattern has two phases; in the first phase, its release rate is high and after a while it will decrease. this difference seems to be due to the difference in the concentration of essential oil between the carrier and the buffer at the beginning and end of the essential oil release. in 2018, baba safari et al., produced nano-liposomes containing thyme essential oil with a size of 123 nm, zeta potential of 12 and an percent encapsulation of 23. their research results are close to the present study. in 2018, nadrinezhad et al., produced nano-liposomes containing thyme essential oil with a size of under 100 nm, zeta potential of between -26 and -36 mv and an percent encapsulation of 80%. their research results are close to the present study. in 2018, baba safari et al., produced nano-liposomes containing thyme essential oil with a size of under 100 nm, zeta potential of between -26 and -36 mv and an percent encapsulation of 80%.. in 2018, mazloom et al., produced nano-niosome containing mentha piperita essential oil with a size of under 80 nm, zeta potential -46.11 mv and an percent encapsulation of 61.36%. in 2018, majdizadeh et al., produced nano-liposomes containing mentha piperita essential oil with a size of 247 nm, zeta potential -34.54 mv and an percent encapsulation of 61.38%. in this study, maximum release of essential oil was reported at 32.23% for 60 hours.the results of the reported studies are very close to the present study. therefore, it can be concluded that pegilated nano-liposomes can be a suitable carrier to essential oil mentha piperita.

Keywords

Liposome, essential oil liberation, mentha piperita

Investigating the effect of sclareol on ire-1 and perk genes in human mnk-45 gastric cancer cells

Elmira Aboutalebi vand beilankouhi,[1] Ebrahim sahkinia,[2,*] Homayon dolatkhah,[3] Mehran khojastehfard,[4]

4. 4. MSc in Clinical Biochemistry, Dept. of Clinical Biochemistry and Laboratories Medicine, Faculty of Medicine, Tabriz U

Abstract

Introduction

In recent years despite the decreasing incidence of stomach cancer. this disease is still the fourth leading cause of cancer death in the world. common cancer treatments may reduce the size of the tumor, but it is transient and does not have a positive effect on the survival of the patient and there is a risk of recurrence of the disease. strong induction of the endoplasmic reticulum stress has been shown to increase the susceptibility to anti-cancer treatment. considering the importance of medicinal plants in recent years, as well as the low side effects after administration, compared with synthetic drugs. the aim of this study investigated the effects of the cleaved sclareol from salvia officinalis on the induction of endoplasmic reticulum stress

Methods

The mkn-45 cell line was purchased from the pasteur institute of iran. this cells cultured in rpmi-1640 complete culture medium with cow serum. then cells cultured treated with 0, 20, 40, 60, 80 and 100 Î¼m sclareol for 5 hours. the level of expression of ire-1 and perk genes was measured by quantitative real time-pcr

Results

The expression level of ire-1 in doses of 20, 40 and 60 Î¼m sclareol increased significantly compared with control group ($p < 0.0001$). while decreasing in doses of 80 and 100 Î¼m. also, the perk expression level in doses of 20, 40 and 60 Î¼m sclareol showed a very high increase compared with control group ($p < 0.0001$), but no increase was observed in doses of 80 and 100 Î¼m.

Conclusion

The results of this study show that the doses of sclareol between 20 and 60 Î¼m in increasing the amount of endoplasmic reticulum stress can be useful, but doses of sclareol above 60 Î¼m do not.

Keywords

Gastric cancer, sclareol, endoplasmic reticulum stress

Investigating the effects of arsenic on human health and molecular features in arsenic induced lung tumors

Nahid Dezvaree,[1,*]

1.

Abstract

Introduction

Arsenic is a well-known human carcinogen, which potentially affects ~160 million people worldwide via exposure to unsafe levels in drinking water. lungs are one of the main target organs for arsenic-related carcinogenesis. these tumors exhibit particular features, such as squamous cell-type specificity and high incidence among never smokers. arsenic-induced malignant transformation is mainly related to the biotransformation process intended for the metabolic clearing of the carcinogen, which results in specific genetic and epigenetic alterations that ultimately affect key pathways in lung carcinogenesis. based on this, lung tumors induced by arsenic exposure could be considered an additional subtype of lung cancer, especially in the case of never-smokers, where arsenic is a known etiological agent. in this article, we review the current knowledge on the various mechanisms of arsenic carcinogenicity and the specific roles of this metalloid in signaling pathways leading to lung cancer.

Methods

This study is a systematic review based on internal databases including sid, iranmeddex, magiran and authentic english databases including scopus, pubmed, as well as articles and reviewed the letters that have met the inclusion criteria, were examined.

Results

Lung cancer is the leading cause of cancer related deaths in north america, affecting over 200,000 men and women each year. arsenic poisoning through contaminated drinking water leading to arsenic-induced lung cancer is a major public health concern; consequently, the mechanisms underlying the carcinogenic effects of arsenic in lung cancer has become an important avenue of research. undoubtedly, the biotransformation of asv into asiii and its methylated conjugates plays a crucial role in arsenic carcinogenicity at both genetic and epigenetic levels. genetic changes are acquired mainly through the induction of ros during the biotransformation process, while the competition for methyl groups between asv detoxification enzymes and dmts contribute to epigenetic abnormalities. arsenic species directly modulate several oncogenic pathwaysâ€‰ â€‰most notably the egfr, pi3k/akt and the nrf2/keap1 pathways â€‰and these specific pathways possess actionable targets for therapy in lung cancer. a greater understanding of the molecular mechanisms governing arsenic-related lung tumorigenesis may therefore yield promising translatable findings. deep characterization of arsenic related tumors and/or cell models at both the genetic and epigenetic levels, and the comparison of arsenic-related and unrelated sqcc tumors may provide such insights. on the other hand, mechanisms associated with anti-tumoral effects of as2o3

in the treatment of apl (not discussed in this review) should also be considered in order to increase the understanding of the molecular effects of arsenic in the human body.

Conclusion

In conclusion, arsenic can induce specific alterations affecting pathways that drive malignant transformation in lung cells. current evidence suggests that arsenic-induced lung tumors represent a unique class of lung cancer, based on histology and underlying molecular characteristics. further characterization of the mechanisms by which arsenic affects its targets will certainly give support to preventing and/or reducing the effects of arsenic toxicity, especially among those populations chronically exposed to arsenic.

Keywords

Arsenic, arsenite lung, cancer epigenetic reactive, oxygen species epidermal growth factor receptor

Investigating the effects of origanum vulgare extract on biochemical parameters including uric acid, creatinine and urea in diabetic rats

Mojghan Mosayebzade,[1,*]

Abstract

Introduction

Sweet mellitus diabetes is classified as one of the metabolic disorders, which its characteristic property is to increase blood sugar because of mall functions in releasing insulin. chronically increasing blood sugar may cause long time damages and mall performances in several vital organs such as eye, kidneys, nervous system, heart, and blood vessels. sweet diabetes has been changed into a major hazard in global health, because of rapid population growth, old populations, spreading obesity, and lack of physical exercise. special attention is therefore necessary to prevent diabetes and its consequences. diabetes is the most substantial reason for kidney disorders in all over the world and it has various medical, social, and economic consequences. the aim of the present study is to investigate the effects of marzanjoush extract on diabetes nephropathy parameters including the level of creatinine, uric acid, and urea

Methods

42 field mousses from the race wistar were utilized in these experiments and categorized randomly into 6 groups; group, one was considered as the control non-diabetic group, group, two was diabetic control group, group, three was sheme and three remainder groups were treated with marzanjoush extract with respectively different concentrations of 200, 400, and 600 milligram per each kilogram of the samples weight. diabetic mousses were received the extract for three months and the blood samples were taken from all the groups at the end of each month. the investigation of creatinine, urea, and uric acid concentrations were performed using a spectrophotochemical techniques with biochemical kits

Results

Marzanjoush herbal extract decreased considerably the level of creatinine, urea, and uric acid in blood samples of diabetic field mousses and this extract can be regarded as a potential drug for decreasing blood sugar with the minimum side effects.

Conclusion

The obtained results demonstrated that the level of the aforementioned chemical species in blood samples had significant increase and herbal extract has also decreased blood sugar in diabetic groups

Keywords

Diabetes; urea; creatinine; uric acid; marzanjoush.

Investigating the future of genomics to personalize therapy of patients with metastatic cancer

Sevil Behnood,[1,*]

Abstract

Introduction

Cancers is a disease with the complex genetic alterations; personalize cancer treatment with comprehensive and precise genetic profiling of the patientâ€™s tumor is beneficial to match each patient to appropriate therapy. the development of next generation sequencing (ngs) has offered unprecedented progress in uncovering cancer genome characteristics and facilitating personalized cancer therapy due to its outstanding accuracy and sensitivity. high throughput targeted next generation sequencing (ngs) is a promising tool to use as a non-invasive biomarker for cancer mutation profiling.

Methods

Cancer genome sequencing based on ngs method used to provide clinically relevant data in patients with rare or novel tumor types. in our study, we implemented targeted next generation sequencing (ngs) with a personalized gene panel of 500 cancer-relevant genes in stage iv metastatic colorectal cancer patient. patient with tumor-specific pms2 and mutyh, muc-6, muc-3a, fbrsl-1, nrbp-2 genes mutation identified with this method. according to amsterdam criteria, revised bethesda guidelines, and family history of patient we used ihc method and germ line mutation analysis to accurate our data.

Results

This study reveals a unique mutation spectrum in stage iv metastatic colorectal cancer patients, which used to guide most promising combination of immune-oncology therapy decisions and monitor drug-resistant mutations that may potentially prolonged survival in our patient. taken together, our study demonstrated the feasibility of clinically useful targeted ngs-based mutation profiling to guide treatment decisions in cancer.

Conclusion

Personalized cancer treatment optimizes the clinical benefits for each patient by choosing targeted interventions. based on that patientâ€™s unique genetic profile translating this sequence information into a clinical treatment plan is highly complicated and requires experts of oncology, tumor molecular biology, genetic engineering and cancer immunology field.

Keywords

Personalize cancer therapy, tumor molecular biology, genetic engineering.

Investigating the impact of broccoli diet on autistic behaviors of asd patients.

Elahe Dookhe,[1,*] Rayan partovi,[2] Romisa moslemi,[3] Farnaz hossainzadeh,[4]

1. islamic azad university,science and research branch, tehran
2. islamic azad university,science and research branch, tehran

Abstract

Introduction

Nowadays, the autoimmune and neurodevelopmental disease and disorders are affecting thousands of peoples. therefore, drug manufacturers are attempting to target the cause of these maladies. one the most important of these disorders which is not curable is autism spectrum disorders (asd). the asd impacts broad range of systems in human body such as gastrointestinal system, immune system, and neurological system. in recent decade, different etiological aspect of asd have been studies and many useful discoveries introduced. one of the important finding was linking autistic behaviors to immune system. on the other hand, the effect of sulforaphane (main substance of broccoli essential oil) in lowering the level of some of the cytokines such as il2, il6, and tnfa have been proven. therefore, we have designed a new experiment in which 20 autistic kids were divided to two different groups and the impact of broccoli diet on behavioral indicators of asd kids were investigated.

Methods

20 asd children with poor social skills and violent behaviors selected and divided to control and treatment group. the control group received 300 grams of broccoli on a daily base and for control group a normal diet with no broccoli was considered. every 30 day an aidos test were taken from each child and after 3 months the results were analyzed.

Results

The aidos test has been utilized to evaluate behavioral indicators of autistic children. analyzing the results after 3 months, 21% improvement on eye contact and 30% decrease of violent behaviors were observed.

Conclusion

The result of this study is suggesting that the increase of broccoli in daily diet of asd kids will improve their behavioral indicators. in future we will examine the molecular effect of sulforaphane of autistic kids and will try to determine the mechanism of this results.

Keywords

Autism spectrum disorder, asd, sulforaphane

Investigating the protective effect of garlic on motility and sperm count in gamma-ray gamma rats

Abolfazl Ghafouri khosroshahi,[1,*] Leila mousavi,[2] Maryam alvandi,[3]

1. Department of Medicinal Chemistry, School of Pharmacy, Hamadan University of Medical Sciences, Hamadan, Iran
2. Hamedan Province, Razan, Valiasr Hospital, Razan Department of Pathology
3. Hamedan University of Medical Sciences, Faculty of Medicine, Nuclear Medicine Group

Abstract

Introduction

Testicular tissue is an important organ of the male reproductive system, which is susceptible to ionizing radiation due to the presence of germ cells and disturbs the spermatogenesis. studies show that compounds with antioxidant properties can be effective in controlling oxidative stress, and in this regard, natural materials extracted from plants are effective because of their antioxidant properties and the absorption of free radicals produced by gamma rays. therefore, we used a herb that, in addition to the antioxidant properties mentioned, has a high daily intake in hamedan province.

Methods

First, we prepared garlic from a company specializing in the cultivation and domestication of medicinal plants. in dry shade conditions, to prepare the hydroalcoholic extract, the dried peppers were converted into finely divided pieces and then by using soaking methods. (maceration) and ultrasonic extracts were extracted. the rotary concentrate was then concentrated and the extract was stored in the refrigerator for biological tests. experimental animal: in this study, male rats were used. they were kept in controlled conditions for 7-10 days in order to adapt to the environment. due to the extreme importance of temperature in this test, throughout the duration of the test, two thermometers showed temperature and all experiments were carried out in the range of 20 to 22 degrees. to create a 12-hour cycle of day and night, a laboratory timer is used to turn on and off the light source of the storage environment. all windows were also blocked to prevent light from entering. conditions for exposure to gamma rays: the rats were divided into 5 groups of 8. the first group was selected as negative control and the second group was considered as positive control only by radiation and the groups treated with pepper extract (after determining the effective concentrations), three groups of mice exposed to gamma rays and also the specified concentrations of extract peppermint (100, 200 and 300) mg / kg was injected intraperitoneally and the groups treated with herbal extracts were injected 1 hour before exposure to gamma rays with 1.5 g of gamma rays. after six weeks, mice in all groups were dissected and the sperms were washed from the testicular tissue by hamsf10 and collected in 2 cm microtubes for sperm analysis. the testis of the testis isolated for pathological examination was sent to the pathology and sperm analysis laboratory.

Results

Garlic hydroalcoholic extract at concentrations of 300 mg / kg showed a significant inhibitory effect on gamma-ray complications compared to the control group and increased the parameters of motility and number of spermatozoa

Conclusion

Hydroalcoholic extract of garlic is due to the presence of sulfide compounds capable of controlling and eliminating free radicals and inhibiting the degradation effects of the radicals formed on the motility parameters and number of sperm mice.

Keywords

Herbal extracts, mouse sperm, garlic.

Investigation causes of abortion by molecular methods

Kosar Babaei,[1,*] Rostam rezaeian,[2] Jalal mohammadi khoshraj,[3] Maede fekri abras,[4]

1. Tonekabon Azad University
2. higher educational institute of mizan
3. higher educational institute of Rab-Rashid
4. Giulan university faculty of science

Abstract

Introduction

Identification of the possible cause of fetal loss significantly reduces long-range psychological distress in women with a miscarriage and enables improved genetic counseling for those couples in future pregnancies. infertility is a problem that affects about 15% of couples, including about 50% of male infertility. a history of three or more consecutive spontaneous miscarriages. however, other authors may classify the type of loss differently; such as, it has been proposed that there are three different types of loss: preclinical, demise less than 6 weeks; embryonic loss, demise at more than 6 weeks but less than 10 weeks gestation; fetal loss, demise at more than 10 weeks but less than 20 weeks. a current review was conducted to find the causes of abortion by molecular methods. biological scientists have come to rely on the research protocols and methodologies in the critically acclaimed methods in molecular biology series. a synthetic production of new dna sequences has helped researchers understand and engineer biology. scientists today can detect the cause of abortion by molecular methods such as mtgfr, cgh array, fish, ngs (this method determines the complete sequence of human dna (coding and non-coding regions), including nucleic dna and mitochondria. this method makes it possible to detect all of the spot mutations, delete chromosomal duplications and rearrangements.).

Methods

In this review article, the study of the causes of abortion by molecular methods from scientific databases such as sid, google scholar, medlib, isi, isc, iran medex, scopus pubmed and using abortion keywords, abortion factors, abortion embryo, abortion-molecular methods, and infertility-abortion was studied. finally, it was more appropriate than the other articles regarding subject matter. the articles were transcribed with time constraints in english and persian.

Results

Many of the clinical factors have been identified as potential risk factors for abortion, including abnormalities of the womb, antiphospholipid syndrome, endocrine abnormalities, chromosomal abnormalities, and infection. however, despite extensive studies, and a series of causes related to abortion, about 50% of cases in the treatment of doctors are still unknown. bacterial agents are one of the critical factors in women infertility.in general terms, the incidence of abortion increase with the age of the mother

as a whole. long-thumbnails of the y chromosome y are the most common genetic-molecular causes of severe male infertility, it happens in the three areas of azos, azf, and azfa.

Conclusion

Recent advances in fertility medicine and molecular cytogenetic have changed the approach to the infertile couple. the introduction of fluorescence in-situ hybridization (fish) has enabled the chromosomal assessment of embryos. by setting up the multiplex pcr method bacterial content of the aborted fetuses can be identified simultaneously. by 6 sts markers and a multiplex pcr procedure, the elimination of y chromosomes can be investigated.

Keywords

: abortion, molecular methods, infertility, bacterial infections

Investigation of inhibitory properties of clove(syzygium aromaticum) extract on the production of bsa proaromaticumtein amyloid nano-biofibrils as a model protein

Hamideh Asayeshtalab,[1,*] Amir arasteh,[2]

1. MSc student of microbiology, Department of biology, Rasht Branch, Islamic Azad University, Rasht, Iran
2. Assistant Professor,Department of biology, Rasht Branch, Islamic Azad University, Rasht, Iran

Abstract

Introduction

Alzheimer is a type of dementia that causes problems with memory and thinking. the most important factors of alzheimer,s disease are the accumulation of beta amyloid proteins and free radicals in the brain. the purpose of this investigation is analyzing the anti alzheimerâ€™s properties of hydro alcoholic extract of clove leaf by anti nano amyloid fibrils and antioxidant methods.

Methods

At first, the leaves of clove were powdered and with the help of 96% ethanol, the hydro alcoholic extract of clove leaves was prepared. anti alzheimer effect of clove extract were measured with investigating by the presence of amyloid strands which done with congored spectroscopy method and by the antioxidant method which done with dpph method.

Results

After preparing the extract with a concentration of 10 mg/ml, the anti alzheimerâ€™s properties of eucalyptus hydro alcoholic extract were measured. the highest antioxidant activity was observed at the concentration of 5 mg/ml. the anti amyloid activity was observed at the concentration of 0.4 mg / ml of extract.

Conclusion

Due to the antioxidant and anti amyloid properties of the hydro alcoholic extract of clove leaves, this medicinal herb can be a perfect alternative for preventing and treating alzheimerâ€™s disease.

Keywords

Anti-alzheimer, antioxidant, clove, nanobiofibril

Investigation of anti microbial activity of the ocimum basillicum extract on the antibiotic resistant bacteria.

Masoud Yaghmoorian khojini,[1,*] Somayeh ataei,[2]

1. MSc student of microbiology, Department of biology, Rasht Branch, Islamic Azad University, Rasht, Iran

Abstract

Introduction

Investigation on the antimicrobial effect of the herbal extracts has shown that medicinal herbs have potential resources against microbial factors. these resources have introduced new combinations from medicinal herbs. the purpose of this investigation is analyzing the antimicrobial activity of ocimum basilicum on the methicillin - resistant staphylococcus aureus and antibiotic resistant pseudomonas aeruginosa.

Methods

At first, ocimum basilicum were powdered and the hydro alcoholic extract of ocimum basilicum was prepared. antimicrobial effect of extract on the msra staphylococcus aureus and antibiotic resistant pseudomonas aeruginosa measured with disk diffusion, mic and mbc method, and amounts of mic and mbc of extract were determined. the active substances of the herb measured with using the gc-ms.

Results

The growth inhibition zone of ocimum basilicum against s.aureus and pseudomonas aeruginosa is 17 and 22 mm. the mic respectively is 25 mg/ml and 12/5 mg/ml. the mbc is respectively 50 mg/ml and 25 mg/ml for these two bacteria. the most important active substance in ocimum basilicum is stragol in gc-ms test.

Conclusion

The results showed the antimicrobial effect of hydro alcoholic extract of ocimum basilicum on the msra staphylococcus aureus and antibiotic resistant pseudomonas aeruginosa. in the future , this extract can be used as a drug against resistant bacteria.

Keywords

Ocimum basilicum extract, msra staphylococcus aureus, pseudomonas aeruginosa

Investigation of antibiotic resistance pattern and phenotypic diagnosis of extended-spectrum Î²-lactamase enzymes in the isolated klebsiella pneumonia strains of pulmonary patients admitted in shoml sp

Ali Khosravi,[1,*] Fateme zaboli,[2] Ismail fattahi,[3]

1. Islamic Azad University of Ayatollah Amoli
2. Islamic Azad University of Ayatollah Amoli
3. Islamic Azad University of Ayatollah Amoli

Abstract

Introduction

One of the antibiotic resistance mechanisms in the klebsiella pneumonia is produce of extended- spectrum Î²-lactamase (esbl) enzyme. encoding genes of esbl are usually located on the plasmid and can be transmitted to other strains with negative grams. this study aimed to examine the frequency of klebsiella pneumonia producing bacteria of esbl.

Methods

The present descriptive-cross sectional study have done on 20 strains of klebsiella pneumonia isolated from exferimental (tria) samples of patients referred to shomal specialized hospital of amol in 2018, and identified by biochemical-differential tests. in order to evaluate the antibiotic resistance pattern, disc diffusion method was used, and organism producing esbl identified by doing verified screeing and phenotypic tests

Results

According to results of this study, the most relevant antibiotic resistance relates to antibiotics cefotaxime (95 %), ceftriaxone (95 %) and imipenem (70 %) and the lowest to amikacin (40 %) and gentamicine (40 %). also 14 positive strains of esbl klebsiella pneumonia were identified.

Conclusion

High prevalence of antibiotic resistance and production of esbls in the studied area show the need for screeing clinical samples concerning esbls by the laboratory and using appropriate antibiotics with Î²-lactamase and antibiotic inhibition capability as combined with clavulanic by doctors.

Keywords

Klebsiella pneumoniae, antibiotic resistance, esbl

Investigation of antibiotic resistance pattern in the isolated acinetobacter baumannii of zare hospital

Sheyda Ghasemi,[1] Pooran pourramezanynejad,[2,*]

1. Islamic Azad University of Ayatollah Amoli
2. Islamic Azad University of Ayatollah Amoli

Abstract

Introduction

Currently selected Î²-lactam antibiotic as drug treatment when infections acinetobacter baumannii resistant to multiple medication use. these bacteria with different mechanisms of resistance to these drugs, including the production of Î²-lactam. this study aimed to examine antimicrobial resistance in the acinetobacter baumannii when an isolated from patients was running the city of sari

Methods

This descriptive study was performed in the year 2016, on clinical samples collected from the hospital over the last three months raised sari. after collecting the samples, using chemical and biochemical techniques to identify differential. then for each antibiotic sensitivity testing, isolates for the antibiotics cephalexin, cefixime, cefotaxime, ceftazidime, cefalotin, tobramycin, co-trimoxazole, ampicillin, gentamicin, ciprofloxacin disk diffusion method based on the order of clsi.

Results

According to the results of this study, the most relevant antibiotic resistance to antibiotics cefixime (%96/66), ceftazidime (%96/66), cefotaxime (% 93/32) and the lowest to tobramycin (%10).

Conclusion

The study of antibiotic resistance when the top of the acinetobacter baumannii isolated from clinical samples.

Keywords

Acinetobacter baumannii, antibiotic resistance, Î²-lactam

Investigation of antioxidant and inhibitory properties of hydro alcoholic extract of eucalyptus on the production of amyloid nano biofibrils from bovine serum albumin as a model protein

Morteza Karimpour,[1,*] Amir arasteh,[2]

1. MSc student of microbial biotechnology, Department of biology, Rasht Branch, Islamic Azad University, Rasht, Iran
2. Assistant Professor, Department of biology, Rasht Branch, Islamic Azad University, Rasht, Iran

Abstract

Introduction

Alzheimer is a type of dementia that causes problems with memory, thinking and behavior. many people suffer from this illness annually. the most important factors of alzheimerâ€™s disease are the accumulation of beta amyloid proteins and free radicals in the brain. the purpose of this investigation is analyzing the anti alzheimerâ€™s properties of hydro alcoholic extract of eucalyptus leaf by anti amyloid nano bio fibrils and antioxidant methods.

Methods

At first, the leaves of eucalyptus were powdered and with the help of 96% ethanol, the hydro alcoholic extract of eucalyptus leaves was prepared. anti alzheimer effect of eucalyptus extract were measured with investigating by the presence of amyloid strands which done with congored spectroscopy method and by the antioxidant method which done with dpph method. notice that the dpph is a free radical.

Results

After preparing the extract with a concentration of 10 mg/ml, the anti alzheimerâ€™s properties of eucalyptus hydro alcoholic extract were measured. the highest antioxidant activity was observed at the concentration of 9 mg/ml. the anti amyloid activity was observed at the concentration of 0.4 mg / ml of extract.

Conclusion

Due to the antioxidant and anti amyloid properties of the hydro alcoholic extract of eucalyptus leaves, this medicinal herb can be a perfect alternative for preventing and treating alzheimerâ€™s disease.

Keywords

Anti alzheimerâ€™s activity, amyloid nano bio fibrils, eucalyptus, hydro alcoholic extract

Investigation of bdnf and trkb genes expression in the presence and lack of fish oil treatment in male rats hippocampus region following memory damage caused rem sleep deprivation

Mohammad Fallahi,[1,*] Mohammad nasehi,[2] Pegah ghoraeiyan,[3]

1. Department of Genetics, Faculty of Advanced Science and Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.
2. Department of Genetics, Faculty of Advanced Science and Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.
3. Department of Genetics, Faculty of Advanced Science and Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.

Abstract

Introduction

Sleep which is known as one of the most vital needs among creatures includes many biological processes of living organisms, both at the cellular and molecular level as well as the clinical level. sleep is composing of two distinct: rapid eye movements phase (rem) and non-rapid eye movement (nrem) which have unique features with the ability to adjust by separate neural centers. sleep plays a key role in memory processing by using the rem phase which is important to generate memories and also learning as a part of the sleep cycle. in other hands, sleep deprivation which is known as one of the most serious problems in developed countries, causes many disorders, especially abnormalities of consciousness and memory. the prevalence of sleep deprivation among mid-class people increase dramatically. brain and its different nuclei and segments are the only major player in learning and producing memory. it has been argued that the most important nucleus which is responsible for the process of memorizing in the brain is called â€œhippocampusâ€• . the hippocampus is a complex structure in the brain which is located deep inside the temporal lobe. many genes have their own proteins which are responsible for memory creation. one of them is the gene-derived brain-derived neurotrophic factor (bdnf), which increases the transmission efficiency of the stimulant and enhances the synaptic plasticity that supports memory and cognition. the trkb gene, which is the coding for the bdnf protein receptor, also plays a vital role in the process of memory formation. it is believed that the activation of the pathway of bdnf-trkb and the expression of their genes to enhance the learning and memory of the hippocampus is required. nowadays, the significance of using seafood in health is clear to everyone. marine foods are rich in unsaturated fatty acids of the omega family. fish oil is, also, known to have high levels of omega-3, an unsaturated fatty acid, which is worked as a developer of the central nervous system. human studies have shown that high levels of omega3-s are associated with an increase in the amount of gray matter in the brain, especially in the hippocampal nucleus and brain regions. it plays a key role in the formation and consolidation of memory and learning. the effect of these unsaturated fatty acids on the change in the expression of different genes at different tissues has also been proven.

Methods

In this study, we investigated the effect of fish oil on changes in bdnf gene expression (neuronal factor gene) and its receptor gene (trk-b) in the hippocampus of wistar male rats by using real-time pcr technique. in this research, rats were divided into five groups. which included: control (healthy rats), sham (under stress), sham was treated by fish oil, deprived of rem sleep and deprived rem sleep-treated by fish oil. then, the rna was extracted from the tissue of the hippocampus and from that cdna was made. real-time pcr reaction was performed for each cdna sample. finally, the gene expression was analyzed using genex software.

Results

The findings showed that the expression of bdnf gene in sham, sham-treated by fish oil, and rem sleep-deprived groups were not significantly different from the control group. but the expression of the bdnf gene in the deprived of rem sleep treated by fish oil group increased compared with the rem sleep-deprived group. in trk-b gene, there was no significant difference between sham and sham-treated by fish oil groups with the control group. but the comparison between the deprived rem sleep group and control group showed a significant decrease in trk-b gene expression in deprived rem sleep group compared to the control group. also, trk-b showed a significant increase in deprived rem sleep treated by fish oil group compared with the deprived rem sleep group. from this study, it can be concluded that rem sleep deprivation decreases the expression of the bdnf receptor gene, the trk-b gene. but stress has no effect on the expression of this gene.

Conclusion

It can also be concluded that fish oil contributes to the improvement of neuronal and memory damage by affecting cellular and molecular mechanisms and increasing the expression of bdnf and trk-b genes in rem sleep deprived rats.

Keywords

Sleep deprivation, memory, hippocampus, fish oil, rat

Investigation of benzene in the fuel stations ambient air in 22 aria of tehran city in 2018

Giti Kashi,[1] Giti kashi,[2,*] Fatemeh sarmast,[3]

1. Department of Environmental Health, Faculty of Health, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
2. *2Associate professor, Department of Environmental Health, Faculty of Health, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran; E-mail address: g.kashi@yahoo.com & Water Purification Research Centre (WPRC), Tehran Medical Sciences, Islamic Azad University, Tehran, Iran; E-mail assress:
3. 3Buchlor student of Department of Environmental Health, Faculty of Health, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Abstract

Introduction

The increase in benzene levels in air is mainly attributed to anthropogenic sources (including fuel combustion (80%) and industrial activities (20%) like solvents application) and natural sources (such as forest fires and volcanic activity). benzene, as the greatest and the most dangerous benzene, toluene, ethylbenzene, and ortho, para, and meta-xylene (btex) compound, has been grouped as a known carcinogenic to humans (group 1) by the international agency for research on cancer (iarc). according to the clean air act, the annual iranian and world health organization standard is set at 5 Î¼g/m3 and 1.5 ppm, respectively. exposure to solvents such as benzene may lead to occurring disorders of the nervous system, liver, kidneys, skin, increased risks of leukemia, bladder, gastrointestinal, and lung cancer. thus, the aim of this study is to determine the seasonal flocculants, spatial variations, risk assessment of benzene in the ambient air of tehran, and urine levels of benzene.

Methods

In this analytical study to sample, cluster random sampling is used. the statistical population of this study is 22 fuel stations (22 districts of tehran) in 2018. the area of the tehran city, tehran province, iran is 730 km2. tehran is a city at latitude 35Â° 43â€² 0â€³ north, and longitude 51Â° 24â€² 0â€³ east. 22 fuel stations are located in the center, south, east, west and north of tehran metropolitan area. of the 161 sampling stations identified, 22 stations (13.6% of the sampling station) are selected. ambient and suburb air sampling points are selected. the sampling is carried out at 10-12 am in the period from march to october. air sampling is carried out by direct sampling method to assess benzene concentration in the ambient and indoor air of the site by using a personal sampling pump (skc model, usa) and tedlar bags (skc model, usa), extracted, and analyzed with spme fiber and gas chromatography (agilent 7890n, usa) equipped with a flame ionization detector. we measure the ambient temperature by using rotary thermometer (kasla model, uk). we perform all tests in triplicate (264 test), and report the mean data values. we employ the geographical information system (gis) software package arcgis 9.2 for mapping. all

statistical analyses are performed using the spss software version 18 and descriptive statistic (determination of percent and average).

Results

The temperature, relatively humidity, and benzene concentration range of 22 ambient air samples in fuel stations in october are 15-20.6 (19.8Â±1.8) ÌŠc and 30-35 (31.3Â±1.07)%, and 34-288 (137.6Â±3.3)ppm, respectively. the temperature, relatively humidity, and benzene concentration range of 22 ambient air samples in fuel stations in march are 17-22.8 (21.3Â±1.9) ÌŠc and 28-32.3 (27.9Â±1.7)%, and 28-282 (132.6Â±3.1)ppm, respectively. the temperature, relatively humidity, and benzene concentration range of 22 suburbs air samples of fuel stations in october are 13-18.9 (17.3Â±1.3) ÌŠc and 32-37.5 (33.5Â±1.1)%, and 24-278 (127.1Â±2.9)ppm, respectively. the temperature, relatively humidity, and benzene concentration range of 22 ambient air samples in fuel stations in march are 17-22.8 (21.3Â±1.9) ÌŠc and 28-32.3 (27.9Â±1.7)%, and 18-272 (122.1Â±2.7)ppm, respectively. the urinary concentrations of trans, trans-muconic acid range of 22 fuel station workers at the start in october and march are 1360-11520 (5504Â±3.6)Î¼g/l and 1120-11280 (5304Â±3.2) Î¼g/l, respectively. the urinary concentrations of trans, trans-muconic acid range of 22 non-exposed persons at the finish in october and march are 720-8340 (3813Â±3.6) Î¼g/l and 540-8160 (3663Â±3.2) Î¼g/l, respectively.

Conclusion

Between urinary concentrations of trans, trans-muconic acid and variables: season, station situation, temperature, relatively humidity, benzene concentration, exposure, and time is seen meaningful statistic relationship ($p<0.05$). the mean of inhalation lifetime cancer risk for benzene is 12.8 10-6 which is lower than the limits recommended by the united. it is concluded that supervision on transportation, urbanization development, and industrial activities lead to prevent air contamination due to controlling and directorship benzene concentrations. fuel combustion is considered as the most important benzene emission source. it is concluded that fuel station workers perhaps and respiration are the most vulnerable exposed groups and the most main exposure route in fuel station workers, respectively. it is purposed that fuel and vehicle standardization, developing public transportation, and industrial emission control are the most urgent policies. the weakness and power point of this research are the limitation of volume sample and risk assessment, respectively.

Keywords

Ambient air, benzene, fuel stations, gas chromatography, tehran city

Investigation of biofilm producer in clinical isolates of klebsiella pneumoniae by phenotypic and pcr methods

Maral Bayati,[1,*] Babak asghari,[2] Reza habibipour,[3]

Abstract

Introduction

The role of biofilm formation by bacteria has been proposedto be an important stage in the pathogenesis of klebsiellapneumoniae. this pathogen is the most important opportunistic pathogen agents of nosocomial infections such as pneumonia, urinary tract infections, invasive infections, and surgical site infections. the aim of this study was to investigate the biofilm producer strains isolated from different clinical isolates of k.pneumoniae.

Methods

230 clinical samples with bacterial infection were examined. the selective culture media and biochemical tests were used for identification of k.pneumoniae isolates. crystal violet assay and pcr were also used to characterize biofilm strains.

Results

Of 230 bacterial isolates collected from different specimens, 100 isolates (43.47%) of k.pneumoniaewere identified by biochemical tests. of these, 58 isolates (58%) and 42 isolates (42%) were isolated from the male and female respectively. the phenotypic method was shown 2 isolates (2%) as a strong biofilm producer, 27 isolates (27%) as medium biofilm producers, 41 isolates (41%) as weak biofilm producers and 30 isolates (30%) as non-biofilm producers.also, the pcr were shown that 65 isolates (65%) had pgaa gene, among these isolates 2 isolates were strong biofilm producers (3.07%), 15 isolates were moderate biofilm producers (23.07 %), 27 isolates were weak biofilm producers (41.53%) and 21 isolates (32.3%) was non-biofilm producers.

Conclusion

The pgaa gene plays an important role in biofilm formation and is able to identify differentbiofilms in k.pneumoniae strains. it is also possible to identify bacteria with weak, moderate and strong biofilms.

Keywords

Biofilms, virulence factor, klebsiella pneumonia, pgaa gene

Investigation of chloroquine effects on liver tissue in balb/c mice infected with plasmodium berghei

Taher Elmi,[1,*] Fateme hajialiani,[2] Fateme tabatabaie,[3] Mohamad reza asadi,[4] Ali kalantari hesari,[5] Fatemeh sadeghi,[6]

1. 1. Department of Parasitology and Mycology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.
2. 1. Department of Parasitology and Mycology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.
3. 1. Department of Parasitology and Mycology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.
4. 2. Ph.D in Histology, Razi Vaccine & Serum Research Institute, Agricultural Research, Education and Extension Organisati
5. 3. Ph.D in Histology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran.
6. 1. Department of Parasitology and Mycology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

There are several families of drugs used to treat malaria. chloroquine (cq) which was first introduced in the 1940s and for many decades served as a cheap and reliable drug, is an anti-plasmodium drug that has many clinical uses in malaria treatment. chemical drugs that are prescribed to treat malaria disease currently have adverse effects such as diarrhea, vomiting and tissue damage, so it seems necessary to investigation of drug effects on vital tissues such as liver.

Methods

in this experimental study 40 mice were infected with plasmodium berghei and treated with chloroquine for four (4) consecutive days. toxicity testing was performed on liver mice. data were analyzed using spss software version 24 and analyzed statistically.

Results

The mean mice weight in groups treated with 50, 40, 20, 15 and 10 mg/kg of chloroquine was increased when compared with the positive control group and was decreased when compared with negative control group (uncontaminated mice treated with pbs), but it was not significant in any of the groups (pâ‰¥ 0/05). histopathological study of hepatic tissue showed no significant differences between negative control groups and experiment group in parameters such as apoptosis, cell necrosis, local inflammation and hyperemia. in the positive control group, the magnitude of the spleen was observed.

Conclusion

The results of this study showed that chloroquine does not have significant liver complications in the common therapeutic dose.

Keywords

Plasmodium berghei, chloroquine, tissue

Investigation of pharmacodynamics effect of ten beta-lactam antibiotics on hemagglutinin in the influenza virus type a (h1n1) with drug repositioning approach by in silico method

Alireza Jalalvand,[1,*] Behrokh farahmand,[2] Shima gholami,[3]

1. Department of Influenza and other respiratory viruses, Pasteur Institute of Iran, Tehran, Iran.
2. Department of Influenza and other respiratory viruses, Pasteur Institute of Iran, Tehran, Iran.
3. Department of Influenza and other respiratory viruses, Pasteur Institute of Iran, Tehran, Iran.

Abstract

Introduction

The h1n1influenza virus is one of the most common pathogen for respiratory infections in the worldwide. this virus is dependent on hemagglutinin for penetrance into the host cell. the part of hemagglutinin called fusion peptide that its function is help to integration of envelope with cell membrane. the purpose of this research with drug repositioning approach is calculation of energy binding between 10 beta-lactam antibiotics and fusion peptide for inhibition of entrance to host cell.

Methods

First, the structure of hemagglutinin was retrieved from the rcsb (pdb id: 3lzg) and the fusion peptide region was repaired by the swiss-model server. energy minimization of protein was performed by swiss pdb viewer software with gromos96 force field. pdb files of 10 beta-lactam antibiotics was downloaded from drugbank including cloxacillin, dicloxacillin, flucloxacillin, methicillin, nafcillin, oxacillin, temocillin, carbenicillin, azocillin, mecillinam. settings of docking between receptor and ligands were defined by autodocktools software. gridding and docking operations was ruined by cygwin software. also to compare these antibiotics with 2-tert-butylbenzene-1, 4-diol as inhibitor of hemagglutinin in drugbank, docking operation was performed on this inhibitor. according to dlg file, the results were analyzed. in finally, visual representation was prepared and analyzed conformation of best antibiotic in binding site.

Results

According to acquired 10 rmsd tables from 10 ligands, flucloxacillin with binding energy of -5.68 kcal/mol has most appropriate affinity considering probability. in the ranking of 10 antibiotics, methicillin was the last with -4.19 kcal/mol binding energy considering probability. also binding energy of 2-tert-butylbenzene-1, 4-diol was -3.84 kcal/mol. analysis of hydrogen bonds demonstrates that one bond forms between flucloxacillin and glutamine 342 with 2.005 angstrom distance before fusion peptide.

Conclusion

Recently, drug repositioning has attracted for many researchers.with this approach, researchers can find other uses for drugs by reverse docking technique without concerning about pharmacokinetics and

toxicity parameters.docking studies demonstrates pharmacodynamics effect of flucloxacillin and dicloxacillin is better than 2-tert-butylbenzene-1, 4-diol as inhibitor of hemagglutinin in drugbank. conformational analysis indicates that fusion peptide was coveredproperly. according to the present study, we suggest to perform more simulations and experimental studies on flucloxacillin.

Keywords

H1n1influenza, docking, flucloxacillin, drug repositioning

Investigation of protective effect of milk thistle extract on methotrexate-induced hepatotoxicity in wistar rat

Mohammad Mohammadi,[1,*] Sahar behvandi,[2] Sara mohammadzade,[3] Babak mohammadian,[4] Ahmad lotfi garavand,[5]

1. Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran
2. Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran
3. Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran
4. Department of Pathology, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran
5. Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran

Abstract

Introduction

Oxidative stress plays an important role in the pathogenesis of tissue damage. the imbalance between free radicals production and antioxidant defense systems leads to oxidative stress. methotrexate (mtx), a chemotherapy drug and autoimmune anti-inflammatory drugs, has its own toxic effects due to its cytotoxic nature. medicinal plants play an important role in reducing the toxicity of drug use due to the presence of antioxidant compounds . in this study protective effect of hydroalcoholic extract of milk thistle on oxidative stress induced by methotrexate in liver tissue of wistar rats was investigated.

Methods

In this study, 30 male wistar rats were divided into 5 groups. the first group (control) was treated with distilled water. the second group (mtx) received methotrexate at a dose of 20 mg / kg intraperitoneally and on the seventh day of the experiment. the third, fourth, and fifth groups of milk thistle extract received 50, 100 and 200 mg / kg oral and daily, respectively, and received methotrexate intraperitoneally at a dose of 20 mg / kg on day 7, respectively. after 11 days, liver tissue was isolated to measure mda, tac, gsh and cat, sod activity in tissue homogeneity and histopathologic studies.

Results

The results showed that sod, cat, tac and gsh levels decreased in methotrexate group compared to control group ($p < 0.05$). cat, tac and gsh levels increased in the fourth and fifth groups compared to the methotrexate group ($p < 0.05$), and the sod level in the fifth group increased compared to the methotrexate group ($p < 0.05$). mda levels in methotrexate group increased compared to control group, which decreased significantly in the fifth group compared to methotrexate group ($p < 0.05$).

Conclusion

In conclusion, milk thistle extract administration could have a protective role in methotrexate-induced liver toxicity in rats through improving antioxidant defense system.

Keywords

Methotrexate, milk thistle extract, hepatotoxicity, oxidative stress, antioxidant

Investigation of recombinant thanatin effects on the growth inhibition of e. coli mastitis in dairy cows

Ali Javadmanesh,[1,*] Abbas tanhaeian,[2] Zahra mousavi,[3] Marjan azghandi,[4]

1. Department of Animal Science-Faculty of Agriculture-Ferdowsi University of Mashhad
3. Department of Animal Science-Faculty of Agriculture-Ferdowsi University of Mashhad
4. Department of Animal Science-Faculty of Agriculture-Ferdowsi University of Mashhad

Abstract

Introduction

Mastitis is one of the most prevalent and costly diseases in dairy cattle industry. unfortunately, using common antibiotics to treat this infection is increasing in which leads to undesirable side effects such as antibiotic residuals in milk and occurrence bacterial resistance to antibiotics. therefore, researchers are searching for an alternative to traditional antibiotics with fewer side effects like herbal extracts and antimicrobial peptides (amps). thanatin is one of the member of cationic amps that have received a great attention regarding growth inhibitory against wide range of microorganisms including gram-negative and gram-positive bacteria, as well as several fungi species.

Methods

This recombinant peptide was prepared through previous studies at the department of animal science, ferdowsi university of mashhad. e. coli was isolated from of holstein cows. minimum inhibitory concentrations (mic) was used based on a microbroth dilution method by 96-well microtiter with four replications. after mic, e. coli bacteria on mueller hinton agar medium was cultured and minimum bactericidal concentration (mbc) was determined as that showing no growth.

Results

The results of mic assay showed a strong activity against e. coli bacteria with the value of mic equal to 6 Î¼g/ml. negative control did not show any growth inhibitory on e. coli. moreover, the amount of mbc of this bacteria was observed approximately 12 Î¼g/ml.

Conclusion

Thanatin showed a strong growth inhibitory against e. coli. antimicrobial peptides are considered to be future alternatives for broad-spectrum antibiotics for treatment a wide range of bacterial diseases. considering adverse effects of mastitis on human health through transferring drug resistant bacteria from cows to human, it is important to replace antibiotics with compounds which have lower chance of developing resistance such as amps.

Keywords

E. coli, bacterial infection, antimicrobial peptides, antibiotic resistant

Investigation of the potential toxicity of zinc oxide nanoparticles on mouse spermatogonial stem cells

Azam Javadi,[1,*] Maryam farzaneh,[2] Saadat mokhtari,[3] Seyede faezeh moraveji,[4] Fereshteh esfandiari,[5] Hamid gourabi,[6]

1. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran
2. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran
3. Department of Physics, Shahid Beheshti University, Tehran, Iran
4. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran
5. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran
6. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Abstract

Introduction

The widespread applications of nanoparticles have made it important to investigate their side effects on the environment and living organisms. among the metal oxide nanoparticles, zinc oxide nanoparticles (zno nps) are widely used in various industries and consumer products such as food packaging and additives, cosmetic products, sunscreens and biomedical applications. spermatogonial stem cells (sscs) that are sperms precursors are very important due to the role of them in transmitting genetic information to the next generation. zno nps according to their nano scale can easily pass through the bloodâ€“testis barriers and affect these important cells. herein, we evaluated the toxicity effect of zno nps on mouse sscs.

Methods

We synthesized zno nps and have been characterized them by xrd and sem. sscs were isolated from testes of 5-7 days nmri mice and characterized by immunofluorescence (if) staining. based on a literature review, the cells were treated with different concentration of zno nps; 10, 20, 30 and 40 Âµg/ml and evaluated for the viability of them by pi staining at one and seven days after treatment. after determining the maximum and minimum harmful concentration on the survival of these cells, the damage to the dna of sscs by these concentrations were investigated by tunel test. moreover, the gene expression of cytokines: il-6, il-8 and tnfÎ± were investigated by q-rt pcr method.

Results

xrd and sem analysis confirmed successful synthesis of zno nps. if for ssc-specific markers, plzf and gfrÎ±, confirmed the presence of sscs. our results showed, the survival of treated cells with zno nps

decreased significantly compared to the control group starting from concentrations of 30 Âµg/ml one day after treatment and starting from concentrations of 20 Âµg/ml, 7 days after treatment (p<0.05). also, the entry of nps into the cell was confirmed by using an electron microscope (tem). we observed dna damage at concentration of 30 Âµg/ml one day after treatment and also 7 days after treatment, starting from concentrations of 20 Âµg/ml. also the results showed that the zno nps at concentration of 10 Î¼g/ml on the first day after treatment, increased the expression of cytokine il-6 and 7 days after treatment, zno nps increased the expression of il-8 (p<0.05). : xrd and sem analysis confirmed successful synthesis of zno nps. if for ssc-specific markers, plzf and gfrÎ±, confirmed the presence of sscs. our results showed, the survival of treated cells with zno nps decreased significantly compared to the control group starting from concentrations of 30 Âµg/ml one day after treatment and starting from concentrations of 20 Âµg/ml, 7 days after treatment (p<0.05). also, the entry of nps into the cell was confirmed by using an electron microscope (tem). we observed dna damage at concentration of 30 Âµg/ml one day after treatment and also 7 days after treatment, starting from concentrations of 20 Âµg/ml. also the results showed that the zno nps at concentration of 10 Î¼g/ml on the first day after treatment, increased the expression of cytokine il-6 and 7 days after treatment, zno nps increased the expression of il-8 (p<0.05).

Conclusion

Our data indicates cyto- and genotoxic effects as well as a pro-inflammatory potential of zno-nps in mouse sscs. therefore, the growing trend in daily application of zno nps can have an effect on the male fertility through the effect on the male sscs. considering this issue, it is advisable to reduce its consumption in industries and consumer products in order to reduce its harmful effects on fertility.

Keywords

Sscs, zinc oxide nanoparticles, dna damage, toxicity, inflammatory

Investigation of the properties of molybdenum nano-composites modified with hepatitis b surface anti-antigens antibody

Zeinab Solimani,[1] Mostafa shourian,[2,*]

1. University of Guilan
2. University of Guilan

Abstract

Introduction

Hepatitis b is one of the factors that causes damage to the liver and even leads to death, as well as in both chronic and acute forms. nanoparticle compounds are used to enhance detection of surface antigens of the virus. nanoparticle compounds, due to the properties of increased levels relative to the volume and the accumulation of energy levels, and other proper characteristics of this work. the molybdenum nanocomposites contain heavy metals with magnetic properties, and are easy to propagate in water and are easy to synthesize. the use of fluorescence makes it easier to detect antigens. the fluorescence-based diagnostic methods are one of the techniques that can have a high sensitivity to detect surface antigen of hepatitis b virus.

Methods

Molybdenum nanocomposites have been used to study the hepatitis b surface antigen. molybdenum nanocomposites were studied using uv-vis and fluorescence spectroscopy, ftir, dls and zeta potential. after that, the binding of antibodies to the surface of the molybdenum nanocomposites was carried out through covalent bonding and adsorption. in this method, molybdenum nanocomposites were synthesized from the desired salts and after dispersing in water, then, by dls and zeta-potentials tests, their size and precipitation were determined. in the next step, the antibody against the surface antigen of hepatitis b was bonded onto the surface of the nanoparticles, which can be accomplished through adsorption or covalent bonding.

Results

molybdenum nano-composites modified with hepatitis b surface anti-antigens antibody have been studied by the devices mentioned above, which indicate that fluorescence is present in this type of molybdenum nanocomposites. this same factor makes it possible, after binding of the antibody to the molybdenum nanocomposites, to use these as nano-libels to detect surface antigen of hepatitis b virus. based on, the fluorescence spectra of these molybdenum and antibody nano-composites, as well as the mix of these two, have been studied and the ability of these molybdenum nano-composites in the production of the signal for diagnosis has been proven. these 595nm molybdenum nanocomposites and antibodies are also in the range of 330-450nm, and their mixing is less pronounced at 345nm and 595nm wavelengths. also, ftir studies confirm the binding of antibodies to this molybdenum nanocomposite.

Conclusion

These molybdenum nano-composites modified with hepatitis b surface anti-antigens antibody have the ability to conjugate with antigen, and their detection by the fluorescence machine is easily possible. in fact, these molybdenum nano-composites are used as an immunonano-libel in biosensors, and in fact, this method is commercially important for early diagnosis and early prevention of this disease. it also has a significant advantage over the absorption spectrum and elisa test.

Keywords

Fluorescence spectroscopy, nano-libels, anti-hepatitis b antibody, hepatitis b virus antigens

Investigation of the relationship between akt expression changes in acute lymphoblastic leukemia cell line jurkat e6.1 under treatment with chemoherapy drug of thiosemicarbazone(ni)

Faranak Daneshi mamaghani,[1,*] Golnaz asaadi tehrani,[2] Azadeh mirza ahmadi,[3]

3. University of Tabriz

Abstract

Introduction

Leukemia or leukemia includes a group of cancers that usually start with bone marrow and produce and reproduce a large number of abnormal white blood cells.the aim of this study was to investigate the role of pharmacokinetics of akt gene expression chages in the akt/pi3k signal pathway path way in acute lymphoblasic leukemia cell line jurkat e6.1 under treatment with thiosemicarbazone complexes.

Methods

Thiosemicarbazone complex (ni) was prepared at different concentrations(0.5-2macro molar).the jurkat e6.1 cancer cells after the passage of cells in different groups and times(24-48 hour)were performed and akt gene expression was evaluated by real time pcr.results were analyzed by resr relative rest analysis software.

Results

Studies in this study showed that there was no significant reduction in expression of akt gene in (24 hour)treatment with ni treatment.also ,during 48 hours(2 macro molar),significant reduction was observed.

Conclusion

The changes of akt expression are influenced by ni drug and reduce the expression of this oncogene.

Keywords

Acute lymphoblastic leukemia,akt,jurkat,thiosemicarbazone

Investigation of the relationship between changes in expression of oncogene pi3k in acute lymphoblastic leukemia cell line jurkat e6.1 under treatment with 6mp chemotherapy drug

Marjan Kamalpour,[1,*] Golnaz asaadi tehrani,[2] Azadeh mirza ahmadi,[3]

1. Islamic Azad university
2. Islamic Azad university
3. University of Tabriz

Abstract

Introduction

Leukemia is characterized by the excessive growth of blood cells that affects the bone marrow.acute lymphoblastic leukemia(all) is the most common type of leukemia in children and adolescents.the aim of this study was to evaluate changes in the expression of akt/pi3k signaling pathway pi3k gene in acute lymphoblastic leukemia cell line jurkat e6.1 under treatment with 6mp.

Methods

6mp was prepared at different concentrations(1-5macro molar).the jurkat e6.1 cancer cells were treated with chemotherapy after the cell passage in different groups and time (24hours).rna extraction and cdna synthesis were performed and the pi3k gene expression was evaluated by real time pcr.the results were analyzed by rest relative rest analysis software.

Results

The results of this study showed that pi3k gene in concentrations(5 macro molar) for 24 hours at concentrations showed a significant decrease($p<0.001$)from the expression level of the gene.

Conclusion

Pi3k gene expression changes are influenced by the 6mp drug and decrease the expression of this oncogene in all concentrations and time,depending on time and concentration.the results of this study can be used to control and treat the optimal treatment of patients with leukemia,by identifying molecular pathways in the function of the chemotherapy drugs used,as well as introducing new drugs and preventing untreated control of jurkat cancer cells.

Keywords

Acute lymphoblastic leukemia,6mp,jurkat e6.1,pi3k

Investigation of the therapeutic effect of iranian native plants extract on human fungal pathogens: review study

Fatemeh Sadeghi,[1,*] Fatemeh peymaei,[2] Taher elmi,[3]

1. Department of Medical Mycology and Parasitology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
2. Department of Medical Mycology and Parasitology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
3. Department of Medical Mycology and Parasitology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

in recent years, due to the emergence of antifungal- resistant fungal species and these side effects, it is essential to use of the new antifungal compounds to overcome this challenge. hence, researchers are seeking new therapies for treatment of fungal infections. herbal extracts have attracted a great deal of researchers attention, due to their anti-fungal properties.therefore, in this study, we investigated the therapeutic effect of iranian native plants extract on human fungal pathogens.

Methods

In the present study, the collection of materials was carried out through the search of human fungal pathogens and iranian native plants extract in the google, pubmed, sid, iran medex databases.

Results

The results of the study (in vitro) showed that the aqueous extracts of anethum graveolens ,thymus vulgaris , coriandrum sativum and rosa damascena (at concentrations of 100, 250, 500, 750 mg / ml) on standard and isolated strains from aspergillus flavus and aspergillus fumigatus, reduced colony growth,(the effect increased with increasing the aqueous extracts concentration). in addition,the essence of thymus vulgaris, shariatian thyme, lavender, artemisia, cumin, sardinia and peppermint plants had very strong anti-candida activity and ,the essence of mountain rhizomes, black currant and herbs had strong anti-candida effects.while, the essence of eucalyptus, anisone, fennel, and geller showed medium anti-candida effects. on the other hand, trichophyton schonenleinii and trichophyton verrucosum were sensitive to all prepared dilutions of echinophora platyloba plant (at concentrations of 35, 50, 150, 250 mg / ml) and did not grow. while trichophyton mentagrophytes, microsporum canis and epidermophyton flucosum were only sensitive to 250 mg / ml dilution of the extract and resistant to the other dilutions. trichophyton violaceum was resistant to dilutions of 35 and 50 but was sensitive to increasing concentrations of the extract (150 and 250 mg / ml).

Conclusion

The findings of this study suggest that it is necessary to carry out more investigations on herbal extract in vivo. in this case we hope that it will be possible to achieve new compounds with low side effects for the treatment of fungal infections in the future.

Keywords

Plants extract, fungal pathogens, infections

Investigation of tnfÎ± gene expression in nsclc patients

Merat Firouzinejhadshirazi,[1] ,* Ghasem ahangari,[5]

1. National institute of genetic engineering and biotechnology
5. National Institute of Genetic Engineering and Biotechnology

Abstract

Introduction

Lung cancer is the most common cause of cancer-related death. lung cancers are generally divided into two major types: small cell lung cancer and non-small cell lung cancer. previous studies demonstrated a link between the changes of cytokine expression level and onset of several disorders. tumor necrosis factors (tnfs) are a family of secretory proteins that play role in many physiological and pathological functions, such as apoptosis, cell proliferation, differentiation, inflammatory reactions and systemic necrosis of host defense against bacterial and viral infections. due to the diverse effects of cytokines, this study aimed to examine changes in expression levels of tnfÎ± gene in peripheral blood mononuclear cells of nsclc patients.

Methods

The peripheral blood mononuclear cells were isolated from the whole blood of 30 nsclc patients and 30 normal controls by ficoll-hypaque gradients method. then, after extracting rna, the cdna was synthesized. finally real-time pcr method was performed using specific primer pairs for tnfÎ± gene and Î²-actin as an internal control.

Results

Data from this experiment shows that mrna relative expression of tnfÎ± gene significantly decreased by 7-folds in patients with non-small cell lung cancer compared to control subjects ($p<0.0001$).

Conclusion

This study suggests that the reduction of tnfÎ± expression in peripheral blood mononuclear cells of patients compared to the control subjects might take part in the development of non-small cell lung cancer. low levels of tnfÎ± expression could be an independent diagnostic indicator of nsclc. targeting tnfÎ± might be a promising prognostic tool by assessment of the clinical stages of nsclc.

Keywords

TnfÎ±, lung cancer, non-small cell lung cancer, gene expression analysis

Investigation of variation in serum bdnf levels in depression model of rats treated with bupropion.

Atefe Vaghei ahmad abadi,[1] Mahsa hadipour jahromi,[2] Farshad hashemian,[3,*]

1. Department of Clinical Pharmacy, Faculty of Pharmacy, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.
2. Herbal Pharmacology Research center, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.
3. Department of Clinical Pharmacy, Faculty of Pharmacy, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.

Abstract

Introduction

Depression is a psychiatric disorder associated with depressed mood and loss of interest in activities. previous studies have suggested that brain-derived neurotrophic factor (bdnf), a member of neurotrophins family, might play a key role in neuroplasticity and pathophysiology of depression. despite of both acceptable therapeutic and adverse effects profile, the exact mechanism action of bupropion, an atypical antidepressant drug, is still unclear. the present study was designed to evaluate the effects of chronic bupropion treatment on depressive-like behavior in animal model of depression and assessment of serum bdnf levels.

Methods

Initially, the doses of 15, 30 and 60 mg/kg/day of bupropion were administered orally to adult male wistar rats for 21 days. at the end of treatment period, the behavioral tests named forced swimming test (fst) and tail suspension test (tst) were performed. finally, the bdnf serum levels was measured using enzyme-linked immunosorbent assay (elisa) method.

Results

In the fst and tst, the dose of 60mg/kg of bupropion significantly reduced immobility time compared to control group (p valueË,0.05 for both tests). moreover, significant increase in serum bdnf levels at the doses of 15, 30 and 60 mg/kg/day of bupropion in comparison to control group was reported. (p value<0.05, <0.001 and <0.001, respectively)

Conclusion

According to our results, decreased immobility time in fst and tst were correlated with increased serum bdnf levels; it can be recommended that enhanced bdnf concentration in serum might be consider as a biomarker of antidepressant action of bupropion. in the future, the potential ability of bdnf as a biomarker for diagnosis of depression and treatment response to existing drugs can be highlighted.

Keywords

Neurotrophic factor, serum, depression, rat, bupropion.

Investigation on the cytotoxic effect of cobalt oxide nanoparticles on pc12 cell line

Mina Nouri,[1] Mojtaba falahati,[2,*]

1. Department of Cellular and Molecular Biology,Faculty of Advanced Science and Technology,Pharmaceutical Sciences Branch,Islamic Azad University of Tehran (IAUPS) ,Iran
2. Department of Nanotechnology,Faculty of Advanced Science and Technology,Pharmaceutical Sciences Branch,Islamic Azad University of Tehran (IAUPS) ,Iran

Abstract

Introduction

Cobalt oxide nanoparticles (co3o4nps) are increasingly recognized for their utility in biological applications, magnetic resonance imaging, and drug delivery. however, little is known about the toxicity of these nanoparticles. therefore, before clinical use can occur, understanding the properties of different nanoparticles such as cobalt oxide nps and their effect on the body is crucial. this study was designed to evaluate the cytotoxicity of co3o4 nps in cultured pc12 cells, as a potential nervous system model.

Methods

In this experimental study, pc12 cells were treated with various concentrations of co3o4nps (1,10,20,50,100 Âµg/ml) for 24 hours. then, cell viability was measured by the reduction of mtt assay. furthermore, apoptosis was detected by using caspase3 activity assay. finally, the mrna expression level of anti-apoptotic gene bcl2 was assayed by real-time pcr.

Results

Mtt assay result showed that co3o4nps induced cell viability reduction in a dose-dependent manner. for the mitochondrial apoptotic pathway, treating with co3o4nps augmented caspase3 activity in pc12 cells. moreover, quantitative real-time pcr data showed down-regulation of anti-apoptotic gene bcl2.

Conclusion

The results of this study demonstrated that co3o4nps induced cytotoxicity in pc12 cells in a dose-dependent manner and doses <10 Âµg/ml are classified into harmless or with less negative effects group for clinical usage.

Keywords

Cobalt oxide, nanoparticles, cytotoxicity, pc12

Investigation on the expression and antibody response of chimeric protein lfd1-pa4 from bacillus anthracis in mice

Hassan Mirhaj,[1] Hosein honari,[2,*] Ehsan zamani,[3]

1. Imam Hossein University
2. Imam Hossein University
3. Imam Hossein University

Abstract

Introduction

Anthrax is a zoonotic and severe infectious disease that caused by bacillus anthracis. the pathogenicity of bacillus anthracis is depends on two important factors in the production of toxins and the formation of capsules. the capsule is made of glutamic acid, it has anti-phagocytic properties. bacterial toxin is made from three protein components: protective antigen (pa) (83 kda), lethal factor (lf) (90 kda), and edema factor (ef) 89 kda. the combination of pa and lf (lethal toxin) after intravenous injection causes the death of laboratory animals, and the combination of pa and ef at the injection site creates edema. the pa protein consists of four regions where its carboxyl terminal region (region 4 or pad4), with binding to host cell surface receptors, causes the introduction of lf and ef into the cell. studies have shown that antibodies generated against four region of pa (pad4) are capable of neutralizing anthrax toxin. the purpose of this study was to express the lfd1-pa4 gene of bacillus anthracis in e. coli host and purify the recombinant protein and produce polyclonal antibody in mice that was successfully performed.

Methods

In this experimental study, pet28 + lf vector was used. the pa4 gene was amplified by pcr and cloned in a pgem-teasy vector. the pa4 and pet28 + lf genes were cut by xbai and hindiii enzymes. the ligation was performed by t4 ligase enzyme and transformed into e.coli bl21 de3.lfd1-pa4 gene sequence was made and with the transformation of this gene into e.coli bl21 de3 , process was confirmed by pcr and sequencing techniques .the expression of recombinant protein was evaluated using sds-page and western blotting techniques. after purification of recombinant proteins by column chromatography, mice were injected in four consecutive times. from the second injection (the first reminder), one week after the injection, blood sampling was performed and analyzed by elisa.

Results

In this study, with the design and construction of a gene cassette and transferring to bacteria, the recombinant protein (fusion) was obtained at about 48 kda. by injecting mixed and fusion proteins, elisa results showed that the antibody titers against pa4, lfd1, lfd1-pa4, and mixed lfd1 to pa4 were suitable in mice, and the antibody titer increased with fusion of lfd1 to pa4.

Conclusion

In this study, dual-antitoxin was produced in the form of a chimeric protein lfd1-pa4, which can control the formation of a toxic complex and transfer of the subunit a (lf) to the host cell. the monoclonal antibody against pa is more effective among anti-toxins produced, but compared to the lfd1-pa4 chimeric protein and this antibody, the chimeric protein is preferable to use as a vaccine because the monoclonal antibody against pa in cases where the anthrax toxin genetically engineered or antibody-resistant, it loses its efficacy. for this purpose, the antibody response against the lfd1-pa4 chimeric protein was evaluated by a mixed protein (lfd1 + pa4), which determined that the lfd1-pa4 chimeric protein produced a stronger antibody response. in addition to antibody response against pa(by lfd1-pa4), the presence of lf in the chimeric protein produced more antibody response than the mixed protein (lfd1 + pa4) and this adjuvant effect lies in the lfd1 domain of lf. on the other hand, given the similarity of aminoacid sequences at the amino end of lf and ef (their binding position to pa), antibodies produced can interact with ef and inhibit it. therefore, the production of anti-lf antibodies, in addition to preventing its binding to pa, affects ef binding to pa and forms edema toxin, resulting in an increase in the effectiveness of the chimeric protein lfd1-pa4 as a vaccine. studies by baillie et al. showed that complete protein lf and its one region (lfd1) in the animal challenge with bacillus anthracis sti strain spores provides complete protection . rezaei et al. also showed that the antibody titre produced against lfd1 has high immunogenicity . in this study, the amount of antibody produced against the fusion protein is appropriate and is superior to that of the mixed protein.thus, the fusion of regions 1 of lf and 4 of pa (lfd1-pa4) is more suitable for making the vaccine from the mixed protein (lfd1 + pa4).

Keywords

Anthrax, pa4 ØŒ lfd1 ØŒ lfd1- pa4, antibody titer

Investigation the role of the tim3 and pdcd1 genes in the asthma treatment by the zataria multiflora boiss and carvacrol

Nasim Adabi,[1] Masoumeh heydari2,[2] Atiye eslahi2,[3] Mahsa mohajeri2,[4] Ali hatami bardar,[5] majid mojarad,[6,*]

1. 1 Department of Biology, Faculty of Basic Sciences, Neyshabour University of Science and Research, Neyshabur, Iran
2. Department of medical Genetics, Faculty of medical science, University of Medical Sciences and Health Services, Mashhad,
3. Department of medical Genetics, Faculty of medical science, University of Medical Sciences and Health Services, Mashhad,
4. Department of medical Genetics, Faculty of medical science, University of Medical Sciences and Health Services, Mashhad,
5. 1 Department of Biology, Faculty of Basic Sciences, Neyshabour University of Science and Research, Neyshabur, Iran

Abstract

Introduction

Numerous medicinal and traditional uses for zataria multiflora and its constituent, carvacrol, have been described such as antispasmodic, anti-inflammatory, and antioxidant effects. in this study, effects of the hydroalcoholic extract of z. multiflora and carvacrol by the pdcd1 and tim3 pathways in moderate asthmatic disease were evaluated.

Methods

Forty eight asthmatic patients were selected according to gina guidelines and divided into four groups consisted of the placebo before the treatment (group 1), placebo after the treatment (group 2), the z. multiflora extract before treatment (5 and 10 mg / kg / day, z 5 and z 10 respectively) in the group 3, and the z. multiflora extract after treatment (5 and 10 mg / kg / day, z 5 and z 10 respectively) in the group 4, (n = 12 for each group). gene expression analysis was performed by the probe-based quantitative pcr technique.

Results

Using the carvacrol treatment without z. multiflora extract caused 29% increase in tim3 expression. in the other hand, this treatment reduces the expression of pdcd1 to 71% of the control level. according to these results, it seems the tim3 gene as an immune response inhibitor interfering with the asthma symptoms treatment by the carvacrol. using the z. multiflora extract along with the carvacrol has no significant effect on the tim3 expression. on the contrary, the z. multiflora extract increases the expression of pdcd1 gene by 46%. this supports the immune response inhibitory role of the tim3 in the asthma symptoms treatment

by the carvacrol. the z. multiflora extract, alone, has no effect on the tim3 expression but it decreases the pdcd1 expression to the half.

Conclusion

The results of this study showed that the z. multiflora extract and carvacrol during two months treatment lead to tim3 and pdcd1 expression changes which effects on the immune regulatory pathways

Keywords

Asthma, pdcd1, tim3, respiratory inflammation, zatria multiflora, carvacro

Invitro assessment of polybutylcyanoacrylate nanoparticles on the a172 gliobalstoma cell line viability

Mahdieh sadat Taghavi,[1,*] Hadi mohamadi,[2] Sabah naeimi,[3]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Young researchers and elite club, Kermanshah branch, Islamic Azad university, Kermanshah, Iran
3. Parasitology department, Pasteur Institute of Iran, Tehran, Iran.

Abstract

Introduction

Brain targeting is one of the most challenging issue for the pharmaceutical research, as number of hydrophilic therapeutic agents such as antibiotics, anticancer drugs, are unable to cross blood brain barrier. in the past few years, a number of different approaches have been developed for drugs to overcome this barrier. the methods include direct injection into the brain, drug structural modifications and nanoparticulate carriers. polybutylcyanoacrylate (pbca), a biodegradable polymer, has been extensively investigated as a drug carrier in recent years. many studies have showed that pbca nanoparticles are able to transport therapeutic agents across the bloodâ€“brain barrier into the brain. the toxicity of nanoparticles is a dark point, especially for biomedical applications. in this study, we evaluated the toxicity of different concentrations of pbca nanoparticles on a172 glioblastoma cell line through mtt assay and annexine/pi flow cytometry.

Methods

Pbca nanoparticles were prepared by emulsion polymerization. the cytotoxicity effect of different concentrations of pbca nps(0, 3.1, 6.2, 12.5, 25, 50, 75 100, 150, and 200Î¼g/ml) on a127 cells was determined by mtt assay. to determine the effects of pbca nanoparticles on apoptosis and/or necrosis, a172 cells were stained with annexin v and propidium iodide for flow cytometry analysis.

Results

We evaluated the toxicity of different concentrations of pbca nanoparticles on a172 cell line. our mtt assay and flow cytometry data indicate that within a concentration of 100Î¼g/ml, empty pbca nanoparticles imparts no cytotoxic effects on a172 cells.

Conclusion

A drug carrier device is suitable for in vivo applications only if it is nontoxice and biocompatible. in present study we evaluated the toxicity of different concentrations of pbca nanoparticles on a172 cell line and determined nontoxic concentrations of pbca nanoparticles for this cell line.

Keywords

Pbca nanoparticles, a172, mtt assay, flow cytometry

Ipsc-based crispr/cas9 gene therapy

Reza Kouchaki,[1,*] Amirhosein maali,[2]

1. Faculty of Allied Medicine, Qazvin University of Medical Sciences, Qazvin. Iran
2. Department of Medical Biotechnology, Faculty of Medicine,Babol University of Medical Sciences, Babol, Iran

Abstract

Introduction

Clustered regularly interspaced short palindromic repeats (crispr) is a microbial adaptive immune system to cleave foreign genetics elements and has been widely used in gene therapy of hereditary diseases. in a crispr/cas9 system, cas9 acts as a nuclease that is linked to a site-specific-binding rna (crispr). combination of crispr/cas9, as a site-specific nuclease, with induced pluripotent stem cells (ipsc), as an evolution in regenerative medicine, introduced a promising tool to gene therapy of monogenic hereditary disorders that was untreatable so far. the application of this technology can help us to characterize the genetic variation involved in various human disease and find a safe method to correct them.

Methods

Searching for â€œipsc-based gene therapy by crispr/cas9â€• in pubmed, scopus, and google scholar databases resulted in 1700 articles published between 2013 and 2018. of these, 15 closely related articles were analyzed and used to our presented article

Results

Cystic fibrosis (cf) is a progressive genetic disease that leads to lung infections, pancreas, liver, kidneys and intestine disorders. homology-directed repair (hdr)-mediated correction of cftr Î”f508 mutation has been done on cf patient-derived ipscs by crisper/cas9 technology, delivered via the plasmid. it led to the corrected expression pattern of cftr on the cells. hemophilia a is a genetic deficiency in clotting factor viii which leads to bleeding and unwanted hemorrhagia. non-homologous end joining (nhej)-mediated correction of hf8 inversion (as target gene) has been done on patient ipsc via plasmid, cas9, and grna delivery system and crispr/cas9 gene editing technology. sickle cell anemia and Î²-thalassemia (as a defected hemoglobin disorder) have also been corrected the defective gene (hbb) by a similar method. ipsc-based crispr/cas9 can be a novel method to treat leukemia and correcting the hereditary defective genes in patient-derived cells. hiv is the most common virus that causes secondary immunodeficiency (sid) by inserting themselves to the cd4+ cells expressed ccr5 and cxcr4. ye et al. disrupted the ccr5 locus by nhej-mediated method. in this study crispr as a nuclease has been introduced to normal ipsc via aav delivery system hu et al. also disrupted the ltr u3 region of viral genes by the nhej-mediated crispr technology on the cell-lines (chme5, hela, tzm-b1, u1). duchenne muscular dystrophy (dmd) is a genetic disorder characterized by the severe muscular disorder. lee et al. corrected exon 45 of dmd gene by disruption of the splicing receptor to skip exon45, nhej restoration of reading frame and hdr-mediated

exon 44 cdna knock in, by talen/crisper technology on patient-derived ipsc. alzheimer, as the most common cause of dementia, is a gene-related chronic neurodegenerative disease. in 2017, the psen2 n141i mutation in ipsc-derived alzheimer neurons corrected by crispr/cas9-based methods.

Conclusion

Crisper/cas9 technology is a promising tool for gene editing in ipscs alongside zfn, talen, meganuclease and other modified nucleases. this method can be used in the various human genetic diseases that are untreatable to human so far. crispr/cas9 will allow us to improve the genomic variation in disease prosses, especially in monogenic hereditary disorders

Keywords

Induced pluripotent stem cell, crispr/cas9, gene editing, gene therapy

Is mirna-30d-5p an appropriate biomarker for type 2 diabetes?

Taravat Ghane roudbaraki,[1] Vahide hasanzade,[2,*] Naeime roshanzamir,[3]

1. University of Tehran
2. University of Tehran
3. University of Tehran

Abstract

Introduction

Diabetes mellitus (dm) is a global health problem which affects ~450 million individuals worldwide. patients with diabetes mellitus develop serious complications that reduce their quality of life and life expectancy if the disease is not diagnosed at an early onset. biomarkers for early detection of the disease, distinction of different subtypes of diabetes and identification of individuals at risk of developing complications would greatly improve the disease diagnosis and patients care. looking for a new biomarker that is likely to respond to this medical need, one highly suitable source is represented by micrornas (mirnas). mirnas are released by most cells in the body, reach blood circulation in a very stable form and may be used to assess cell activity at distance. they enter the bloodstream encircled by membranous vesicles (exosomes and microparticles), lipoproteins, and other ribonucleoprotein complexes. one of the major problems in the study of diabetic patients is the lack of a suitable biomarker associated with Î²-cell destruction. perhaps circulating islet-specific mirnas are a good biomarker to diagnose the function of Î²-cells in various types of diabetes. according to previous studies, mir-30d-5p is one of mirnas up-regulated by glucose in the pancreatic Î²-cell. overexpression of mir-30d-5p increased insulin gene expression, while inhibition of mir-30d-5p abolished glucose-stimulated insulin expression. findings indicate that overexpression of mir-30d-5p is associated with increase in the expression of a specific Î²-cell transcription factor called mafa. on the other hand, wang et al found that mir-30d-5p could enhance islet Î²-cell function, promote proliferation, and inhibit cell apoptosis by targeting socs3 through the suppression of the jnk signaling pathway. in this review, we focus on studies considering circulating mir-30d-5p as biomarkers of diabetic complications.

Methods

The first study reporting dysregulation of circulating microrna in diabetic patients was published in 2010. thus, we reviewed the articles published on this issue from 2010 onwards using the following keywords:â€˜mir-30d-5pâ€™, â€˜diabetesâ€™ â€˜expressionâ€™ â€˜profileâ€™ â€˜profilingâ€™.. eligible studies had to meet the inclusion criteria: (1) they were mirna expression profiling studies on patients with diabetes; (2) they used diabetic and non-diabetic control samples for comparison; (3) they reported significant dysregulation of hsa-mir-30d-5p expression in diabetic patients.

Results

The main findings on this subject come from four important studies. kong et al detected an increase in the expression of mirâ€‘30d-5p and six other diabetes-related mirnas in plasma of patients with type 2 diabetes (t2d) compared with pre-diabetic patients however, there was no change in mirâ€‘30d-5p expression between pre-diabetic and healthy subjects. in a concurrent study, karolina et al analyzed eight mirnas in whole blood of pre-diabetic and type 2 diabetic patients and found that all eight tested mirnas were differentially expressed. unlike the previous study, they reported a decrease in the expression of mir-30d-5p. seyhan et al compared plasma expression levels of a panel of 28 mirnas associated with islet function or previously associated with diabetes in subjects with pre-diabetes and t2d to those of healthy controls. they reported that mir-30d and mir-34a were most significantly increased in type 2 diabetic patients relative to healthy controls. finally, in a study conducted in 2017, candia et al found that the level of mir-30d-5p is decreased in pre-diabetic subject compared to healthy or diabetic individuals.

Conclusion

These studies indicate that increased level of circulating mir-30d-5p in the bloodstream is specific to t2d. therefore, it seems that circulating mir-30d-5p is a good biomarker for the diagnosis of type 2 diabetes. furthermore, given that the level of circulating mir-30d-5p in pre-diabetic subjects was reduced compared with diabetic and control subjects, this microrna could be used for early diagnosis of type 2 diabetes. however, coherent results are still scarce. this could be due to differences in source sample, population ethnicity, pre-analytical and analytical procedures, microrna quantification platforms and data normalization processes.

Keywords

Diabetes, biomarker, mirna-30d-5p, expression

Isolation and identification of genes in staphylococcus aureus from panton valentine leukocidin dairy in mazandaran province

Pooran Pourramezanynejad,[1] Sheyda ghasemi,[2] Ali khosravi,[3,*]

1. Islamic Azad University of Ayatollah Amoli
2. Islamic Azad University of Ayatollah Amoli
3. Islamic Azad University of Ayatollah Amoli

Abstract

Introduction

The most important factors of food poisoning staphylococcus aureus infections in the world that has been in effect contaminated food. staphylococcus aureus that contains the gene for virulence panton valentine leukocidin (pvl) finally getting liz leukocytes and cause tissue necrosis. the aim of the present study, isolation and identification of staphylococcus aureus microbe pvl gene in dairy samples using pcr techniques.

Methods

This study was carried out in the year 2016 in which r 55 examples of traditional dairy products (milk and cheese, traditional) was collected at the level of the province. for the identification and isolation of staphylococcus aureus infections, bio-chemical, differential tests. to identify pvl gene pcr test was used.

Results

Of the 55 samples tested, 20 samples (36.36%) with the laboratory techniques, pollution with staphylococcus aureus showed, that the 15 samples of milk and cheese from 5 samples were pvl gene in isolation none of the isolates of staphylococcus aureus identification.

Conclusion

Based on the results of this study because of the possibility of the presence of the bacterium staphylococcus aureus in milk and cheese to traditional, falling consumer health due to the presence of toxins and various enzymes in the production and distribution of bacteria, they should be under the control of the relevant professionals.

Keywords

Staphylococcus aureus, panton valentine leukocidin, traditional dairy products, pcr

Isolation of lactic acid bacteria generating bacteriocin from pot cheese

Faezeh Nasrollahi nia,[1,*] Mahdi bayrami,[2] Amir ganjkhanlu,[3] Asghar zahed,[4] Mohsen azizi,[5] Sanaz alioghli,[6]

1. department of biology, factuly of science, university mohaghegh ardabili
2. department of biology, factuly of science, university mohaghegh ardabili
3. faculty of veterinary medicien, azad university of tabriz, tabriz, iran
4. faculty of veterinary medicien, azad university of tabriz, tabriz, iran
5. faculty of veterinary medicien, azad university of tabriz, tabriz, iran
6. department of biology, factuly of science, university mohaghegh ardabili

Abstract

Introduction

In fermented foods, lactic acid bacteria (lab) display numerous antimicrobial activities. this is mainly due to the production of organic acids, but also of other compounds, such as bacteriocins and antifungal peptides. several bacteriocins with industrial potential have been purified and characterized. lactic acid bacterias generate bacteriocin through lactic fermentation, whichis antimicrobial protein. hence, this investigation was manipulated to evaluate and measurethe ability of lactobacilli in pot cheese to produce and secrete bacteriocin and determine itsinfluences on five strains of bacteria in foodborne diseases.

Methods

In this way, isolated strains were incubated in mrs broth medium at 37 Â° c. after that the cultures were centrifuged at 10,000 rpm for 10 minutes and subsequently the supernatant solution was removed. to verify antimicrobial activity due to the production of bacteriocin, the ph of the supernatant solution was adjusted to 6.5 to 7. in mueller hinton agar, 100 Î¼l of each bacterial strain was incubated. the wells were then placed on inoculated medium and 200 Î¼l of supernatant solution was poured into the wells and incinerated at 37 Â° c for 48 hours, and subsequently, the wells around them were aureoles which has the lack of growth was considered as antimicrobial agent strain.

Results

31 strains with strong antibacterial activity were identified from the lactic acid bacteria which are isolated from pot cheese. the isolated strains presented a significant inhibitory effect on staphylococcus aureus, escherichia coli, bacillus cereus and less inhibitory effect on listeria monocyte genes and yersinia enterocolitica.

Conclusion

According to the results of the study, these isolated materials can be used as strains of natural preservatives in dairy industry.

Keywords

Lactic acid bacteria, bacteriocin, antimicrobial, pot cheese

Isolation of nontuberculous mycobacteria from in-use waters of burns and haemodialysis hospital units

Ehsan Aryan,[1,*] Azra haghani-nasimi,[2] Mohammad derakhshan,[3] Davoud mansouri ,[4] Zahra meshkat,[5] Masoud yousefi,[6]

1. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
2. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
3. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
4. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
5. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
6. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences

Abstract

Introduction

Nontuberculous mycobacteria (ntm) are widely present in water sources and they are accounted a major threat for immunocompromised patients. burn and haemodialysis (hd) patients are weekly exposed to a large amount of water in hospitals. to study the possible presence of ntm in waters used in burns and hd units, four university hospitals were investigated in mashhad, northeast iran.

Methods

Ninety six water samples including 35 and 61 samples were collected from burns and hd units, respectively. one liter of each sample was concentrated through filtration by a 0.45-Âµm nitrocellulose membrane filter after removing chlorine and non-mycobacterial contamination from water respectively by 3% sodium thiosulfate and 0.005% cetylpyridinium chloride. the sediment of each sample was inoculated on both lowenstein-jensen medium and 7h11 middlebrook agar and incubated at 25, 37, and 42Â°c, and examined twice a week for 8 weeks. acid-fast colonies were subjected to dna extraction followed by rpob-pcr restriction enzyme analysis (pra) using mspi and haeiii.

Results

Efficacy of the concentration method was determined as 10 cfu/l using different sterile water samples spiked with different known numbers of mycobacterium smegmatis mc2155 strain. a total of 19 ntm species (19.8%) including m. chelonae (36.8%), m. simiae (15.8%), m. fortuitum type ii, m. austroafricanum, m. gordonae type i (10.5% each), and m. gordonae type iv (5.3%) were isolated and identified from hospital waters. moreover, two isolates could not be definitely identified by rpob-pra.

Conclusion

About 63% of ntm isolates of this study are clinically significant in humans; therefore in-use waters should effectively be disinfected in critical hospital units.

Keywords

Nontuberculous mycobacteria (ntm), rflp, haemodialysis, burn icu

Knife detection and treatment of cancer

Fateme Nasrollahi,[1] Fateme nasrollahi,[4,*]

4. univercity of payam nour of karaj

Abstract

Introduction

Cancer is a basic unit of; like a bag that contains proteins; fatty acids; carbohydrates ; and vitamins such as dna; the ability to grow; replicate; and replicate the characteristic of living cells. the genetic structure of growth ; the division of the time of death determine sit it . in normal mode; the replacement of worn-out cell with young cells becomes naturalized by a regular program; and the process of cell growth and cell turnover is content in the body. cancer is a condition in which cell lose their ability to divide normally; and this leads to the conquest; destruction; and loss of healthy tissues. it is caused by the accumulation of these cancer cells and the destruction of healthy tissue cells called tumors. if the tumor end up in thin layer and do not spread to other tissues and organs; the tumor is benign or non-cancerous; and if the tumor is spreading or potentially spreading and deflecting other tissues; it is called malignant or non â€“cancerous.

Methods

Commonly used treatments for cancer include: 1- chemotherapy 2- surgical 3- radiation therapy 4-gene therapy 5-biological treatment 6- use of nano-robots 7- stem cell transplantation these methods have a newer; more modern and advanced method of treating other treatments; also called cancer diagnosis and treatment knives. now we want to make a device like that and make other changes. among the changes that can be said; instead of using catalysts using lasers and nanoparticles; the main components of this device are the following: 1-cutting knife 2-the mass spectrometer system; which itself consists of a different part; a) sample input system b) ionic production source c)ion degrading device d)ion detector r) spectrum recording system 3-laser 4-vacuum compartment and vacuum pump 5-monitor how the device works: vertical or horizontal incisions are triggered by the suspicious tissue of the nanoparticles; when activated; this knife only covers the damaged part; which does not harm the healthy tissue of the side. when the tumor is detected; the green light is displayed on the monitor; and until the texture is completely removed; the light remains on. if the doctor accidentally used a suspicious mass and this method was used and the affected area was not cancerous; the red light would be displayed; which in any case would eliminate that mass. the nanoparticles of ion after their work is completed; and from there to the detector; and finally sent to the monitor by the spectrum recording system.

Results

This device was made by researchers from the uk and hungary; which has been tested on 313 patients. and now it is used in other hospitals in the two countries ; researchers say that about 80%of cancers have improved and no need to be re- surgical ; especially in breast ; stomach ; lung ; and other invasive cancers

; but we want all cancers use aggressive and non-aggressive . british doctors use this device for 3 seconds; our time may be high; but due to changes; it can compensate for this.

Conclusion

Given that the methods described are individually harmful to patients; this method is a better alternative; in the field of medicine; all of which must be up â€“to â€“date. cancer patients also have to pay a lot of money for their treatment; so most of them do not have these costs and consequently lose their lives. but despite this progress; all patients ; even those who do not have the financial means ; can also be treated and treated ; and they also have a higher life expectancy because for life expectancy .

Keywords

Knife - treatment - cancer - dna

Lack of association between interleukin-34 single nucleotide polymorphism (rs3813904) and hepatitis b virus chronic infection

Nafiseh Mohammadi lamolang,[1,*] Seyed reza mohebbi ,[2] Masoud parsania,[3] Shabnam kazemian,[4] Mahsa saeedi niasar,[5] Mohammad reza zali,[6]

1. Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran
2. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences
3. Department of Microbiology, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran
4. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences
5. Basic and Molecular Epidemiology of Gastrointestinal Disorders Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran
6. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences

Abstract

Introduction

Chronic hepatitis b virus (hbv) infection is one of the main reasons of liver cirrhosis, hepatocellular carcinoma and high mortality in the world. the host genetic variations including single nucleotide polymorphisms (snps) are important factor in progression of hbv infection to chronic disease or clearance of the viral infection. the cytokines genes can affect the host immune responses and recent studies revealed a possible association between genetic variation in these genes and chronicity of hbv infection. il-34 that is a novel cytokine plays a probable role in the inhibition of hbv replication. the aim of present study was detection of a possible link between one snp (rs3813904) in il-34 gene and chronic hepatitis b infection.

Methods

In this study we choose 226 individuals (121 chronic patients and 105 healthy control). then genomic dna extracted of blood samples through salting out method. the snp was genotyped using the polymerase chain reaction restriction fragment length polymorphism (pcr-rflp) method.

Results

The frequency of (rs3813904 g/c) snp for gg, gc, cc genotypes were found 19.01, 47.93, 33.06 percent in the chronic patients and 22.85, 50.48, 26.67 in the control group percent respectively. results showed there is no significant difference among genotype frequencies p=0.539).

Conclusion

In this study, we didnâ€™t find a significant link between the il-32 snp (rs3813904) and chronic hepatitis b infection. thus, it canâ€™t be considered as a susceptibility factor for hbv chronicity.

Keywords

Hepatitis b, cytokine, il-34, single nucleotide polymorphism

Lactoferrin a protein with multiple bioactivities

Amir Khalafi,[1,*] Fatemeh moradian,[2] Alireza rafiei,[3]

1. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University, Mazandaran, Iran.
2. Department of Basic Sciences, Sari Agricultural Sciences and Natural Resources University, Mazandaran, Iran.
3. Molecular and Cell Biology Research Center,Faculty of medicine, Mazandaran University of Medical Sciences

Abstract

Introduction

Lactoferrin(lf) is an 80 kda iron-binding glycoprotein and members of the transferrin family with capability of binding and transfer of iron. lactoferrin is an antioxidant that can capture free irons and prevents the formation of uncontrollable free radicals. lactoferrin is a multifunctional protein involves in many physiological functions including regulation of iron absorption and immune response and antioxidant activity, anticancer ,antimicrobial and antiinflammation activities

Methods

Lactoferrin was dissolved in pbs,and purity of protein was checked by sdsâ€“page and passed through a 0.2-Î¼m filter before use and stored at 4Â°c.

Results

Lactoferrine have antibacterial, antifungal and anticancer activity:lf has inhibitory effect against wide range of gram-positive and gram-negative bacteria. human and bovine lactoferrin activity, as well as lactoferricin were specified against pathogenic fungi, especially candida albicans and many other species . since free iron may act as a mutagen in the oxidative degradation of nucleic acid structure, it is likely that the ability binding of iron in lactoferrin as anti-tumor properties was important

Conclusion

One of the first applications of lactoferrin was add to childrens nutrition, and recently it has been used in food and drug and immune system enhancers, cosmetics, pet food supplements, beverages, fermentation milk, chewing gum and toothpaste

Keywords

Antioxidant, chemoprotective, lactoferrin, multiple functions

Lateral hypothalamus deep brain stimulation is useful against morphine addiction via dopamine signaling modulation

Ghorbangol Ashabi,[1,*]

Abstract

Introduction

High-frequency deep brain stimulation (dbs) is a novel therapeutic address against drug addiction. the mechanism by which this is succeeded still unknown. dopaminergic signaling is specific neurotransmitter of drug-reward circuity and lateral hypothalamus (lh) is involved in dopamine signaling and reward pathway. we aimed effect of lh high frequency stimulation in dopamine and c-fos expression in the prefrontal cortex.

Methods

Electrodes were implanted into the lh bilaterally and after recovery lh were stimulated with dbs (130 hz pulse repetition frequency, 150 Âµa pulse amplitude, and 100 Î¼s pulse width) and treated with morphine (5mg.kg) for four consecutive days. then, rats were sacrificed and prefrontal cortex were separated for western blot analysis and rt-pcr.

Results

Dbs and morphine treatment decreased the cellular level of both d1-like family compared with morphine treated rats without dbs in the prefrontal cortex. dbs with concomitant morphine increased d2-like family in comparison to morphine received rats in the prefrontal cortex. also, dbs and morphine treatment increased c-fos expression compared with morphine received group.

Conclusion

Stimulation of lh as a site against drug reward might influence dopaminergic system and inhibits reward system in the brain of morphine addicted subjects. also, stimulation of lh increased c-fos in morphine received rats; an immediate early gene involved in neuronal plasticity. based on these data, targeting dbs of lh might be a novel candidate against addiction.

Keywords

High frequency stimulation; morphine; dopamine receptors; c-fos; lateral hypothalamus; rat

Legal and moral issues attitude of men referring; regarding embryo donation in shaheed mostafa khomeini hospital 1397

Kobra Khajavi shojaie,[1,*] Ashraf pirasteh,[2] Zahra jouhari,[3] mohammad tayyeb,[4]

1. Shahed University
2. Shahed University
3. Shahed University
4. Shahed University

Abstract

Introduction

Background and objective: infertility is one of the problems that have had a profound effect on the relationship between infertile couples and their social relationships. the purpose of this study was to evaluate the attitudes of men referring to shaheed mostafa khomeini hospital regarding legal and moral issues of embryo donation 1397

Methods

Material and methods: this observational/cross-sectional study is conducted on 225 subjects chosen through convenience sampling from male patients of clinic in shahid-mostafa-khomeini hospital in 2018.

Results

Results in this study, 60.5% of participants agreed with the donation of embryos as a treatment for their infertility. according to religious beliefs, 64% of people agreed with this method. according to religious beliefs, 64% of people agreed with this method. but 63.1% of the participants were against the transfer of fetus from their family. 67.1% of the participants agreed with the donation of their fetus to the needed couples. 79.6% of the participants agreed with the anonymity of couples in embryo donation.

Conclusion

Conclusion: based on the results, it is concluded that the attitude of men about embryo donation has a significant relationship with level of education and increase of age.

Keywords

Keywords: attitude, embryo donation, legal, moral, men.

Limonene inhibites the growth of resistant e. coli and pseudomonas aeruginosa

Saeedeh Ghiasvand,[1,*] Ali shalilian,[2] Firoozeh alavian,[3]

1. Department of Biology,faculty of science Malayer University
2. Department of Biology,faculty of science Malayer University
3. Faculty of science,Farhangian University Tehran, Iran

Abstract

Introduction

Through the last decades, by developing new antibiotics for microorganisms, the resistance of bacteria developed too. therefore, new compounds should be use for antibiotics to have greater effect on microorganism and infections. plants have always been a good secondary and sometimes primarily participants in antibiotics and in last decade the use of herbal drugs are growing worldwide. herbs and natural compounds could be a good help in making and developing recombinant drugs.in this study, we investigate the antibacterial properties of citrus essence (limonene). its main constituents are 51% linal acetate, 35% linalool and camphor. bacteria used for this study are e. coli and pseudomonas aeruginosa hospital variant. the bacteria were gathered from malayer hospital and were resistant to variety of antibiotics.

Methods

Bacteria were incubated in nutrient broth , overnight and in 37 ÌŠc. then cultivate in nutrient agar media with wells which have already been filled with limonene. after 24 hours the diameter of inhibition region were measured. for synergism effect of the limonene the prepared bacteria were added to nutrient agar media and then the antibiotic disks and limonene were added to the media and after 24 hours the diameter of inhibition region were measured.

Results

Limonene inhibited the growth of e. coli with 10mm inhibited region diameter, pseudomonas aeruginosa with 11mm inhibited region diameter. synergism results showed that if the limonene was added to media with antibiotics, the bacteria are more inhibited and the inhibition region is greater therefore the antibiotic is more useful with limonene. the limonene inhibited e. coli 15mm more than penicillin disk itself, and limonene inhibited pseudomonas aeruginosa 3mm more than penicillin disk itself.

Conclusion

Based on these results, limonene could be a useful compound of new antibiotics. our developed antibiotics and drugs need herbal substitute for greater effect and less harm for health of human kind.

Keywords

limonene, hospital bacteria, resistance, recombinant drugs, herbal compounds.

Lipopolysaccharide induces the expression of inflammatory factors and reactive oxygen species production in human peripheral blood mononuclear cells

Alireza Bahiraee,[1,*] Reyhane ebrahimi,[2] Solaleh emamgholipour,[3]

1. Department of Medical Genetics, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
2. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
3. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

The inflammatory role of lipopolysaccharide (lps) has been considered by many researchers. lps is a component within the cell wall of gram-negative bacteria and it has a stimulating effect on the release of inflammatory factors in various cell types. here, we study the priming effects of lps exposure on the gene expression of inflammatory factors including interleukin (il)-6, il-1Î², and tnf-Î± and also reactive oxygen species (ros) production in human peripheral blood mononuclear cells (pbmcs).

Methods

First, peripheral blood was drawn from healthy volunteers and pbmcs were separated using ficollâ€“paque. then, pbmcs were suspended in roswell park memorial institute (rpmi) culture medium supplement with 5% (v/v) fetal bovine serum and 100â€‰iu/ml penicillin in 6-well plates. next, pbmcs were treated with lps at a concentration of 100 ng/ml for 4 hours and total rna was isolated using geneall rna extraction kit. subsequently, cdna was synthesized by the quantitect reverse transcription kit. real-time measurements were performed after 4 hours incubation in order to investigate the gene expression of il-6, il-1Î², and tnf-Î± using a sybr green assay. moreover, intracellular ros production stimulated by lps was measured by flow cytometry using 2â€²,7â€²-dichlorofluorescein diacetate (dcfh).

Results

The gene expression levels of il-6 and tnf-Î± were significantly higher in pbmcs treated with 100 ng/ml of lps compared with cells left untreated ($p < 0.05$). additionally, the gene expression of il-1Î² was higher too but it was not reported as significant. the ros production measured by flow cytometry was higher in pbmcs treated with 100 ng/ml of lps compared with control however it was not statistically significant.

Conclusion

Collectively, it seems likely that lps can mediate the induction of ils and also the intracellular ros production, then it may cause to antibacterial activities of pbmcs. hence, this material can be used as an

inflammatory agent in circulating immune cells like pbmcs. moreover, developing effective treatments for its inflammatory responses-induced cellular injury and concurrent sepsis is very imperative.

Keywords

Inflammation, lipopolysaccharide (lps), interleukins, reactive oxygen species (ros)

Localized surface plasmon resonance (lspr) nanobioprobe for influenza a virus detection based on gold nanoparticles-anti nucleoprotein (np) conjugation

Mehri Mirkamali,[1] Azadeh azizi,[2,*] Farida behzadian,[3] Zeinab bagheri,[4]

1. Department of Bioscience and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran
2. Department of Bioscience and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran
3. Department of Bioscience and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran
4. Faculty of Life Sciences and Biotechnology, Shahid Beheshti University G.C., Velenjak, Tehran, Iran

Abstract

Introduction

Nowadays, nanobiosensors are commonly used in order to detect wide variety of viral and bacterial agents. among them, nanobiosensors based on local surface plasmon resonance (lspr) of plasmonic nanoparticles provided a suitable base for the rapid diagnosis of various pathogenic agents. this property is due to the concentration of electric field at the surface of plasmonic nanoparticles. herein, a lspr based nanobioprobe has been designed in order to detect type a of human influenza virus. nanobioprobe has been fabricated based on the electrostatic conjugation between the specific antibody against the nucleoprotein (np) antigen of the virus and gold nanoparticles (gnps).

Methods

For this purpose, gnps-antibody conjugation has been confirmed by monitoring the lspr spectra and dynamic light scattering (dls) technique. after that, in order to investigate the lspr nanobioprobe sensitivity, the lspr band alterations of gnps have been monitored in the presence of different concentrations of influenza virus. finally, the sensitivity of the lspr nanobioprobe was compared with elisa technique.

Results

According to the transition electron microscopy (tem) images, the average diameter of gnps was about 40 nm and the dls results showed that the size of gnps has been increased after the conjugation with antibody. moreover, lspr bands alteration showed that the sensitivity of the nanobioprobe to detect the virus was 10 pfu/ml. however, based on the results, the sensitivity of the elisa method is much lower than the lspr method.

Conclusion

In conclusion, compared to the traditional techniques such as elisa, the sensitivity of the lspr nanobioprobe method is much more favorable for the rapid visual detection of pathogenic agents.

Keywords

Influenza virus; gold nanoparticles (gnps); local surface plasmon resonance (lspr); nanobioprobe

Low plasma level of adiponectin is related to a higher risk of nonalcoholic fatty liver disease

Reyhane Ebrahimi,[1,*] Alireza bahiraee,[2] Solaleh emamgholipour,[3]

1. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
2. Department of Medical Genetics, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
3. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

There is an accumulating evidence that nonalcoholic fatty liver disease (nafld) is strongly linked to insulin resistance and obesity. it is also generally accepted that alteration in circulating adipokine levels especially adiponectin exerts a crucial role in pathomechanism of nafld and related disorders. here, we aimed to evaluate the plasma level of adiponectin in patients with nafld and nafld+ type 2 diabetes (t2d) compared with healthy subjects, and also to study its correlation with obesity indices.

Methods

A total of 102 subjects including 41 with nafld, 41 with nafld+t2d and 20 healthy people aged between 43 and 72 years, were recruited for the current study. all the patients were recently diagnosed and were recruited from the outpatient clinics of shariati hospital, tehran, iran. this study was approved by ethics committee of tehran university of medical sciences (tums). nafld diagnosis was based on the results from abdominal ultrasonography procedure. anthropometric indices of all participants including age, weight, height, bmi, waist circumference (wc), hip, waist-to-hip ratio (whr), and blood pressure were assessed. additionally, biochemical analyses were performed for all participants. finally, plasma level of adiponectin were determined by using the elisa kit.

Results

Plasma concentration of adiponectin was significantly lower in patients with nafld and ones with nafld+t2d compared with controls ($p < 0.05$). analysis of covariance (ancova) was used to compare the plasma adiponectin among all the studied groups while adjusting for age and well-known obesity indices. our findings showed that the difference of circulating adiponectin levels between the controls and nafld patients and between the controls and nafld +t2d group disappeared after adjustment.

Conclusion

It has been suggested that a lower plasma level of adiponectin exposes a greater risk of developing nafld and nafld+t2d even in non-obese individuals. moreover, it is tempting to speculate that the use of plasma adiponectin level could be considered as an additional biomarker in the early diagnosis and monitoring of nafld.

Keywords

Adiponectin, nonalcoholic fatty liver disease (nafld), obesity

Male s spata19 and women s tumors

Mahsa Zargar,[1,*] Mohammad hosein modaresi,[2]

1. Tehran University Medical Science
2. Tehran University Medical Science

Abstract

Introduction

Although many types of research have been developed that help identify human gene function but it should be noted that the function of many genes is still unknown. one of them is spermatogenesis associated-19 (spata19) which, so far only 11 articles have been published about it. spata19 is a testis-specific gene that has a mitochondrial signal peptide at its n-terminus. previous data has shown that spata19 has a high expression in the testis, and it has also been demonstrated the increase its expression in the basal cell carcinoma of the skin and in some other cancers, such as breast and prostate cancers. to understand the function of genes in in-vivo condition, transgenic animals are helpful. of these animals, mice have a wider use for different reasons such as evolutionary and genetic proximity to humans. by knocking out the mouse gene, behavioral, apparent, physical and biochemical changes can be made that can help to better understand the gene s function.

Methods

Recently, we replicated the spata19 mice for another experiment.

Results

Accidentally, we observed solid metastatic tumors originated from the armpit in transgenic mice. the gender of the affected mice was female. most of them had a history of labor and showed a lower life expectancy than others. pathologic diagnosis of these tumors was hyperplasia of the lymph nodes with very severe necrosis.

Conclusion

Causes of every tumor can be genetic or environmental. but it can be said that the influence or the lack of influence of environmental factors is also somehow influenced by genetic factors. it is possible that the immune system of these mice is weaker and the spata91 function is not limited to male fertility. of course, proof of these claims requires more research and research.

Keywords

Spata19, immune system

Maternal intake and human breast milk composition

Marzieh Aminzadeh anbouhi,[1,*]

1. Science and research branch of azad university

Abstract

Introduction

Breast milk is a perfect supplement for infants and it provides many nutrients for them such as vitamins, proteins, fat, calcium and others. as we know, infants wonâ€™t be able to chew food for several months after birth and feeding is done by breast milk which that will have healthy effect on infantâ€™s future. therefore, it is very important to recognize breast milk composition and its effective factors because of the close relationship between infantâ€™s health and breast milk composition. in this article we tried to overview effective factors on the quality and composition of the human breast milk, so this information can help us to have better understanding of the role of human breast milk on infantâ€™s health.

Methods

There are different factors that can effect on breast milk composition and its energy, such as maternal diet, month of lactation, parity, complementary food energy, maternal age and infant sex. many of human milk micronutrients depend on maternal diet, such as vitamins a, b1, b2, b6, b12, d, iodine and lactose and some of them are not effected significantly by maternal supplementation, such as thiamin and b6. amount of energy of breast milk is depend on several factors such as amount of fat, protein and lactose of milk that it was estimates from 65 to 70 kcal/dl. amount of fat in vegetarians and non-vegetarians is different and amount of this in vegetarians is 3.21 Â± 1.78% and in non-vegetarian is 3.23 Â± 2.13% that can be derived from different sources. parity and interval length were negatively correlated with percent of milk fat and this correlation were higher than in total sample of non-vegetarian. according to the last research many food antigen can be found in human milk but maternal dietary exposure during pregnancy and lactation is unlikely contribute significantly to the development of food allergy in the infant. the mean of protein in term milk is estimated about 0.9 to 1.2 g/dl. amount of amino acid concentration of milk if different during lactation, the mean of amino acid of colostrum is higher than intermediate milk and the mean of amino acid concentration of intermediate milk is higher than mature milk. mothers who smoke can affect on their amount of milk and they will reduce daily milk about 250-300 ml.

Results

Concentration of fatty acid, fat soluble and water soluble vitamins in milk are significantly affected by maternal diet but lactose, mineral, trace element and electrolytes concentrations seem comparatively resistant to varying maternal intake.

Conclusion

Breast milk composition has an affective role on infantâ€™s health and human breast milk is one of the most important factor on a quality of breast milk and we can understand it by studying this information, according to the reports in the literature of european and american children who have suffered malnutrition or had lower growth rate while being breast-fed by vegetarian so this kind of information about breast milk composition can help mothers to have correct nutrition.

Keywords

Breast milk, composition, diet

Mda-7/il-24: as an anti-cancer gene in human breast cancer

Pollet Bet benyamin,[1,*] Saman yasamineh,[2]

1. Undergraduate cellular and molecular Biology, Institute of Higher Education Rab-Rashid, Tabriz, Iran
2. Undergraduate Biotechnology, Institute of Higher Education Rab-Rashid, Tabriz, Iran

Abstract

Introduction

Breast cancer continues to be a leading cause of cancer-related deaths in women worldwide. wnt/Î²-catenin signaling is one of the key pathways that promote self-renewal of breast cancer-initiating/stem cells.breast cancer-initiating display high levels of expression of apoptotic regulating proteins including bcl-2, nf-Îºb and akt. mda-7/il24 is a secreted protein of the il-10 family, functions as a cytokine at normal physiological levels and located on chromosome 1q32-33 in humans and it can encodes a 206 amino acid protein. our recent study showed that mda-7/il-24 also inhibited the growth and self-renewal potential of breast cancer-initiating/stem cells without any adverse effects on normal breast stem cells.

Methods

In this review, we study characteristic of mda-7 by using the several article. these articles are acquired through searches on online database such google scholar and pubmed.

Results

Mda-7/il-24 plays a prominent role in inhibiting tumor growth, invasion, metastasis.rational combination of agents that would synergize with mda-7/il-24 would help to overcome the resistance of cancer cells toward conventional treatment regimens as well as generate the biological response at low doses.additionally, novel strategies to define ways of selectively inducing mda-7/il-24 expression, protein production and secretion using small molecules would also augment the applications of this novel cytokine for therapy of cancer. accordingly, concerted research efforts in the context of mda-7/il-24 will not only augment our understanding in the related field of mechanisms of action.

Conclusion

In this article, we introduced mda-7/il-24 as one of the methods of gene therapy, which effect on immune cell for treatment of breast cancer.

Keywords

Mda_7, gene therapy, breast cancer

Meat products microbial total count supplied in tabriz markets

Mahdi Bayrami,[1] Amir ganjkhanlu,[2,*] Asghar zahed,[3] Heydar tayefe sattari,[4] Anahita bajgiran,[5] Danial bajgiran,[6]

2. faculty of veterinary medicine, Azad university of Tabriz, Tabriz, Iran
3. faculty of veterinary medicine, Azad university of Tabriz, Tabriz, Iran
4. faculty of veterinary medicine, Azad university of Tabriz, Tabriz, Iran
5. department of nutrition science, Azad university of Tehran, Tehran, Iran
6. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.

Abstract

Introduction

Foodborne diseases are one of the most important problems in international societies, especially low-health areas. typically, food contamination with microbial agents is one of the main causes of diseases and food toxications in humans. the contamination of microbial substances is eliminated because of meat being cooked, however, there are many reports of food poisoning annually. beef and lamb meat are among the most important food sources in humans. this study aimed at evaluating the quality and microbial total count, packaged or unpackaged meat products and sausages in the markets of tabriz city.

Methods

: for this purpose, 100 samples of each ready-minced meat and sausages of 2 and 10 cm calibrated (a&b) were collected during the four different seasons in the year 2017 and transferred to the laboratory for microbial assay.

Results

As a result, salmonella contamination in minced meat, sausages a and b were 8%, 3% and 15%, s.aureus contamination 5%, 0% and 12%, b.cereus contamination 11%, 3% and 7%, l.monocytogenes contamination 2.5%, 1% and 1% respectively. the contamination was higher than other seasons during the summer, due to the warm weather, microorganisms were able to more grow and multiply. especially in unpackaged sausages and minced meat, which are placed outside the environment and not kept in hygienic packaging.

Conclusion

In general, the present study showed that contamination of salmonella, s.aureus, b.cereus and l.monocytogenes exist in meat products presented in tabriz marketsØŒ that it has endangering potential for human health. in order to reduce the amount of contamination observed, health principles are essential in all stages of food processing.

Keywords

Microbial total count, meat products, tabriz

Medicinal herbs for improvement of psychoneuroendocrine axis: daily eating to lessen stress-induced hyperglycemia

Majid Anushiravani,[1,*] Zeinab jaberzadeh,[2]

1. Department of Persian Medicine, School of Persain and Complementary Medicine, Mashhad University of Medical Sciences
2. Department of Health Psychology, torbat e jam Branch, Islamic Azad University

Abstract

Introduction

The pathologic effects of stress and anxiety on neuro-endocrine systems and the onset, severity, and prognosis of diabetes are considered obvious medical facts. in addition to the biologic phenomenon of stress-induced hyperglycemia, stress may lead to some maladaptive behaviors like smoking, eating and sleep disorders, and sedentary life style which all can accelerate the various pathologic consequences of diabetes mellitus. many researches showed that emotion regulation and stress reduction methods through biologic interventions, cognitive and behavioral therapies, mindfulness, music therapy, yoga and other alternatives may improve glucose tolerance and also self-care behaviors of diabetic people. these biologic effects take place in a psycho-neuro-endocrine continuum and some organs including limbic system, amygdala, hypothalamus, pituitary, and adrenal take part in this axis.

Methods

The databases from comprehensive books on herbal medicine, and the published articles in pubmed, embase, scopus, medline, cochrane library searched for the herbs with effects on both hyperglycemia/diabetes and stress/anxiety disorders. the findings sorted and seven herbs with some considerations including nativity, cost, availability, and cultural compatibility were chosen.

Results

Using medicinal herbs is one of the favorite biologic interventions to reduce stress and improve the function of psychoneuroendocrine axis. considering the increasing incidence of diabetes mellitus in iran and regarding the phytochemical and clinical evidences, the authors chose seven herbs with both anti-hyperglycemic activity and calming, anxiolytic, sedative, antidepressant, and nervine effects. the authors have a concern to the current socioeconomic situation of iran and therefore the native herbs with high availability, cost-effectiveness, and culturally acceptance were preferred to introduce. the recommended herbs are as follows: 1. portulaca oleracea (purslane) 2. ocimum basilicum (basil) 3. melissa officinalis (lemon balm) 4. dracocephalum moldavica (moldavian dragonhead) 5. lactuca sativa (lettuce) 6. malus pumila(apple) 7. punica granatum(pomegranate)

Conclusion

According to evidences from phytochemistry and phytotherapy studies, these recommended seven herbs are effective on both glucose tolerance and better coping with emotional-mental triggers of stress-induced hyperglycemia. they can be simply consumed in daily regimen as ordinary fruits and vegetables by pre-diabetic and diabetic people with high stress levels. they would achieve more benefits than just lowering the blood glucose by continuous and protocol-based consuming of these herbs.

Keywords

Stress-induced hyperglycemia, diabetes mellitus, psychoneuroendocrinology, phytotherapy

Methylation status of smg1 promoter in multiple myeloma patients

Amirhosein Maali,[1] Mehdi azad,[2,*] Reza kouchaki,[3] Hamid gholipour,[4] Saeid abroun,[5]

1. Department of Medical Biotechnology, Faculty of Medicine, Babol University of Medical Sciences, babol, Iran
2. Faculty of Allied Medicine, Qazvin University of Medical Sciences, Qazvin, Iran
3. Faculty of Allied Medicine, Qazvin University of Medical Sciences, Qazvin, Iran
4. Department of hematology, tarbiat modares University of Medical Sciences, tehran, Iran
5. Department of Hematology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Abstract

Introduction

Multiple myeloma (mm) is the third most common hematological malignancy worldwide after leukemia and lymphoma and involves approximately 15,000 people in the world, per year. mm is characterized by neoplastic plasma cells proliferation in the bone marrow. the â€œmyeloma cellâ€• is a malignant plasma cell that has been released from germ line through centroblastic and centrocytic stages and produces 13,000 to 85,000 monoclonal antibodies, mainly from the igg class under influence of changes in the class of immunoglobulin, somatic hypermutation and para-protein excretion. epigenetic modifications can be observed at any stage in the development of tumor. more than a decade ago, it has been shown that the overall level of genomic methylation in cancer cells has decreased compared to normal tissues. the hypo-methylation starts chromosome instability and oncogenesis. on the contrary, hyper-methylation leads to silencing of tumor suppressors expression. smg1 gene (located in chr.16) that plays a central role in nmd, maintaining the telomeric integrity, protection against tnf-induced apoptosis, the lifespan regulation, embryogenesis, p53 protein activation, and dna damage response (ddr) mechanism. various studies have shown that smg1 acts as a special tumor suppressor gene in hypoxic tumors. in this study, we identified the methylation state of the smg1 promoter in mm patients.

Methods

In this study, 9 mm patients (2 females and 7 males, all were new cases) who referred to shariyati and shahid chamran hospital in tehran, and 4 healthy individuals were evaluated (confirmed by flow-cytometry). the genomic dna was extracted from peripheral blood mononuclear cells (by mini kit of geneall). the purified dna treated by sodium bisulfate (by qiagen epitect bisulfite kit). this step converts un-methylated cytosine to uracil. methylation specific pcr (msp) is performed by epitect msp qiagen kit and two specific primers (methylated specific primer and un-methylated specific primer) which approved bioinfomatically. the products have been analyzed qualitatively by agarose gel electrophoresis.

Results

The methylation statuses of smg1 promoter evaluated as hemi-methylated in multiple myeloma patients. the presence of sharp bands indicates methylated and un-methylated dna, partially. this means the pattern

of methylation of the smg1 gene in mm patients is hemi-methylated. it seems this genotype is associated with incomplete methylation of promoter regions, so it can be assumed that one pair of coupled cpg contains un-methylated c, and the other has 5hmc elements. also, the methylation statuses of smg1 promoter evaluated as hemi-methylated and un-methylated in control individual.

Conclusion

We found that smg1 promoter methylation statuses in mm patients are hemi-methylated compare to hemi- & un-methylated statuses in healthy individuals. so, it can suggest that smg1 have a complicated role in mm pathogenesis, different from its role as a tumor suppressor gene in other cancers. also. we suggest studying more on smg1 expression level and methylation status in the various types of cancers. although the methylation status of smg1 cpg island has not been studied in multiple myeloma patients so far, but there are reports of the hyper-methylation status of smg1 cpg island in other cancer (such as head and neck cancer). given these findings, it looks that smg1 is thought to be a tumor suppressor gene that its expression has been reduced in some types of cancers. our study shows that smg1 expression level must be increase in mm relatively due to finding some individuals with un-methylated status in the promoter of smg1. hemi-however, more evidence is needed to prove this claim.

Keywords

Methylation, smg1, methylation-specific pcr

Mhc class i & ii restricted htert derived peptides in cancer immunotherapy

Amir Mohammadi,[1] Jamshid gholizadeh navashenaq2,[2] Arezoo gowhari shabgah2,[3] Reza falak,[4] Abasalt hosseinzadeh colagar,[5] gholam ali kardar,[6,*]

1. 1 Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran. 2 Immunology, Asthma & Allergy Research Institute, Tehran University of Medical Sciences, Tehran, Iran
2. Immunology, Asthma & Allergy Research Institute, Tehran University of Medical Sciences, Tehran, Iran.
3. Immunology, Asthma & Allergy Research Institute, Tehran University of Medical Sciences, Tehran, Iran.
4. Department of Immunology, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
5. Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran.
6. Immunology, Asthma & Allergy Research Institute, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Breast cancer has the highest incidence rate in women in the world. telomerase is the most common tumor associated antigen (taa) and its activity increased in more than 90% of cancers, thus, its targeting can be used as a cancer control

Methods

In this study as a continuing in vitro studies, we re-analyzed htert selected peptides against mice mhc with iedb and epimhc database. about 5 Ã— 105 mouse breast cancer 4t1 cells was washed and suspended in 100 Î¼l normal saline and s.c injected to mammary fat pat of balb/c mice and then start to tumor measurement 2 times a week. about 100 ug klh conjugated peptides accompany incomplete freundâ€²s adjuvant were injected s.c in days 10th and 20th after cancer cells inoculation.

Results

The analysis of peptides shown they are can binding to mice mhc i and ii respectively but score of them is significantly lower than their interaction with human hla

Conclusion

The results were shown contemporary mhc restricted peptide as a vaccine, can inhibit tumor growth and also increase overall survival of vaccinated mice compare untreated group.

Keywords

Htert, mhc, peptide-based vaccine, cancer immunotherapy

Micrornas as a molecular diagnostic tool for recurrent implantation failure

Scarlet Babian,[1] Nassim ghorbanmehr,[2,*] Saghar salehpour,[3] Leila nazari,[4]

1. Department of Biotechnology, Faculty of Biological Sciences, Alzahra University, Tehran, Iran
2. Department of Biotechnology, Faculty of Biological Sciences, Alzahra University, Tehran, Iran
3. Department of Obstetrics and Gynecology, Infertility and Reproductive Health Research Center , Shahid Beheshti University of Medical Sciences, Tehran, Iran
4. Department of Obstetrics and Gynecology, Preventive Gynecology Research Center, Shahid Beheshti University of medical Sciences, Tehran, Iran

Abstract

Introduction

Recurrent implantation failure is refers to the condition that a woman fails to achieve clinical pregnancy after at least three cycles of embryo transfer. successful implantation requires the transfer of a good quality embryo to a receptive endometrium. a high quality embryo is in turn, the result of fertilization of a mature oocyte by a viable and functional sperm. in recent years, the necessity of more precise and clinically useful tests for prediction of the quality of sperm, egg and the receptivity of endometrium is demonstrated. without robust and predictive tests the therapeutic approach has gain limited outcome. recently micrornas are considered as significant and specific biomarkers for diagnosis of sperm and oocyte quality, ovarian reserve and successful implantation. in addition the researchers proved that circulating micrornas in plasma, serum and follicular fluid have useful information about ovarian function which is important in fertility and ivf results.

Methods

We have studied fifty articles about micrornas as gene regulators in endometrial receptivity, implantation and healthy embryonic development published from 2008 to 2017.

Results

The studies show that mir-320a, mir-132 and mir-29a are related to oocyte quality. mir-27b, mir-34c and mir-21 are related to sperm quality. also there are some important micrornas which are associated with endometrial receptivity and implantation such as mir-494-3p.

Conclusion

This survey shows that micrornas can serve as important biomarkers for molecular diagnosis of infertility specially in rif cases and they may be used as a tool for prediction of ivf treatment outcomes in the future.

Keywords

Infertility, recurrent implantation failure, micrornas, biomarkers

Micrornas as novel biomarkers for the diagnosis of lung cancer

Pollet Bet benyamin,[1] Mehdi norouzi,[2] Saman yasamineh,[3,*]

1. Undergraduate cellular and molecular Biology, Institute of Higher Education Rab-Rashid, Tabriz, Iran
2. Undergraduate Genetic, Institute of Higher Education Rab-Rashid, Tabriz, Iran
3. Undergraduate Biotechnology, Institute of Higher Education Rab-Rashid, Tabriz, Iran

Abstract

Introduction

Lung cancer is one of the most common types of cancers, being divided into nsclc and sclc classes, histologically. cytology, chest radiographs and computed tomography are using in the diagnosis of lung cancer .these diagnosis methods cannot respond of lung cancer due to less precision and side effects. micrornas (mirnas) are a class of non-coding rna have 19 to 25 nucleotides. mirnas are key regulators of cancer by increasing and decreasing the expression of oncogene and tumour suppressor genes. mirnas have different function on de lung cancer inhibiting cell growth and inducing apoptosis in lung cancer cells. circulating mirnas are circulated in various body fluid they are good biomarkers for lung cancer. the expression level of mirnas can be identified by qrt-pcr, microarray, northern blotting, and nanoparticles. level of mirnas in samples such as mir-145-5p, mir-21-5p, mir-221-3p, mir-222-5p, mir-20a-5p, mir-146a-5p, mir-223-3, mir-21-5p, mir-141- 3p, mir-145-5p, mir-20a-5p, mir-155-5p, mir-223-3p, and â€¦ showed lung cancer types and stage of this cancer.

Methods

In this review we used online database such as mirbase, ncbi (pubmed), and google scholar. this research is the result of a survey of more than 190 articles of which 75 articles are directly used in this study.

Results

Mirna detection in lung cancer patients has become the core of different research. mirnas-based tests can be used for early clinical diagnosis and prediction of clinical consequences of lung cancer. studying the role of mirnas in lung cancer development and its relationship with diagnostic and prognostic parameters might help to improve the sensitivity of diagnosis and the efficacy of lung cancer treatment. detection of mirnas are very suitable, high sensitive, selective, rapid, and inexpensive, and so mirna as potential biomarkers for lung cancer. to this end, the progress of a multitude of detection method for mirna profiling analysis has been necessary.

Conclusion

In this review we focused on characterizing mirna as potential biomarkers for lung cancer. these paper can possible form the basis for the progress of a standardized diagnostic test that can be used for early diagnosis of lung cancer equally well.

Keywords

Lung cancer, microrna, circulating mirnas, diagnosis

Micrornas related to polycystic ovary syndrome: a scientific review

Fatemeh Moradi,[1] Behnaz enjezab,[2] Akram ghadiri-anari,[3,*]

1. Student Research Committee, Shahid Sadoughi University of Medical Science
2. Research Center for Nursing and Midwifery Care ,Nursing and Midwifery School, Department of Midwifery, Shahid Sadoughi University of Medical Science
3. Diabetes Research Center, Shahid Sadoughi University of Medical Sciences

Abstract

Introduction

Polycystic ovary syndrome (pcos) is a multifactorial disorder with various genetic, metabolic, endocrine and environmental abnormalities with an estimated prevalence of 8â€“18% depending on diagnostic criteria. the characteristics of pcos include polycystic ovaries, hyperandrogenism, irregular menstrual cycles, and metabolic abnormalities such as hyperinsulinemia and obesity. there is increasing evidence suggesting that pcos affects the whole life of a woman, can begin in utero in genetically predisposed subjects, it manifests clinically at puberty, continues during the reproductive years. in recent years, micrornas (mirnas) have emerged as important regulators of gene expression involved in various cellular functions related to metabolism, inflammation, and reproduction. altered mirna expression has been associated with various diseases such as diabetes, insulin resistance, inï¬,ammation, and cancer. several mirnas have been identiï¬• ed in pcos. the aim of this study was review of micrornas related to polycystic ovary syndrome.

Methods

For this purpose,55 initial articles obtained and finally 27 articles from 2014 to 2018 were reviewed with the keywords of polycystic ovary syndrome, micrornas and epigenetics in pubmed, google scholar, wiley online library, springer link and elsevier.

Results

in the majority of studies, kind of method was descriptive- cross-sectional study, 5 study was interventional- in vivo and in vitro and one of them was review study. all papers had described different micrornas in pcos, that according to, reduced levels and discordance between the expressions of mir-23a/b were observed in the women with pcos and mir-23a/b were affected from testosterone and bmi, reversely. the expression of mir-93/25 is related to pcos and insulin resistance. free testosterone and free androgen index were positively correlated with expression of mir-93 and mir-21. speciï¬• c follicular ï¬,uid mirnas are associated with phenotypical traits of pcos. the mir-518f-3p was diï¬€erentially expressed in hyperandrogenic pcos patients andmir-224 differentially expressed in follicular fluid too. new data provided evidence for a functional role of mir-27a-3p in the gcs dysfunction that occurs in patients with pcos. the mir-146a rs2910164 and mir-222 rs2858060 polymorphisms are associated with an increased risk of pcos. the mir-16 promoted ovarian gcs proliferation and inhibited apoptosis through directly

targeting pdcd4 in pcos. the expression of mir-9, mir-18b, mir-30c, mir-135a, mir-146a and mir-222 were significantly increased in pcos patients and the expression of mir-19b, mir-93 and mir-132 were significantly decreased in blastocysts of pcos patients. the expression of mir-27b and mir-103 and circulating mirna-93 and mirna-223, mir-21 expression in whole blood and serum expression of mir-155 were higher and decreased levels of mir-24-3p, -29a, -151-3p, and -574-3p was seen in pcos patients. themir-93 and serum mirna-6767-5p may be a novel candidate as a molecular biomarker in the diagnosis of pcos. the mirnas mir-92a, mir-92b, mir-145 and mir-182 may be involved in the pathogenesis of pcos. overexpression of mirâ€‘19b may be a potential therapeutic approach for pcos. in addition, expression of mir-324-3p in the ovary of pcos rats was decreased signiï¬• cantly andmirâ€‘33bâ€‘5p was overexpressed in the ovarian tissues of insulin resistant pcos rats, and thus may play an important role in the development of insulin resistance in pcos patients.

Conclusion

Several mirnas have been identiï¬• ed in pcos. our understanding of mirnas, particularly in relation to pcos, is currently at a very early stage, and additional studies will yield important insight into the molecular mechanisms behind this complex and heterogenic syndrome. studies have shown that circulating mirnas are present in whole blood, serum, plasma and the follicular ï¬‚uid of pcos patients and that these might serve as potential biomarkers and a new approach for the diagnosis of pcos.

Keywords

Polycystic ovary syndrome, micrornas, epigenetics

Mimotope design against vegf in order to inhibit angiogenesis

Elmira Karami,[1] Fatemeh kazemi lomedasht,[2,*] Shiva irani,[3]

1. Department of Specialized biology, Science and Research branch, Islamic Azad University, Tehran, Iran
2. Biotechnology Research Center, Venom & Biotherapeutics Molecules Lab., Pasteur Institute of Iran, Tehran, Iran
3. Department of Specialized biology, Science and Research branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

In the last decade, vegf is considered as an important therapeutic approach in cancer treatment. vegf nano bodies are the new class of antibodies with numerous advantages compared with its older types which enables us to produce smaller and more cost-effective drugs if we can generate peptides derived from these nano bodies with the same functionality. in this study we discuss about designing a vegf nano body-derivative peptide using in silico analysis. it is assumed that the determining region of complement form of nano body is large so that not only it can connect to vegf growth factor but also it can perfectly connect to the nano body.

Methods

A computer analysis was performed for anti-vegf nano bodies and different cdrs using swiss-pdb software in order to predict their third structure. molecular docking was performed for predicted structures using hex software.

Results

: in silico results revealed that cdr3 region of vegf molecule act as a drug-mimicking peptide that can be used instead of complete nano body molecule.

Conclusion

The derivative peptide from vegf molecule can reduce nano body synthesis related costs and can be a suitable substitute for vegf nano body. however, this requires further studies and investigations.

Keywords

Vegf,insilico, docking,peptidomimetic

Mir-217 as a biomarker candidate in iranian breast cancer patients

Faezeh Majidi,[1,*] Mahdieh salimi,[2] Hossein mozdarani ,[3] Iman salahshourifar ,[4]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Medical Genetics, Institute of Medical Biotechnology, National Institute of Genetic Engineering and Biotechnology (NIGEB), Tehran, Iran
3. Department of Medical Genetics, Tarbiat Modares University, Tehran, Iran
4. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Despite the advances in diagnosis and new treatments such as targeted therapies, breast cancer is still the most common cause of cancer death in women. finding biomarkers related to breast cancer in different aspects such as early detection, prognosis, treatment response, etc. has huge importance. micrornas play variety of significant roles in tumorigenesis, tumor progression and metastasis in breast cancer.

Methods

. in the present study the mir-217 expression was investigated as a potential breast cancer related biomarker in 45 tumor and normal adjacent breast tissues using micro rna extraction and cdna synthesis followed by real- time rt-pcr. the mrna level of dach1 were investigated by real time pcr and the dual-luciferase reporter system was used to determine the direct interaction between mir-217 and dach1. the data was statically analyzed by student t-test using spss software.

Results

Our data showed that compared to that in normal breast samples, the expression of mir-217 was significantly upregulated in breast cancer tissues. moreover, the expression of mir-217 was negatively correlated with the expression of dach1. the results of dual-luciferase reporter assay demonstrated that mir-217 directly targets and inhibits the transcriptive activity of dach1.

Conclusion

In conclusion we found that mir-217 was commonly overexpressed in breast cancer. the dach1 (the cell-fate determination factor) was identified as a target of mir-217. further analysis is needed to distinguish mir-217 association with pathological and clinical characteristics.

Keywords

Breast cancer, mir-217, biomarker, epigenetics

Modulation of mirna155 and mirna133 by bone marrow mesenchymal stem cells in a rat model of asthma: intratracheal versus intravenous administration

Mahdi Ahmadi,[1,*]

1. Department of Physiology, Faculty of Medicine, Tabriz University of Medical Sciences

Abstract

Introduction

Owning immune-modulatory features, it makes mscs eligible to be used broadly for ameliorating chronic lung diseases such as asthma. due to specific anatomical and histological characteristics, lungs are good candidate for mscs administration, certainly either by local or systemic routes. the overall goal of current study was to compare the effects of msc after either local or systemic administration on the modulation of mirna155 and mirna133 in ova-inducted asthmatic male rats.

Methods

36 male rats, weighing between 200-250 g, were enrolled to the current study. four healthy rats were randomly used for extraction of rat bone marrow-derived mscs (rbmmscs). the remaining 32 animals were assigned into four experimental groups (n = 8 per group); control rats (c group), asthmatic rats (a group), asthmatic rats received intravenously 2 Ã— 106 mscs (acv group) and asthmatic rats received intratracheally 2 Ã— 106 mscs (act group). in ovalbumin (ova)-sensitized groups, rats were exposed to ova for a period of 32 Â± 1 days. in control group, rats received saline instead of ova. two weeks post treatment with stem cells (day 48); the expression levels of mirna133 and mirna155 as well as histopathological changes were evaluated.

Results

Our pathological results revealed that lesions observed in the lung tissue of asthmatic groups were significantly higher than the control rats ($p<0.001$ to $p<0.05$), confirming the rat model of asthma was constructed efficaciously. in addition, a significant reduction in the expression of mirna133, coinÂ¬cided with a remarkable increase in the expression of mirna155 were seen in all sensitized groups as compared with healthy rats. the systemic and direct injection of mscs, decreased pathological injures in ova-sensitized rats by the modulation of expression levels of mirna133 and mirna155 in lung tissues of ova-sensitized rats ($p<0.001$ to $p<0.05$), although these changes were more evident in local route.

Conclusion

The results of this study showed systemic and direct injection of mscs could be effective in alleviation of asthma pathophysiology, possibly via the modulation of mirna133 and mirna155. however, the regenerative responses observed post local administrations of mscs were higher than systemic route.

Keywords

Asthma, msc, intravenously, intratracheally

Molecular characterization of polymorphism among pseudomonas aeruginosa strains isolated from burn patients wounds in shahid motahhari hospital

Parastoo Parsa,[1] Mohammad ali bahar,[2,*] Nour amirmozafari,[3] Bahareh nowruzi,[4]

1. Department of Biology, School of Basic Science, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Burn Research Center, Department of Immunology and Biology, Iran University of Medical Sciences, Tehran, Iran
3. Microbiology Department, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
4. Department of Biology, School of Basic Science, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Pseudomonas aeruginosa is one of the most important causes of nosocomial infections. burn injuries constitute a major health concern with respect to morbidity and mortality as well as cost of management particularly in developing countries. due to the increased resistance of antibiotics, the aim of this study is to isolate pseudomonas aeruginosa strains from burn patientâ€™s wounds by analyzing the antibiotic susceptibility and genetic profile. in this survey, we are going to find a repeatability relationship between the nucleotide pattern and antibiotic susceptibility using pcr-based rapd method.

Methods

In this research, 105 isolates of pseudomonas aeruginosa were collected from a major burn center in tehran, iran. the isolates were identified using standard biochemical tests and were examined by applying the disk diffusion and mic method to find the patterns of sensitivity and their genetic relationship was revealed through rapd-pcr technique with the help of primers 272 and 208.

Results

According to the antibiogram results, most of the isolates were resistant to 3 or more antibiotics tested and the most sensitivity was related to the colistin antibiotic. rapd-pcr method showed a high polymorphism among pseudomonas aeruginosa isolates in tehran. there was no significant correlation between the genotype groups and antibiotic susceptibility profiles.

Conclusion

We need to assess the pattern of resistance to pathogenic organisms, and identify multi-drug resistant organisms. currently, colistin antibiotic is the most suitable treatment option for burned patients. rapd-pcr is a genotyping method with a high efficiency for typifying and categorizing different isolates of mdr pseudomonas aeruginosa.

Keywords

Pseudomonas aeruginosa, rapd-pcr, nosocomial infections, burn patients

Molecular epidemiology, genotyping of respiratory syncytial virus (rsv) strains.

Mohammad hesam Sohani,[1] Hossein keyvani,[2,*] Parvaneh saffarian,[3]

1. Department of Microbiology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Virology, Iran University of Medical Sciences, Tehran, Iran
3. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Human respiratory syncytial virus (hrsv) is the leading cause of lower respiratory tract disease in children and the most common cause of bronchitis in the world. the host defense mechanisms against hrsv infection are a combination of intrinsic and acquired immune responses. in recent years, a number of respiratory viruses resulted in genetic changes and mutations, and subsequently led to severe illnesses. a high mortality rate has been reported in some countries, imposing high expenses to health care system. altogether, these facts highlight the necessity of performing case studies on molecular epidemiology and determination of respiratory syncytial virus (rsv) strains in patients with respiratory infections.

Methods

In this study, the rate of hrsv infection was investigated in military garrison. - the populations of patients infected with viruses types a and b were assessed with pcr - blood groups of individuals and virus types were monitered as the determining factors - the ages of infected individuals were recorded - the symptoms were investigated in terms of virus types

Results

Pcr products were evaluated in terms of sequence. research findings indicated that most of the infected patients were aged between 18 and 23 years old and had blood type a. in addition, among infected patients, number of patients infected with virus type a was much more than those infected with virus type b, and is the most common symptom between patients with sore throat.

Conclusion

According to the findings of this study, the main cause of respiratory infections was the presence rsv and the most commonly reported contamination was rsv type a.

Keywords

Human respiratory syncytial virus (hrsv), immune response, pcr, epidemiology

Molecular identiï¬• cation and phylogenetic analysis of toxic natural products synthetase genes by a filamentous cyanobacterium of the genus nostoc sp. isolated from fresh water of golestan province

Fahime Bakhtiary,[1,*] Farzane hosseini,[2] Bahare norowzi,[3]

Abstract

Introduction

Cyanobacteria are well known for their production of a multitude of highly toxic substances. the genus nostoc sp. is regarded as good candidates for producing biologically active secondary metabolites, which are highly toxic to humans and other animals. discovery of several dead dogs, mice, ducks and fish around fresh water of golestan province, prompted us to study the toxic compounds in a strain of nostoc. the aim of this paper is to describe the role of horizontal gene transfer in the evolutionary history of toxic natural products

Methods

in this study, nostoc sp. was assessed in phylogenetic and evolutionary perspectives. the structural gene 16s ribosomal rna (rrna), functional genes nif d, psba, nif h, rpoc1, pc-igs, rbcl and toxic genes mcy g, d, e, nos e, nos f were selected as molecular chronometers in this study.

Results

we hypothesized that horizontal gene transfer may play a role in the distribution of toxic biosynthetic genes within the genus nostoc sp.

Conclusion

these results suggest that toxic bioactive compounds induced liver damage and may have significantly contributed to the death of the dog. this case is thus the first reported incident of potential microcystin intoxication in a dog in iran.

Keywords

phylogenetic analysis, toxic natural products, nostoc sp.

Molecular mechanism underlying neuroprotective effect of central administration of recombinant resistin in mouse model of stroke

Sedigheh Behrouzifar,[1,*] Abedin vakili,[2] Mehdi barati,[3]

1. Research Center and Department of Physiology, Faculty of Medicine, Semnan University of Medical Sciences, Semnan, Iran
2. Research Center and Department of Physiology, Faculty of Medicine, Semnan University of Medical Sciences, Semnan, Iran
3. Cancer Research Center, Semnan University of Medical Sciences, Semnan, Iran

Abstract

Introduction

Our recent research showed that resistin has a neuroprotective effect against stroke-induced injury through suppressing apoptosis and oxidative stress. however, the molecular mechanism of neuroprotection of resistin is unclear. this work was designed to examine the effect of mouse recombinant resistin on mrna expression of tumor necrosis factor-Î± (tnf-Î±), interleukin-1Î² (il-1Î²), interleukin-10 (il-10), transforming growth factor-Î²1 (tgf- Î²1), and heat shock protein-70 (hsp-70) in a mouse model of stroke.

Methods

Transient focal cerebral ischemia was induced by the middle cerebral artery occlusion (mcao) in mice. tnf-Î±, il-1Î², il-10, tgf-Î²1 and hsp-70 mrna were detected at sham (0 h), 3 h, 6 h, 12 h and 24 h after mcao using real-time qrt-pcr method. moreover, animals were treated with resistin at the dose of 400 ng/mouse at the commencement of mcao, and mrna expression of the cytokines and hsp-70 was measured 24 h after mcao.

Results

Tumor necrosis factor-Î± and il-1Î² mrna expression markedly increased at 12-h time point and then returned to the basal level at 24 h after mcao; but hsp-70 mrna expression increased at 24-h time point. furthermore, resistin (400 ng/mouse) significantly increased tgf-Î²1 and il-10 and decreased hsp-70 gene expression at 24 h after mcao.

Conclusion

Our findings revealed that a molecular mechanism of attenuating ischemic damage by resistin administration probably is increased mrna expression of anti-inflammatory cytokines. however, applying resistin in the clinical settings for the treatment of stroke deserves further researches in the future.

Keywords

Resistin, cerebral ischemia, gene expression, cytokines, heat shock protein-70

Monoclonal antibodies production against 40kda band antigen of hydatid cyst and their effects on breast cancer cells

Seyedeh maryam Sharafi,[1,*] Hossein yousofi,[2]

1. Environment Research Center, Research Institute for Primordial Prevention of NonCommunicable disease, Isfahan University of Medical Sciences, Isfahan, Iran
2. Department of Parasitology and Mycology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Introduction

Hydatid cyst is the larval stage of the tapeworm echinococcus granulosus. hydatid cyst fluid, cyst membrane and protoscolices, contain a complex mixture of antigens that can induce immune responses in the host. anti-cancer properties of protoscolices and hydatid cyst fluid has been shown. in order to identify antigens of hydatid cyst fluid that have anti-cancer effect, in this study production of monoclonal antibodies against one of the hydatid cyst fluid band (40kda) that has cross reaction with sera of patients with breast cancer has been investigated.

Methods

In this experimental study, 40kda band of hydatid cyst fluid was used as antigen. a group of mice were immunized with this antigen, and then their spleen cells were extracted and fused with sp2 cells. monoclonal antibodies production was checked in wells using elisa and western blotting. the reaction of the produced monoclonal antibodies with breast cancer cells was tested using flow cytometry method. finally effect of the monoclonal antibodies on growth of breast cancer cells was investigated in vitro.

Results

The results of this study showed that monoclonal antibodies antibody against 40kda were detected in several wells. the produced monoclonal antibodies reacted with the surface of breast cancer cells. however, they had no significant effect on growth of breast cancer cells in culture medium

Conclusion

Produced monoclonal antibodies against hydatid cyst fluid 40kda band reacted with the surface of breast cancer cells but had no significant effect on growth of these cells.

Keywords

Monoclonal antibodies, hydatid cyst fluid antigens, anti-tumor effect

Morphological comparison of ectopic and eutopic endometriotic stromal cells in culture

Nastaran Miyanmahaleh,[1] Zeynab borandegi,[2] Maryam shahhoseini,[3,*] Parvaneh afsharian,[4] Ashraf moini,[5]

1. 1. Department of Molecular genetics, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and Culture, ACECR, Tehran, Iran. 2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
2. 1. Department of Molecular genetics, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and Culture, ACECR, Tehran, Iran. 2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
3. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran , Iran
4. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
5. 1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran. 2. Department of Obstetrics and Gynecology, Arash Womens Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction

Endometriosis is a benign disease which is caused by presence of endometrial tissue including glandular and stromal cells in the extra-uterine environment. it has a prevalence of 10â€“15% among women of reproductive age and may cause severe chronic pelvic pain and infertility. the effects of endometriosis on womens quality of life can explain the importance of in-vitro study of this disease. it is known that there are differences between many biological features of eutopic and ectopic endometrial tissues such as invasive and adhesive behavior, growth, gene expression profile and epigenetics. in this study we compared microscopic phenotype, proliferation rate and the surface area of eutopic endometrial stromal cells (euescs) with ectopic endometrial stromal cells (eescs).

Methods

Samples were obtained from 2 patients with ovarian endometriosis (endometrioma) during the proliferative phase of the menstrual cycle at arash womens hospital. eescs and euescs were isolated and cultured in phenol red free dulbeccos modified eagles medium (dmem) with 10% fetal bovine serum (fbs). the cells were passaged to passage 3 in which the fluorescence activated cell sorting (facs) analysis showed more than 99% purity of stromal cells. then the morphology and the proliferation rate was assessed by an inverted microscope.

Results

Eescs were larger in size compared to euescs morphology and had lower proliferation rate than euescs. in addition, the cell density of eescs were significantly lower than euescs in equal culture conditions and seeding density at confluency of 90% in 6 well plates. the estimated surface area that each of the ectopic stromal cells occupied (48Ã— 10 -4 mm2) was about 3 times more than the eutopic stromal cells (14Ã— 10 -4 mm2).

Conclusion

It was concluded that the migration of the endometrial cells to the extra-uterine environment (ovaries), higher proliferation rate and higher cell density of euescs in culture may be the responsible elements for the differences between euescs and eescs morphologies in endometriosis.

Keywords

Endometriosis, stromal cells, eutopic, ectopic, morphology

Movements control system and central pattern generator: a review

Shiva Anvari poor,[1] zainab arvaneh ,[2] Mohamad moin norouzjam,[3,*]

1. Food and Drug administration ,Department of Medical Engineering, Islamic Azad University, Science and Research Branch, Tehran, Iran
2. Food and Drug Administration , Ilam University of Medical Sciences ,Ilam , Iran
3. Department of Medical Engineering, Islamic Azad University, Science and Research Branch, Tehran, Iran

Abstract

Introduction

Nature always represents the best modes of movement for creatures. physiological studies of the nerves of the living organism have shown that the basic and repetitive movements of the body with neural networks are created as a central pattern generator

Methods

. researchers have shown the role of spinal cord in regulating movement. reflex arc or stimulus response model for understanding spinal cord activity. so that an external stimulation causes a predictable move response

Results

The central generator of the moving pattern is the neuronal circuits seen both in the vertebrates and in the mollusks and they can produce periodic patterns without periodic inputs

Conclusion

These circuits are the agent of basic routine movements such as chewing, breathing, digestion, and also the cornerstone of moving neuronal circuits, such as walking, swimming, flying, crawling, etc.

Keywords

Central pattern generator, neural networks, movements control

Mrna encoding antibody as potential approach for cancer immunotherapy

Mona Shafaghi,[1,*] Aliakbar shabani ,[2]

1. Dept. & Center for Biotechnology Research, Semnan University of Medical Sciences, Semnan, Iran. Students Research Committe, Semnan University of Medical Sciences, Semnan, Iran.
2. Dept. & Center for Biotechnology Research, Semnan University of Medical Sciences, Semnan, Iran.

Abstract

Introduction

Cancer immunotherapy is an exciting technique which stimulates the body to attack tumor cells. one aspect of this type of cancer treatment is the antibody-based therapies. conventional approaches of antibody immunotherapy have limitations such as high production and storage costs, and the requirement for repeated dosing due to short in vivo half-life. a novel potential strategy for antibody-based immunotherapy is synthetic mrna that encodes a therapeutic antibody. this review presents the latest developments of mrna technology in the field of antibody production for cancer immunotherapy, as well as discussing challenges and future prospects of this attractive alternative approach.

Methods

This is a review essay.

Results

Mrna therapeutics hold promise to be a controllable and safe alternative to dna-based approaches, as well as simple and cost-effective alternative to recombinant antibody therapies. in vitro transcribed (ivt) mrna encoding antibody can direct in vivo expression of high levels of functional antibody. repeated intravenous administration of ivt mrna at a low dose has shown clear and strong anti-tumor effects. the serum half-life of mrna can be regulated by various modifications and delivery systems. the flexibility of mrna technology has shown by the expression of various antibodies and antibody formats. some antibody formats bear manufacturing challenges and short in vivo half-life, and mrna technology can circumvent these limitations.

Conclusion

Formulated mrnas can successfully produce efficient therapeutic antibodies in the host tissues and can act as a novel strategy for the development of cancer immunotherapy.

Keywords

Antibody; messenger rna; cancer immunotherapy.

Mrna-based passive vaccination against infectious diseases

Mona Shafaghi,[1,*] Aliakbar shabani ,[2]

1. Dept. & Center for Biotechnology Research, Semnan University of Medical Sciences, Semnan, Iran. Students Research Committe, Semnan University of Medical Sciences, Semnan, Iran.
2. Dept. & Center for Biotechnology Research, Semnan University of Medical Sciences, Semnan, Iran.

Abstract

Introduction

Passive immunization provides immune-mediated protection via delivery of antibodies or antibody-encoding genes and offers an immediate action. protein-based therapeutic approaches bear limitations such as the high cost of production and storage. dna-based therapeutics are hindered by the risk of genomic integration and immunogenicity of viral vectors. as an attractive alternative to the traditional approaches, exogenous mrna encoding antibody can quickly direct high levels of in vivo expression of functional antibody. this review presents the current state of mrna technology in the field of antibody production for passive vaccination against pathogens, as well as discussing the future perspectives and challenges of this alternative approach.

Methods

This is a review essay.

Results

Recent reports have demonstrated that injectable antibody-encoding mrna can use for in vivo production of protective antibodies against infectious agents and toxins. the in vivo half-life of mrnas can be regulated by applying various modifications and delivery methods. mrna therapeutics offer a safe, simple and cost-effective alternative to dna-based approaches and recombinant antibody therapies. flexibility of mrna technology provides the possibility of expression of different antibody formats against diverse biological threats.

Conclusion

These achievements suggest the utility of formulated mrna as a potential novel technology for passive vaccination.

Keywords

Antibody; messenger rna; passive immunization

Multi-targeted chimeric antigen receptor (car) t cell therapies as a new hope against glioblastoma; a systematic review

Abdolreza Esmaeilzadeh,[1] abdolreza esmaeilzadeh,[2,*]

1. School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran
2. Department of Immunology and Cancer Gene Therapy Research Center (CGRC), Zanjan University of Medical Sciences, Zanjan, Iran

Abstract

Introduction

Glioblastoma is the most invasive form of primary brain tumor with poor prognosis of about 12 to 15 months. conventional treatments including aggressive surgery, chemotherapy, and radiotherapy are accompanied by limited efficacy and multiple side effects. also, the immunosuppressive status of the glioblastoma promotes the immune evasion of this approach and leads to resistance of the tumor to treatment. thus, there is an urgent need for the development of novel treatment methods to fight glioblastoma. immunotherapy has recently been in the spotlight for glioblastoma treatment. adoptive cell therapy (act), manipulating and recruiting the lymphocytes and mononuclear cells of the patientâ€™s blood, is one of the latest approaches in immunotherapy of glioblastoma that has recently shown promising results. chimeric antigen receptor (car) t cells are genetically engineered t cells that can be redirected against specific targets and exert their anti-tumor function after binding to their target

Methods

Pubmed, scopus, google scholar, elsevier, and embace were searched in english with the keywords: glioblastoma, immunotherapy, chimeric antigen receptor, and multi-target therapy from 2014 to october 2018. 20 articles were found based on our inclusion criteria, and 10 articles were selected and included in our study based on exclusion criteria

Results

Multiple studies have shown the safety and efficacy of car t cell therapies against glioblastoma; however, off-tumor toxicity and antigen heterogeneity still remain as the most important barriers. glioblastoma cells exhibit distinct levels of antigen expression. also, different sections of the tumor highly vary in the type of antigen they express. another obstacle that limits the efficacy of car t cell therapy is the antigen escape/loss after treatment. thus, it seems that targeting glioblastoma using multiple antigens could pave the way to improved efficacy and clinical outcome against this fatal brain cancer by overcoming the antigen heterogeneity, escape, and loss. this could also increase the anti-tumor activity of car t cells. to achieve this, novel strategies including dual and tandem cars have been developed.

Conclusion

Multi-targeted therapies have recently achieved much attention in immunotherapy of multiple diseases including glioblastoma. in this review, we aim to discuss the antigen expression profile and novel approaches of multi-targeted therapies of glioblastoma using car t cells. we would also provide novel suggestions for multi-targeted treatment of glioblastoma using car t cell therapy.

Keywords

Glioblastoma, immunotherapy, chimeric antigen receptor, multi-target therapy

Multiple antibiotic resistance patterns of the most common isolates from different form of meat

Maryam Behboudipour,[1] Nima bahador,[2,*]

1. Department of microbiology, College of Science, Shiraz Branch, Islamic Azad university, Shiraz, Iran
2. Department of microbiology, College of Science, Shiraz Branch, Islamic Azad university, Shiraz, Iran

Abstract

Introduction

The extensive use of antibiotics in the breeding of food-producing animals has led to an increase in drug-resistant pathogens. although these pathogens could be transmitted to humans in different ways, therefore, identification and determination of their antibiotic pattern could be considered as a good solution. in this regard, the study tried to isolate common pathogenic bacteria from different types of meat and then evaluate their antibiotic susceptibility.

Methods

In this research, 50 meat samples including: whole meat, minced meat and fish were purchased from different areas of shiraz city. the samples were transferred to the lab and cultivated in nutrient broth as well as blood agar. then the isolates were purified and the most common isolates identified using gram staining, catalase, oxidase, growth ontsi and imvic tests. furthermore, antibiotic pattern was evaluated using kirby-baure method according to clsi 2017 standard versus 16 antibiotics and the data were analyzed using anova- duncan statistical tests. finally the most common isolates were identified by molecular technique.

Results

Although different types of bacteria were isolated from meats and they were identified using biochemical tests and confirmed using molecular technique as hafnia alvei, enterobacter cloacae, escherichia coli and aeromonas salmonicida, the most common isolates was hafnia alvei. furthermore, the isolates showed different antibiotic resistance pattern and according to the results they were considered as multi drug resistant bacterium. statistical analysis carried out revealed not significant differences in respect to the isolates and antibiotics.

Conclusion

In general, the results of this study showed that among common species hafnia alvei with (50%) frequency was the most common isolates with multi drug resistance.

Keywords

Antibiotic resistance, meat, hafnia alvei

Multiplex cancer cell imaging with dna-paint (review article)

Nasrin Mohajeri,[1] Mohammad pourhassan moghaddam,[2] Abolfazl akbarzadeh,[3] Nosratollah zarghami,[4,*]

1. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
2. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
3. Department of Medical Nanotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences
4. Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences

Abstract

Introduction

Super-resolution fluorescence microscopy is the main challenge in biological and biomedical enquiries. dna points accumulation for imaging in nanoscale topography (dna-paint) allows researchers to detect a large number of distinct target agents. dna-paint provides an excellent super-resolution imaging method that attains less than 10 nm spatial resolution in vitro and in situ using dna structure.

Methods

Dna origami formation was carried out in a one-pot reaction containing scaffold standard. dna paint docking strands need folding buffer with suitable ion concentration. for cell immunostaining used common cell line such as hela cell. to intracellular structure imaging should be used fluorescence microscopy with perfect focus system. transmission electron microscopy (tem) and atomic force microscopy were essential for supplementary studies. super-resolution data processing were reconstructed using fiducial-based, spot-finding and 2d-gaussian fitting algorithms.

Results

Researchers found that the spatial resolution of dna-paint depends on enhanced drift correction and advanced localization precision. multiplexed cellular imaging with dna-paint labeled protein targets using antibodies conjugated with dna docking strands. transient binding of dye-labeled dna strands to their complementary target sequence (docking site) attached to a molecule of interest. the transient binding of imager strands is detected as blinking.

Conclusion

Dna-paint provide a simple, easy and powerful method for highly super-resolution imaging. imaging groups researchers anticipate this method will become a standard and promising strategy for studying

complex bimolecular systems. we can use this method in multiplex detection of the cancer cell with high resolution. although the only limitation is the orthogonality of dna-paint sequences.

Keywords

Dna-paint multiplex imaging

Nano particles and pharmaceuticals

Sina Mansoori,[1,*]

1. institute for advanced studies in basic sciences Zanjan

Abstract

Introduction

The standard pharmaceutical system actually follows two components. the size of the drug and next to it is the impact of the efficiency of the drug in the body. some of the most important problems in treating cancer are in fact incorrect markup in cancer cells. physical shooting techniques in the body. the quantum dot and fluorescence imaging sections and the mri contrast agents that contain nanoparticles are in fact the effect of the intelligent pharmacology (carrier) of the epr effect of the growth of tumors and vascular nutrition in the body. in fact, a drug that carries long-lived nanoparticles it is accumulated in the tumor and its material is released at a certain rate. a new generation of this pharmacy is performed with the help of pamam and ppi dendrimers. pamam dendrimers contain nuclei of ammonia compounds the synthesis of this method is divergent, which is a structure of nh.sh and is used to react between units of oh, which is a reactive methyl acrylate and linker group acrylates are used in the polymer family, also known as vinyl polymer. its primary structure consists of ch2-chn ---- c-o-r, which is water-repellent for the detection of cancerous tumors of this substance. in fact, smart nanoparticles can actually be used to treat cancer tumors through nano-dendrimers.

Methods

In fact, it can be said that the dendron is a greek word meaning the tree, and mer also means "propagation". in fact, these dendrimers are a branched molecule that is a repeating monomer and can carry the structure or materials to the site itself specifically transmitted, and this repetition is repeated in the last parts of the dendrimers. the dendrimers are very flexible and their branches can enter into the droplet of the resulting molecule in a globular protein appearance. in dendrimers, instead of using ab monomic units, which in fact generates dendrimers can be made with units of n = 3.2 for this purpose, there are two types of structures in the dendrimers that are the phrase: divergent synthesis: the nucleus is the beginning of the matter and has a molecular level convergent synthesis: it also has an internal focal point. in fact, it can be said

Results

Chiralite in dendrimers is caused by the presence of branches that are chemically identical but structurally different (chiral species). due to the distinctions that can be made with chiral compounds in these species, chiral dendrimers are also effective in the purposeful release of drugs and the detection of chiral compounds in the body. poly dendrimers (pamamos = poly (amidoamine-organosilicon)) which are radially converted to a single-molecular maisley, the polyamido-amine (pamam) core friend inside and the organo-silicon (os= organosilicon) hydrophilic is placed outside. dendrimers containing peptide on the

surface of the traditional dendrimer body and dendrimers containing amino acids are defined as peptide dendrimers. these peptides can be located in branch or core units. due to its biological and therapeutic properties, peptide dendrimers play an important role in various areas such as cancer, antibacterial, antiviral, central nervous system, anesthetics, asthma, allergies, and calcium metabolism. due to their absorption into the cell, peptides are very useful for drug delivery. among the dendrimers are pamams that are highly regarded in drug delivery. the following figure shows a pamam dendrimer with three generations. many of the pamam dendrimers with modified levels do not stimulate the immune system, they are soluble in water, and contain variable endpoint amines that can be joined to guest or different target molecules. the inner cavity of the pamam dendrimers, due to its unique structure, which contains triple amine and amide connections, can host metal or guest molecules.

Conclusion

Dendrimers are the dual structure of the polymeric friend that can stay in the body with this property and carry medication in the form of truffle.

Keywords

Nanoparticle-pharmaceuticals-dendrimer

Nanobased dressings for wound healing

Saeedeh Ahmadi,[1] Malihe keramati,[2] Iman akbarzadeh,[3] Haleh bakhshandeh abkenar,[4,*]

1. Department of Biophysics, Islamic Azad University Science and Research Branch
2. Pilot of Nano-Biotechnology Department, Pasteur Institute
3. Department of chemical engineering, Sharif University
4. Pilot of Nano-Biotechnology Department, Pasteur Institute

Abstract

Introduction

Skin encounters many wounds daily. these wounds include simple scratches, sunburns, cuts, and also deep wounds caused by accidents or surgical injuries. wound healing is a complicated and chronic process that usually takes within 8-12 weeks depending on the size, depth and the extent of damage in the epidermis and dermis layer of the skin. researchers around the globe have started providing evidence on the effective use of such nanoparticles in various fields of medicine extending from genetics to various other branches of medicine. this review attempts to consider the currently available applications of nanotechnology in wound dressing

Methods

In this simple overview to collect information, articles that contain one of the terms: woundhealing, nanotherapy, dressing from 2010 to 2018 at science direct, scopus, pubmed and google scholar were searched and reviewed. so, through an extensive search of relevant literature, this review reports the most significant evidence regarding nanobased dressings for wound healing.

Results

Wound healing by appropriate materials to cover the wound in order to prevent any infections has been used from many years ago. plant fibers, linen, honey pastes, and animal fats have been used as wound dressing from the years ago. suitable dressing material must be selected dependent on the wound type. the features of an ideal dressing include its ability to a) maintain high humidity at the wound environment b) increase epidermal migration c) removed without causing trauma to the wound d) allow gaseous exchange e) be comfortable and conformable f) appropriate tissue temperature g) prevent bacteria infiltration h) non-toxic and non-allergic, and also having long shelf life and cost effectively. nowadays nano-based wound dressings such as metallic and metallic oxide nanomaterial, non-metallic nanomaterial, antibiotics and antioxidant-containing nanoparticles, growth factor incorporated nanomaterial, stem cell incorporated nanoscaffolds are widely used. development of nanotechnology, especially multifunctional systems in wound healing is reported by several papers recently, which indicates the high expectations toward nanotherapeutic interventions in the wound-healing field. however, the hurdle lies in gathering enough information about the physicochemical features of the nanoscale systems and their excepted behavior and toxicity in the human body. furthermore, the high purity of the scaffolds and nanoparticles administered

by the fda(food and drug administration) for human use is also a challenge, as often the bulk preparation and purification of the polymers and nanoparticles prepared are difficult. thus, there is an incessant need for better synthetic tools and analytical methods that will allow for the translation of nanotechnology-based approaches to the clinic. further studies are indispensable to provide insights into how research findings of nanotechnology-based therapies can be applied in the clinical usages. it is expected that new and exciting nanotechnology platforms will arise; thus, additional research on these technologies is needed to develop international standards on biocompatibility and toxicology of nanotherapies.

Conclusion

Overall, the current capabilities in advanced constructing and improvement of different nanosystems, together with the knowledge of chronic wounds, molecular pathology, and phenotype-genotype characteristics, are projected to promote the design of the next generation of wound-healing nanotechnology. comprehensive efforts are also critical to achieve chronic wound therapies with site-specificity and targeting efficiency in order to avoid undesirable events and interferences that might prevent the nanosystems from their biological functions in the human body.

Keywords

Wound healing, nanomaterial, dressing

Nanoformulation of auraptene with tb and pb biocompatible amphiphilic copolymers

Nazila Jalilzadeh,[1,*] Gholamreza dehghan,[2] Roya salehi,[3]

1. Drug applied research centre, Tabriz University of Medical Sciences,Tabriz, Iran
2. Faculty of natural sciences, University of Tabriz, Tabriz, Iran
3. Drug applied research centre, Tabriz University of Medical Sciences,Tabriz, Iran

Abstract

Introduction

The most abundant prenyl oxycumarin in the nature is granyl oxy-coumarin or aur(auraptene), which is well known today for many valuable pharmaceutical properties including: high anti-cancer, antimicrobial, anti-fungal, anti-inflammatory, antioxidant, anti-hypertension properties.poor water solubility of natural compounds, is one of the most important obstacles for drug delivery.in recent years, nanoscience, specially nano-size drug carriers has been widespread in order to increase the efficacy and bioavailability of drugs. in this study, two, three block (tb) and penta block (pb) biodegradable copolymers were synthesized to prepare the appropriate carriers for delivery of aur

Methods

2.materials and methods 2.1 synthesis of copolymers pentablock copolymer: poly (ethylene glycol)-poly (caprolactone)-poly (lactic acid) (pla-pcl-peg-pcl-pla), for preparation of nanocarriers was synthesized in two steps. calculated amounts of peg mw1,000 (7.5g), Îµ-caprolactone (15 ml), and stannous octoate (1 wt%) were added in the round-bottomflask and degassed for 30 min. then the flask was purged with nitrogen, and the reaction was performed for 24 h at 130 Â°c. the resulting crude product was dissolved in methylene chloride and precipitated with cold petroleum ether to remove un-reacted monomers. after purification predetermined amount of triblock copolymer (5 g) and l-lactide (10 ml) monomer were added in the round-bottom flask, and stannous octoate(1 wt %) was added as a catalyst. then, the flask was purged with nitrogen, and a reaction was performed for 24 h at 130 Â°c. the final product was purified as was said above. 2.3. drug loading and efficiency drug-polymer solution was added dropwise to deionized water solution of 0.25% pva while hemogenizing at 20000 rpm. then nanoparticles solutions were centrifuged at 12000 rpm for 1 hour and the supernatant was removed. the nanoparticle solutions were centrifuged twice more to eliminate organic solvent completely and then diluted with deionized water. nanoformulated auraptene prepared with three proportion of the drug to the polymers. then uvâ€“vis spectrophotometer was applied to measure the amount of unloaded aur. uv absorbance for aur was measured at Æ›max = 310 nm. the encapsulation efficiency and loading capacity of aur on tb and pb nanocarriers were calculated by following equations: encapsulation efficiency(%)=(w of initial drug-w of free drug)/(w of initial drug)Ã—100 2.4.dynamic light scattering to measure the average diameter and zeta-potential of nanoparticles, the laser scattering technique was used at 25 Â°c. 2.5. scanning electron microscopy the surface morphology and size of nanocarriers were observed by field emission microscop. particles size were achieved by measuring the diameters of at least 50 particles revealed through sem.

Results

3. results 3.1.s size measurment approximately the actual size of particle is 5 to 10 times smaller than the hydrodynamic size. the greater surface charge and small size of the particles causes the suspension stablility and also causes penetration into the tissues and high intracellular uptake. in the images of sem, nanoparticles have spherical morphology and size of the nanoparticles varies from 10 nm to 50 nm. 3.3. auraptene loading result loading capacity and loading efficiency parameteres of 3 types of formulation were measured. pb polymer prepared nanocarriers entrapment efficiency is more than 90 % in all types of formulations.maximum entrapment efficiency of pb prepared nanocarriers is 95 %.tb polymer prepared nanocarriers entrapment efficiency has increased from 71% in 1to10 drug polymer ratio to 89% in 1to5 ratio and then to 94% in 1 to 2 ratio.

Conclusion

4.conclusion in this study nanoformulation of aur was done for the firs time. prepared nanocarriers were desirable for delivery of aurapten in terms of size, pdi ,surface charge, morphology and loading efficiency parameters. also our findings showed the superioroty of pb copolymer to tb in delivery of auraptene.

Keywords

Auraptene, nanoformulation.tb and pb copolymers

Nanovaccine for brucellosis: multi epitope subunit vaccine- loaded mannosylated chitosan nanoparticles induce high protection against brucella infection

Zohre Sadeghi,[1] Mahdi fasihi ramandi,[2] Saeid bouzari,[3,*]

1. Pasteur Institute of Iran
2. Baqiyatallah University of Medical Sciences
3. Pasteur Institute of Iran

Abstract

Introduction

Brucellosis is a zoonotic disease that can cause abortion in domestic animals and severe disease in humans. brucellosis exhibited as an endemic disease in iran. live attenuated brucella vaccines have several drawbacks. peptide-based vaccines have been advocated as an attractive approach for prevention or treatment of infectious diseases. the reverse vaccinology has introduced new candidates for brucella such as bhua, flic, 7Î±- hsdh through computer analysis. chitosan nanoparticles also play an important role in enhancing acquiring immune responses. therefore, in this study, we try to test novel multi-epitope subunit vaccines with mannosylated chitosan nanoparticles against brucellosis infection in mouse model.

Methods

B cell and cd4+ and cd8+t cell epitopes from bhua, flic, 7Î±-hsdh antigens were selected and arranged in different patterns. the two and three-dimensional structure of the constructs were evaluated. then, expression of the synthetic constructs were performed using pet28a expression vector in e. coli bl21(de3). the proteins were purified with ni-nta column. sds-page and western blot were used for confirmation of purified proteins. mannosylated chitosan nanoparticles are synthesized by chemical synthesis and then nanoparticles are examined in terms of structure, shape and size by ftir, sem and dls. mice were immunized and cytokines ifn-Î³, il-2, il-10 level and total igg, igg1 and igg2a antibodies were assessed by elisa. in challenging tests different groups of immunized mice were infected with brucella.

Results

According to our in silico analyses, b and t constructs were stable with high antigenicity and immunogenicity. sds-page and western blotting results indicated the similarity of in silico designing and in vitro expression. vaccination of balb/c mice with the nanovaccine candidates provided strong humoral and cellular immune responses and protected the mice from b. melitensis and b. abortus challenge.

Conclusion

In conclusion, these recombinant nanovaccine candidates could generate a potent immune response and may be used as epitope-based vaccine for development of brucella vaccine candidates.

Keywords

Brucella, multi-epitope vaccine, new candidate, chitosan, nanovaccine

Natural killer cells: amplifier or suppressor of graft-versus-host-disease symptoms?

Arsalan Jalili,[1] Abbas hajifathali,[2] Marzieh ebrahimi,[3,*]

1. Department of Stem Cells and Developmental Biology at Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.
2. Hematopoeitic Stem Cell Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3. Department of Stem Cells and Developmental Biology at Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.

Abstract

Introduction

Graft-versus-host disease (gvhd) is a routine complication after bone marrow transplantation and administration of other blood products. during gvhd cytotoxic t cells attack the hosts body cells. there different factors that should be considered to reduce the risk of graft-versus-host-disease like age, hla matching, hygiene, gender et al. according to the recent evidences, immune cells can be considered as a powerful therapeutic approach against different diseases and complications. natural killer cells (nk cells) are a kind of cytotoxic lymphocyte which are critical for innate immune system. nk cells provide rapid responses against viral-infected cells, infection and tumor cells. there are two main types of receptors on the surface of nk cells named inhibitory and activation receptors. and also there are some other types such as: co-inhibitory, co-activation receptors and immune checkpoint molecules. activation of each of these receptors can change the function of nk cells. activation of activation receptors by cancer cell, antigen presenting cells or any other stimulatory cells can make nk cells to release perforin, ldh, ifnÎ³ and other factors which can cause the apoptosis and the death of stimulatory cell. on the other hand, targeting the inhibitory cells cause the exhaustion and inhibition of nk cells. as donors tcd8+ cells play a critical role in the complications of gvhd, this question was created that how nk cells are influenced in this condition and if these cells are helpful in suppression of gvhd side effects or escalation of them.

Methods

Relevant english-language literature were searched and retrieved from pubmed search engine (2010-2018). the following keywords were used: "graft-versus-host-disease", â€œgvhdâ€• ,â€• natural killer cellsâ€• and â€œnk cellsâ€• .

Results

Based on previous studies, the effect of nk cells on gvhd is controversial and is not clearly clarified, and that is because of its different reaction via apcs. if the inhibitory receptor nkg2a on the surface of nk cells bind to hla-e on the surface of apcs, it can cause the release of ifnÎ³ and tnf-Î±. they make t cells to release perforin which cause tissue damage. on the other hand, if the activation receptor nkg2c on nk cells be bind

to hla-e on the surface of gvhd , can cause the binding between nk cells and t cells and the release of perforin by nk cells which leads to the protection of tissues against gvhd.

Conclusion

Despite major efforts undertaken during this project for better understanding of nk cells function during gvhd, the role of nk cells during remained elusive because of conflicting evidence coming from different experimental approaches. nk cells are capable of both effector and regulatory functions. this dual nature of nk cells is likely responsible for the variable and even conflicting roles nk cells during gvhd.

Keywords

Graft-versus-host-disease, natural killer cells, bone marrow transplantation.

Necessity of human group a rotavirus vaccination in iran; an epidemiological survey in patients with acute gastroenteritis during 2017-2018

Mohammad Namayan,[1,*] Seyed reza mohebbi,[2] Seyed masoud hosseini,[3] Mahtab dehbozorgi,[4] Shabnam kazemian,[5] Mohammad reza zali,[6]

1. Research Institute for Gastroenterology & Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Research Institute for Gastroenterology & Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Department of Microbiology, Faculty of Biological Sciences, Shahid Beheshti University, Tehran, Iran
4. Research Institute for Gastroenterology & Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran
5. Research Institute for Gastroenterology & Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran
6. Research Institute for Gastroenterology & Liver Diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Acute gastroenteritis is one of the most common diseases all over the world. rotavirus group a (rva) is the main cause of the disease in infant and children less than 5 years of age and can lead to an estimated 352,000â€“592,000 deaths from severe diarrhea worldwide. actually every child in both developed and developing countries will be infected by rotavirus in the initial years of life. the frequency of rva infection is strongly related with age and also rotavirus infection show a distinguished seasonal pattern with epidemic peaks occurring predominantly in the fall and winter months of the year. the main symptoms of rva infection in children include watery diarrhea, vomiting, nausea, abdominal pain and fever. symptoms can be lead to complications like severe electrolyte imbalance, shock and death. the aim of this study is to investigate rva in tehran and karaj residents suffering from gastroenteritis complications during 2017 to 2018.

Methods

Feces samples (n=150) were collected from shahid fahmideh pediatrics hospital (south of tehran), tehran children hospital (center of tehran), taleghani educational hospital (north of tehran), vali asre polis hospital (north of tehran), shahid beheshti hospital (karaj). viral rna genome was extracted from stool specimens and cdna were prepared. all samples screened for rotavirus with primers that amplifies a section of the vp6 virus genome.

Results

Rotavirus group a was detected in 45 of 150 samples (30%). comparison of rva infection between male and female patients showed that there was not any statistically significant difference (27/82 patients, 32.93% male versus 18/68 patients, 26.47% female; p value=0.390). in addition, analyzing the age distribution of rva showed a higher frequency (20 rva infected patients) in individuals less than 2 years of age in comparison to other age groups (15 patients between 2 and 5 years, 9 between 5 and 18 and finally 1 patient older than 18 years.

Conclusion

In the present study we describe relatively high prevalence of rva in two provinces of iran (tehran and alborz provinces). rotavirus vaccination is an urgent requirement for iranian children to decrease rva infection rate and subsequently to lower down the burden of acute gastroenteritis. however, performing an extensive annual surveillance program for comprehensively determining of rva transmission routes is a necessity.

Keywords

Group a rotavirus, gastroenteritis, epidemiology, viral protein 6 gene

Network and pathway analysis related to hepatitis b with and without hepatocellular carcinoma using computational bioinformatics approach

Sedigheh Behrouzifar,[1,*] Meysam mobasheri,[2]

2. Islamic Azad University-Pharmaceutical Branch

Abstract

Introduction

Chronic infection with hepatitis b is an independent risk factor for the development of hepatocellular carcinoma (hcc) which can occur without cirrhosis. because of the long-term treatment process for hepatitis b, designing new combined therapeutic strategies to eradicate viral carcinogenesis would be very helpful. this study was conducted to identify hub genes and active key pathways in liver tissue of hbsag positive patients with hepatocellular carcinoma.

Methods

Microarray data of gse84402 deposited in geo database was downloaded. the differentially expressed genes (degs) were determined in 14 hbsag positive cancerous liver tissue samples and 14 hbsag positive non-cancerous tissue samples using limma r packages. then genes with the cut-off criteria of $p < 0.05$ and log fold-change (fc) above 1.5 were selected. hub genes were further screened using cytoscape software and annotated using kegg enrichment pathway analysis. afterward, the centrality and modularity class of hub genes were analyzed using gephi software. finally, the prognostic values of the hub genes with high centrality were assessed using proggenev2 database.

Results

107 up-regulated genes were screened out. kegg pathways enriched with the degs were mainly cell cycle, p53 signaling pathway, dna replication, viral carcinogenesis and micrornas in cancer. five hub genes with the highest centrality were ccnb1, cdk1, ccna2, bub1b and ccnb2. ccna2 was suggested to be prognostic factor for liver carcinoma. the gene ontology molecular function enriched for the three modules were primarily microtubule motor activity and exodeoxyribonuclease activity. pathways enriched for the three modules in wikipathway were primarily, cell cycle, retinoblastoma in cancer and gastric cancer network.

Conclusion

High throughput data analysis indicated that the several genes implicated in cell cycle regulatory machinery have pivotal roles in the progression of liver carcinoma that could potentially be used as diagnostic and therapeutic targets. identification of the molecular mechanism of hepatocellular carcinoma and important pathways involved in viral carcinogenesis for designing novel therapeutic agents is important.

Keywords

Hepatocellular carcinoma, network analysis, hub genes, viral carcinogenesis pathway, bioinformatics

New age of cancer immunotherapy

Farnaz Hosseinzadeh otaghvari,[1,*]

1. 1- Science faculty, Department of Biology, Central Tehran Branch, Islamic Azad University.

Abstract

Introduction

Cancer immune therapy is one of the newest and effective ways of treating cancer. cancer therapy is commonly used either alone or as complementary therapies, along with surgery, chemotherapy and radiotherapy. cancer immunotherapy take place in two ways; active and inactive. in active form, immune system recognizes the cancer cell and fight them back while in inactive form physicians supply modified immune system components such as antibodies to restrict cancer cells. with increased understanding of the immune system, small molecules, peptides, recombinant antibodies, vaccines, and cellular therapies are used to treat cancer.

Methods

Immunotherapies do not yet represent a panacea in cancer therapy since only a minor subset of some cancers respond to some of these treatments, and it is difficult or impossible to determine precisely who will benefit.

Results

The immune system has the ability to defend the body against pathogens and cancer. one of the barriers for immune system to fight cancer is the capability of cancer cells to produce immunosuppressive cytokines such as tgf-beta. as a result, a number of therapeutic strategies have been developed to re-activating the immune system in cancer patients. as a result, immunotherapy is one the promising strategies in cancer treatment and requires a series of researches and developments.

Conclusion

â€¢ prevent the cancer from recurring â€¢ destroy any cancer cells which are still in the body after other treatments have ended â€¢ stop a tumor from growing or spreading

Keywords

Cancer, immunotherapy, check point blocker

New strategies of precision medicine for breast cancer treatment

Hamed Hosseinian,[1,*] Marziyeh akbari,[2]

1. Biology Department, Science and Engineering faculty, Science and Arts University
2. Biology Department, Faculty of Sciences, Shehrekord University

Abstract

Introduction

Breast cancer is a persistent global challenge because of its high prevalence among women (although rarely occurs in men), which is due to its risk factors and itâ€™s gene mutations. to date, breast cancer has undergone many treatments such as surgery, ablation, chemotherapy, radiotherapy, and more specific treatments like hormone therapy and the administration of various substances that reduce cancerâ€™s growth, severity and reappearance.

Methods

Precision medicine is a kind of treatment that is relevant to the individualâ€™s needs of each patient, and nowadays it has received a lot of attention due to its importance in the development of effective cancer treatment regimens.

Results

In fact, recent studies have identified a large number of genes and molecules that can be used as biomarkers to predict drug responses and severe symptoms which is associated with breast cancer. these could be good clues not only for the proper selection of appropriate medications and dosages in precision medicine, but also can be useful in identifying target genes or molecules that are involved in the development of breast cancer, which ultimately leads to the promotion of more effective and precise personal therapies for treatment.

Conclusion

In this paper, recent studies could be considered as appropriate options for precision treatment for breast cancer and survivors, that have been reviewed. new methods of optimizing drug and dose selection and identifying genetic changes that are associated with symptoms of cancer can be helpful in increasing of the effectiveness and acceptance of existing treatments for breast cancer.

Keywords

Precision medicine; breast cancer; treatment; drug dosage

Next generation sequencing approach to molecular diagnosis of duchenne muscular dystrophy

Seyed mohammad Hosseini,[1,*] Nosratallah alizadeh,[2] Javad mohammadiasl,[3]

1. Department of Medical Genetics, Faculty of Medicine, Ahvaz Jundishapur University of Medical
2. Alizadeh Medical Genetic Councelling Center , Ilam university of Medical Sciences
3. Assistant Professor, Department of Medical Genetics, School of Medicine, Ahvaz Jundishapur University of Medical Scie

Abstract

Introduction

Duchenne muscular dystrophy is the most prevalent x-linked recessive of progressive neuromuscular diseases. the disease is caused by mutations in the dystrophin gene. this disease generally affects only boys. the main symptoms of this disorder are proximal muscle weakness. dmd disease progresses rapidly, and patients usually need wheelchairs at the age of 10 years and most of them die because of cardiac and respiratory complications. duchenne muscular dystrophy is the most prevalent x-linked recessive of progressive neuromuscular diseases. the disease is caused by mutations in the dystrophin gene. this disease generally affects only boys. the main symptoms of this disorder are proximal muscle weakness. dmd disease progresses rapidly, and patients usually need wheelchairs at the age of 10 years and most of them die because of cardiac and respiratory complications. duchenne muscular dystrophy is the most prevalent x-linked recessive of progressive neuromuscular diseases. the disease is caused by mutations in the dystrophin gene. this disease generally affects only boys. the main symptoms of this disorder are proximal muscle weakness. dmd disease progresses rapidly, and patients usually need wheelchairs at the age of 10 years and most of them die because of cardiac and respiratory complications.

Methods

The subject was an 8-year-old child with classical symptoms of muscle weakness. the sequencing of the patient genome was accomplished by the next generation sequencing method and all exons of dystrophin gene were analyzed by mlpa technique to detect of exon deletions or duplications.

Results

Our data showed a micro-duplication in dystrophin genes encompassing the exons 10-42. the mlpa confirmed this duplication in the patient.

Conclusion

We recommended that ngs method is an efficient, powerful and cost effective strategy to molecular diagnosis of dmd patients.

Keywords

Dmd, ngs

Next-generation sequencing technologies and its applications in genomics and molecular diagnostics.

Sheyda Khalilian ,[1,*] Halimeh rezaei,[2]

1. Division of Genetics, Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran, IR Iran
2. Division of Genetics, Department of Biology, Faculty of Science, University of Isfahan, Isfahan, Iran, IR Iran

Abstract

Introduction

Introduction of the sanger sequencing method in the 1970s, has enabled sequencing of clonal dna populations and advances in genetics and molecular biology; however, the low-throughput and high cost of sanger sequencing limited its complex genome analyses. the recent introduction of next-generation sequencing (ngs) technology, has overcome these problems and large number of dna molecules can be sequenced in parallel and in this way the need for fragment-cloning method that often used in sanger sequencing is minimized; moreover, ngs provides a possible way to obtaining genomic information about patients. in this review, we try to introduce ngs technology and also its increasing use in molecular diagnosis of genetic diseases is briefly investigated.

Methods

Article searches were conducted using several internet search engines such as pubmed and scopus. the articles collected from list of 2017 to present.

Results

Ngs technologies are increasingly being applied to many aspects of research, including dna database construction, monozygotic twin studies, body fluid and species identification and it have been comprehensively applied in a variety of ways such as whole genome sequencing, whole exome sequencing, target sequencing, chip-seq and rna-seq. since the massive amount of data generated by ngs, represents a great challenge, an integrated software system is needed for variant detection and integration of different types of data.

Conclusion

Ngs technologies have reduced the cost of dna sequencing and increased speed and throughput by producing massive data. to transfer ngs technologies to molecular diagnostics, the validation of genome variations associated with clinically meaningful phenotypes and also developing informatics tools for variant identification and reducing the sequencing cost, need to be addressed.

Keywords

Next-generation sequencing, genomics, molecular diagnostics, whole genome sequencing

Non-invasive biomarkers for breast cancer detection

Shiva Shariati,[1,*] Elahe ferdosi shahandashti,[2]

1. Department of Medical biotechnology, Faculty of Medicine, Babol university of Medical sciences
2. Department of Medical biotechnology, Faculty of Medicine, Babol university of Medical sciences

Abstract

Introduction

Breast cancer is one of the most common cancer among women, it is estimated that each year 1.5 million people are affected. nowadays, with the improvement of the standard techniques in the diagnosis of breast cancer, we are witnessing a decline in the death rate of affected people. two of these commonly used techniques for diagnosing breast cancer in the world are mammography and biopsy of the tumor tissue. x-rays from a mammogram in young women with brca gene mutations that require screening at age 30 can lead to breast cancer and also because of high breast tissue densities in young women, this technique is not effective. in fact, mammography has a low sensitivity and specificity that increases the error rate in the diagnosis (false positives 19% and false negatives 17%). biopsy of the tumor tissue is an invasive method for diagnosis, so some people refuse to do because of fear of pain. thus, according to conducted studies non-invasive, accurate and specific method for early detection of breast cancer, is necessary which blood analysis and identifing biomarkers is one of these methods. the 19-22 nucleotide microrna, are highly protected single strands that contribute to cell proliferation, angiogenesis, metastasis, tumorigenesis, apoptosis and the like. recently, it has been shown that circularting microrna released from many apoptotic and necrotic cells, so these micrornas are visible in many biological fluid (blood, urine, saliva, ...). encapsulated in the microvesicles or exosomes, binding to proteins (npm1) , lipoproteins (hdl, ldl)and ago2 cause them stable against, rnases , ph changes and more. therefore, their persistence in biological fluids, including (blood and serum, â€¦)can be a non-invasive biomarker with high specificity and sensitivity in early diagnosis of breast cancer. some of these circulating microrna in the initial stage are dysregulated, that can be used for diagnosis before doing any biopsy, imaging and clinical signs.a number of these circulating microrna (mir1202-5p, mir1207-5p, mir1225-5p, mir4270-5p, mir4225-5p), that have been increased in the plasma of patients at stage Î™ of breast cancer, have been presented as a diagnostic panel. in another study, over expression (mir-96-5p, mir505-5p, mir125-5p) in plasma was expressed as biomarkers for non-invasive breast cancer detection.

Methods

Different methods are used to identify circulating microrna in blood, plasma and ... samples. q-rt-pcr is the most widely used technique, which has high sensitivity, accuracy and dynamic range, and the most oftenly is used to evaluate the quantity level of microrna, which takes about 6 hours. microarray is a technique of moderate complexity, but its precision and dynamic range are less than other techniques and cannot detect novel circulating microrna. the input of the rna is low for its analysis and duration of performance is about 1 to 2 days. ngs technique can be used to identify known and novel microrna and is highly accurate. ngs has a complex system and requires computational analysis and cannot detect more

than 800 microrna in each sample, it also takes 1 to 2 weeks. sample type and extraction techniques: the extraction of rna from a biological fluids samples is the first step in using the above techniques . serum and plasma are the most common types of samples used in the detection of circulating microrna in breast cancer. by examining these microrna, it has been shown that serum is less susceptible to hemolysis so is a better sample than plasma . due to the binding of these microrna to proteins, apoptotic bodies or exosomes, the chosing of a standard method for extraction can play a key role in the identification of all the presented microrna in the sample

Results

in studies conducted so far, circulating microrna have difference expression in breast cancer patients compared to control groups, but the provided diagnostic panels, due to differences in type and amount of samples, inappropriate statistical analysis, different methods for extraction and effect simultaneous illnesses on circulating microrna are seen to be less overlapping between the presented panels.

Conclusion

Circulating microrna can be used as precise, specific and non- invasive biomarkers for early diagnosis of breast cancer. therefore, the need for more extensive studies as well as the use of standardized guidelines are required to perform

Keywords

Breast cancer, biomarkers, circulating microrna

Nonenzymatic h2o2 sensing using graphene-ag nanoparticle hybrid

Maryam Rezaei,[1,*] A. nekahi ,[2] M.a. mohammadmirzaie ,[3]

1. Chemical and polymer engineering group, Yazd University, Yazd, Iran
2. Nanostructure coating institute, Yazd PayameNoor University, Yazd, Iran
3. Chemical and polymer engineering group, Yazd University, Yazd, Iran

Abstract

Introduction

there is a great demand for sensitive, reliable, low-cost and small electrochemical biosensors for detection of different kinds of biomarkers such as hydrogen peroxide. the sensitivity and selectivity of biosensors strongly depend on the modified electrode surface. these characteristics have been improved using graphene nanostructures with intrinsically high surface area and reactivity. graphene hybrids with other nanomaterials have shown improved electrochemical and sensing performance due to their catalytic activity. ag nps have been attracted as hybrid material for h2o2 sensing regarding electrocatalysis, anti-bacterial property and nontoxicity. the nps prevent the accumulation and agglomeration of graphene sheets [1-3]. the combination of extreme surface area and reactivity of graphene and catalytic characteristic of agnps can improve sensing performance of the electrode even in the nonenzymatic electrochemical sensors

Methods

2.1. grapheneâ€'agnws hybrid go was prepared by modified hummers method [4]. agnps were obtained from acsnano. a mixture of graphene oxide (1.5 mg.ml-1) and nps (1 mg) was poured in an autoclave nd then was placed in an oven at 180 Â°c for 18 h. the produced aerogel was freeze dried at -80 Â°c. 2.2. electrochemical analysis sensor electrode was prepared using gf-agnps hybrid on ag paste. amperometric test and impedance spectroscopy were carried out in a 3-electrode system containing calomel reference electrode, an ag wire as counter electrode and hybrid working electrode. while the former was performed in 0.1 m ph 7 phosphate buffer solution (pbs) and the latter was done in k3fecn6.

Results

The hybrid morphology is depicted in the sem micrograph in fig. 1. it is obvious that a 3-d porous structure with an open network was formed in the hydrothermal synthesis of gf. this structure certainly provides a huge speciï¬• c surface area and more active sites for electrolyte diffusion comparing graphene sheets. fig. 1 reveals that during hydrothermal synthesis of graphene foam, agnps were finely dispersed between different layers and cavities lead to a homogenous gf-agnps hybrid. fig. 1- sem of gf-agnps hybrid structure with fine distribution. the electrochemical impedance spectroscopy (eis) was applied to investigate the ion-transport behavior and electrical resistance of the electrodes, as shown in fig. 2. commonly, eis data of biosensing electrodes have revealed a semicircle indicative of the charge-transfer resistance on the electrode surface and a 45 Â° line showing diffusion. as it can be seen in fig. 2,

there is no semicircle and it is a sign of high conductivity of the electrode. fig. 2- eis spectra of gf-agnps hybrid electrode in pbs. the electrode was also used for h2o2 sensing, fig. 3. cv plots show that cathodic peak moved to more negative potentials by addition the concentration of h2o2. moreover, the cathodic peak current increased as a result of h2o2 electrochemical reaction on the electrode surface. therefore, hydrogen peroxide was sensed significantly by the electrode. fig. 3- cv of sensing different concentrations of h2o2.

Conclusion

In this research, gf-agnps hybrid was used for sensing h2o2. eis results confirmed high electrical conductivity of the electrode surface. in addition, cv analysis revealed high electrochemical performance in h2o2 sensing. the simple electrode can be used for biosensing applications.

Keywords

Nanobiosensor; ag nanoparticles (agnps); graphene; hybrid; hydrogen peroxide.

Novel and heteroplasmic mutations in mitochondrial coding genes in iranian patients with familial adenomatous polyposis (fap)

Elham Afkhami,[1,*] Mohammad mehdi heidari,[2] Mehri khatami,[3]

1. Department of Biology, Faculty of science, Yazd University, Yazd, Iran.
2. Department of Biology, Faculty of science, Yazd University, Yazd, Iran.
3. Department of Biology, Faculty of science, Yazd University, Yazd, Iran.

Abstract

Introduction

familial adenomatous polyposis (fap) is an autosomal dominant inherited disorder and a rare formâ€Œ of colorectal cancer (crc) that represents the most common gastrointestinal polyposis syndrome. generally, cancers start to develop a decade after the appearance of the polyps. it manifests equally in both sexes, and incidence of this disease is in the second decade of life. cytochrome c oxidase subunit i (cox1) is one of three mitochondrial dna (mtdna) encoded subunits (mt-co1, mt-co2, mt-co3) of respiratory complex iv. alteration of the electron transport components by mutations in mtdna may compromise the normal electron flow. this could lead to an increase of bifurcation and generation of superoxidase radicals and increase oxidative stress in various types of cancer cells.

Methods

in this study, 21 iranian patients were investigated for presence of the mutations in mitochondrial coding genes (coxi, d-loop) by pcr and sequencing analysis. the study of pathogenicity of the whole mtdna was accomplished by the human mitochondrial genome database (mitomap).

Results

Our results showed that one patient has a heteroplasmic mutation which is located in mt-co1 gene, (c6433g) that cause change in amino acid (tâ†'s) and according to the results of the in-silico analysis, it was assessed as pathogenic mutation. also, this mutation is novel and has not previously been reported in any other disease. furthermore, one homoplasmic variant (16362t>â€Œc) in d-loop region was also identified. the bioinformaticsâ€™ predictions show that these mutations probably disturb the process of gene expression.

Conclusion

This study is the most comprehensive study in the iran and the results of this study can be used for genetic counseling and prenatal diagnosis and suggest that mutations in mitochondrial coding genes might lead to the production of defective proteins in the respiratory chains, so potentially lead to crc in iranian subjects.

Keywords

Familial adenomatous polyposis, mitochondria, coding genes, mutations.

Novel chitosan based nanoparticulate delivery system for egf

Samaneh Montazeri,[1] Zohreh mohammadi,[2,*] Mahboobeh nazari,[3] Hanieh jafary,[4]

1. Department of Biology, Science and Research Branch,Islamic Azad University, Tehran ,Iran.
2. School of Pharmacy- International campus, Iran University of Medical Sciences, Tehran, Iran.
3. Monoclonal Antibody Research Center ,Avicenna Research Institute,Tehran,Iran.
4. Department of Biology, Science and Research Branch,Islamic Azad University, Tehran ,Iran.

Abstract

Introduction

Epithelial growth factor (egf) is a single-chain polypeptide containing 53 amino acid residues (mw = 6,045) and three disulfide bridges that are required for biological activity. this polypeptide stimulates the proliferation of epidermal cells as well as other cell types such as fibroblasts and endothelial cells and so can accelerate wound healing process. many studies have investigated the application of egf for the treatment of wounds. however ,Â¬due to its susceptibility to proteolysis and denaturation ,Â¬and also relatively short half-life, maintaining an effective topical concentration at the wound site during certain period of time is very difficult. therefore, the development of a suitable delivery system for egf to achieve a sustained release and improve its bioavailability is necessary. in recent years, polymeric nanoparticles have attracted considerable attention as potential drug-delivery vehicles. chitosan (cs), a linear cationic polysaccharide composed of deacetylated beta-1,4-d-glucosamine, has been considered as a candidate pharmaceutical material for biomolecular delivery, based on its unique features such as biocompatibility, biodegradablity ,mucoadhesive behavior ,Â¬non-toxicity ,and anti-inflammatory characteristics. moreover, chitosan itself has beneficial effects on wound healing. the aim of this study was to prepare a novel delivery system for protection and controllable release of rhegf through chitosan nanoparticles for using in topical formulation in future.

Methods

- size, zeta potential and poly dispersity index of nanogels were evaluated by nanozetasizer - loading efficiency pattern of rhegf from the chitosan nanogel was measured by hplc technique - release pattern of rhegf from the chitosan nanogel was measured by hplc technique - the effect of egf nanogels,and chitosan on growth rate of cells were determined by evaluating their effects on proliferation of human melanoma skin cancer cells (a375).

Results

Nanogels containing the ratio of 2:1 and 6:1 (chitosan to protein) revealed loading efficiency of 90% and 97.4% respectively. moreover, they were able to release 80% and 60% of the protein after 24 hours. the cell viability studies indicated significant growth induction in both ratios, while stability of protein by both of these nanogels was well preserved.

Conclusion

According to the findings of this study, chitosan nanogels containing rhegf in optimal ratios may be suitable candidates for dermal formulation, with regenerative purposes.

Keywords

Nanogel chitosan - epidermal growth factors - wound healing

Novel modeling of cancer: ipsc is answer

Amirhosein Maali,[1,*]

1. Department of Medical Biotechnology, Faculty of Medicine, Babol University of Medical Sciences, babol, Iran

Abstract

Introduction

Cancer is one of the most complex abnormalities ahead of the human. failure to understanding the molecular dysregulations leads to a theoretical and technical disability in diagnosis, prognosis, and treatment of cancer.(1) also, the unknown various mechanisms of heterogeneous chromosomal abnormalities, uncontrollable cellular plasticity, and reconsideration of various types of cancer are the most important of these challenges.(2) precise molecular studies on cancer require adequate access to malignant cells and cancer modeling in in-vitro conditions. the endeavors of yamanaka et al. that generate induced pluripotent stem cells (ipsc) led to a huge evolution in medicine.(3) transducing of oct4, klf4, sox2, and c-myc transcription factors into somatic cells can reprogram them to the embryonic-like state. the reprogrammed cells can be differentiated into the all human cell lines. ipsc technology faced regenerative medicine, cell therapy and in-vitro modeling of human diseases with the new approaches. patient-derived ipscs can simulate various cells (subsequently various cancers) in in-vitro conditions, and we can understand the dysregulations, mutations, and other disorders involved in cancer, design more effectively target and subsequently novel drug, by molecular approaches (as general or personalized medicine).(4) ipsc-based cancer modeling studies are explored in this article to clarify the importance of ipscs in the future of cancer medicine.

Methods

This study was conducted based on our last studies on the application of ipscs in leukemia, as well as other articles indexed in pubmed, scopus, and google scholar databases. in this regard, out of a total of 181 articles have been found (between 2012 to 2018), with the search term "ipsc cancer modeling", 19 articles were reviewed, selected and studied. our findings are presented as a brief review.

Results

Acute myeloblastic leukemia (aml) is a heterogeneous disorder in hematopoietic stem cells caused by genetic mutations, epigenetic dysregulations, and erratic chromosomal rearrangements. (5) a study on aml-derived ipsc showed that the activation of the target genes of myeloid-specific mll can control leukemogenesis in aml patients with 11q23/mll rearrangement, following induction of expression of the meis1-hox fusion protein.(6, 7) chronic myeloblastic leukemia (cml) is a myeloproliferative disorder in the bone marrow. a study on cml-derived ipsc (cd34+/lin-) showed that chronic myeloblastic-like stem cells are resistant to tyrosine kinase inhibitors. however, olfactomedin-4 can be used as a novel drug in the treatment of cml.(8) noonan syndrome (ns) is an autosomal disorder that in some cases leads to

juvenile myelomonocytic leukemia (jmml). ptpn11 mutations occur in ns and jmml.(9) the study on ns/jmml-derived ipsc clarified the role of mutated ptpn11. it showed that the upregulation of mir-233 and mir-15a are involved in ptpn11-associated jmml myelopoiesis.(10) other studies on leukemia modeling are mentioned in our last research.(11) myelodysplastic syndrome (mds) as a hematopoietic disorder that caused by genetic mutations, can leads to aml over time.(12) the mechanism of this process was not known until the advent of ipsc technology. the introduction of chr7q deletion in mds-derived ipsc guided the cells slowly to aml-stem cells and determined that haploinsufficient genes (such as hipk2, atp6v0e2, luc7l2, and ezh2) are involved in chr7q deletion in mds patients.(13) pancreatic ductal adenocarcinoma (pdac) is a very lethal cancer with poor prognosis. the injection of pdac-derived ipscs into naked mice and their proteomic analysis led to the recognition of hnf4a as a novel protein involved in pdac in in-vivo conditions.(14) glioma is a non-treating cns malignant tumor that has a p53 mutation.(15) a study on p53-knocked down ipsc-derived neural progenitor cells resulted in the introduction of three biochemical agents for the treatment of glioma: nelarabine, letrozole and capecitabine.(16) other disorders associated with p53 mutation include li-fraumeni syndrome (lfs). lfs progresses to various type of cancers, including osteosarcoma (os) and leukemia.(17) to investigate the role of lfs in os, lfs-derived ipsc was differentiated into osteoblasts. it was found that the p53 gain-of-function mutation with downregulation of h19 guides normal differentiation of osteoblasts to the os.(18, 19)

Conclusion

The introduction of ipsc technology in cancer research can lead to better understanding of the genetic and epigenetic patterns and chromosomal dysregulation of cancer. this approach promises the introducing new therapeutic targets, a faster diagnosis and better prognosis for cancer in the future.

Keywords

Ipsc, cancer modeling, genetic of cancer, reprogramming

Novel players of x chromosome inactivation: recent insights

Halimeh Rezaei ,[1,*] Sheyda khalilian,[2]

1. Division of Genetics, Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran, IR Iran
2. Division of Genetics, Department of Biology, Faculty of Science, University of Isfahan, Isfahan, Iran, IR Iran

Abstract

Introduction

To achieve a balanced gene expression dosage between males (xy) and females (xx), mammals have evolved a mechanism to randomly inactivate one of the female x chromosomes. x chromosome inactivation (xci), starts with the upregulation of the long non-coding rna, xist, after silencing the most x-linked genes and acquires some chromatin modifications. although the choice of x chromosome to be silenced is random, this process is highly regulated, but the mechanisms and several of the regulatory factors responsible for the initiation of xci, remain largely unknown. recent technological advances have identified several new key factors that play a significant role in xci. skewed x inactivation can result in expression of the phenotype of x-linked diseases and these similar identifications are important for detecting pathogenic variants in x-linked diseases. in this review, we discuss recent advances that revealed unexpected factors that are responsible for initiation steps of the gene silencing.

Methods

Multiple databases including pubmed, elsevier and scopus were reviewed.

Results

A set of factors and proteins has been identified to be necessary for the initiation of xist-mediated gene silencing. amongst this list of candidate factors, spen (for split-ends) is identified in all studies and proposed to facilitate the xci initiation through binding to the xist rna. wtap (for wilms tumor associated protein), is another protein identified in the experiments and proposed to have a direct role in xist rna methylation and xist-mediated gene silencing by post-transcriptional control. the exploration of these novel key players can provide new insights into xci initiation mechanism.

Conclusion

The recent studies using molecular and genetic approaches, state that xci involves multiple gene-silencing mechanisms. however; the inter-relationships of the factors playing the key role in related pathways, are challenging. hopefully, identification of regulators of xci proposes an opportunity to explore the mechanism of xist-mediated gene silencing as a potential therapeutic strategy to treat x-linked diseases.

Keywords

X chromosome inactivation, xist, gene silencing, x-linked diseases

Nrf1 and nrf2 knockdown effect in mitochondrial biogenesis

Mahshid Shabanpour,[1] Raana sirous azar,[2] Solmaz khalifeh,[3,*]

1. Amir-Almomenin Hospital, Tehran Medical Sciences, Islamic Azad University
2. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University
3. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University

Abstract

Introduction

The transcription factor nf-e2 p45-related factor 2 (nrf2; gene name nfe2l2) allows adaptation and survival under conditions of stress by regulating the gene expression of diverse networks of cytoprotective proteins, including antioxidant, anti-inflammatory, and detoxification enzymes as well as proteins that assist in the repair or removal of damaged macromolecules. nuclear erythroid 2-related factor 1 (nrf1) stand as an important regulator of the adaptive response to oxidants and play important role in coordinating antioxidant defense system

Methods

In current study small interfering rna (sirna) targeting nrf1and nrf2 (nrf1&2) was injected in dorsal third ventricle of adult male albino wistar rats. next, we used western blot analysis to evaluate the protein level of mitochondrial biogenesis factor.

Results

Based on our findings, nrf1&2- silenced rats induced anxiety-like behavior compared to the control group. the level of peroxisome proliferator-activated receptor gamma coactivator-1ï• ¡ (pgc-1ï• ¡) protein increased in hippocampus, prefrontal cortex and amygdala regions.

Conclusion

Present data evaluated the complexity of mitochondrial functions and nrf1 and nrf2 in ratâ€™s brain in addition to its effect on pgc-1ï• ¡ level also nrf2 has a crucial role in the maintenance of cellular redox homeostasis by regulating the biosynthesis, utilization, and regeneration of glutathione, thioredoxin, and nadph and by controlling the production of reactive oxygen species by mitochondria and nadph oxidase.

Keywords

Nrf1, nrf2, rat, mitochondia

Obsessive-compulsive disorder and related factors in ms patients.

Kosar Babaei,[1,*] Tahereh babaei,[2] Sadeghali tazikeh,[3]

1. Tonekabon Azad University
2. Golestan University of Medical Sciences & Health Services
3. Golestan University of Medical Sciences & Health Services

Abstract

Introduction

Multiple sclerosis (ms) is a myelin sheath degradation disease in the central nervous system (cns). ms is a major cause of neurodevelopmental disorder in young adults, and therefore has significant personal, social and economic costs. the association of multiple sclerosis with psychiatric disorders has been confirmed. depression is the most common psychiatric disorder among ms patients. ocd, or obsessive-compulsive disorder, is an anxiety disorder characterized by a combination of obsessive-compulsive disorder. studies have shown that ocd has been reported in patients with ms.

Methods

The present study is a cross sectional cross-sectional study. participants from 130 ms patients referred to gorgan neurology specialists clinic have participated in a valid questionnaire for yale brown obsessive-compulsive disorder y-bocs). then, the demographic information of the participants in the study was recorded in the questionnaire and the data was analyzed by spss.v16 software and various statistical tests.

Results

The frequency of ocd in patients with ms was 16.9 %. the ocd was significantly correlated with the duration of disease (pv:./..2 (-0r:8.14. ocd was also significantly correlated with bmi.

Conclusion

Our study reported a high incidence of ocd in ms patients. the reason for the combination of these two conditions is not clear, but there should be research to determine the cause of this combination to take the necessary measures to treat and improve quality of life.

Keywords

Obsessive compulsive disorder, multiple sclerosis, frequency

Occult hepatitis c virus infection in beta thalassemia major: is it a mysterious infection?

Ahmaf Ayadi,[1] Amir hossein nafari,[2] Shiva irani,[3] Farzam vaziri,[4] Seyed davar siadat,[5] Abolfazl fateh,[6,*]

1. Pasteur Institute of Iran, Tehran, Iran
2. Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Science and Research Branch, Islamic Azad University, Tehran, Iran
4. Pasteur Institute of Iran, Tehran, Iran
6. Pasteur Institute of Iran, Tehran, Iran

Abstract

Introduction

Occult hepatitis c virus (hcv) infection (oci) is described as the presence of the viral genome in both hepatocytes and peripheral blood mononuclear cells (pbmcs), despite constant negative results from tests for serum hcv rna. beta thalassemia major (btm) is a group of inherited blood disease. these patients require repeated blood transfusions, which increases the risk to infectious agents. in this study, we assessed the prevalence of oci in iranian btm patients and the role of host factors in oci positivity.

Methods

A total of 181 btm patients with hcv negative markers were selected. hcv-rna was tested in pbmcs using nested-pcr and then the positive samples were genotyped by restriction fragment length polymorphism (rflp) and sequencing of 5â€²-untranslated region (5â€²utr).

Results

Out of 181 btm patients, hcv viral genome was found in pbmc samples of six (3.3%) patients. among six oci patients, three (50.0%), two (33.3%), and one (16.7%) patients were infected with hcv-1b, hcv-1a, and hcv-3a, respectively. there were significantly association between oci positivity with abo blood groups (p = 0.032) and serum uric acid (p = 0.045).

Conclusion

In conclusion, we revealed the low frequency of oci in btm patients. nevertheless, this infection can be important and need to pay more attention. further studies are needed to indicate the true prevalence of oci among btm patients in iran.

Keywords

Occult hepatitis c virus infection, beta thalassemia major, abo blood groups, serum uric acid

Occult hepatitis c virus infection in hemophilia patients and its correlation with interferon lambda 3/4 polymorphisms

Amir hossein Nafari ,[1] Ahmad ayadi,[2] Zahra noormohamadi,[3] Farzam vaziri,[4] Seyed davar siadat,[5] Abolfazl fateh,[6,*]

1. Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Science and Research Branch, Islamic Azad University, Tehran, Iran
4. Pasteur Institute of Iran, Tehran, Iran
5. Pasteur Institute of Iran, Tehran, Iran
6. Pasteur Institute of Iran, Tehran, Iran

Abstract

Introduction

Occult hcv infection (oci) is described as the presence of hcv rna in the liver and peripheral blood mononuclear cells (pbmcs), with no hcv rna in the serum. single-nucleotide polymorphisms (snps) near interferon lambda 3/4 (ifnl3/4) gene are associated with spontaneous clearance and treatment response in patients with hepatitis c virus (hcv) infection.

Methods

In this study, we evaluated the frequency of oci in hemophilia patients and determined the association of three ifnl3 snps (rs12979860, rs12980275, and rs8099917) and ifnl4 ss469415590 with oci positivity in 450 hemophilia patients.

Results

The frequency of oci was estimated at 10.2%. among 46 oci patients, 56.5%, 23.9%, and 19.6% were infected with hcv-1b, hcv-1a, and hcv-3a, respectively. compared to patients without oci, unfavorable ifnl3 rs12979860 tt, ifnl3 rs8099917 gg, ifnl3 rs12980275 gg, and ifnl4 ss469415590 âˆ†g/âˆ†g genotypes were more frequently reported in oci patients. the multivariate logistic regression analysis showed that alanine aminotransferase (alt), cholesterol, triglyceride, ifnl3 rs12979860 (tt), ifnl3 rs8099917 (gg), ifnl3 rs12980275 (gg), and ifnl4 ss469415590 (âˆ†g/âˆ†g) were associated with oci positivity.

Conclusion

In conclusion, we studied the incidence of oci in iranian patients with hemophilia for the first time. our results demonstrated that unfavorable genotypes of ifnl3 snps and ifnl4 ss469415590 have a strong relationship with oci positivity. it seems that the host immune response plays a vital role in oci positivity.

Keywords

Occult hcv infection, interferon lambda 3, interferon lambda 4, hemophilia patients

Oleanolic acid and ursolic acid induce hypertrophy in neonatal rat ventricular cardiomyocytes.

Hannaneh Parvaresh,[1] Zeinab neshati,[2,*]

1. 1. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. 1. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran 2. Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

The major function of the heart is to maintain perfusion of peripheral organs during both normal and stress conditions. in response to an increased workload, the heart and the individual cardiomyocytes often undergo enlargement. this condition termed hypertrophy. cardiac hypertrophy increases contractility and left ventricular wall thickness, thereby maintaining cardiac efficiency. cardiac hypertrophy is also accompanied by some changes, such as, changes in gene expression, increased cell size, increased cell protein and rna content and increased production and assembly of contractile proteins into sarcomeric units, which induce changes in metabolism, contractility and cardiomyocyte survival. there are two types of cardiac hypertrophy: physiological and pathological hypertrophy. development of either physiological or pathological hypertrophy depends on the nature of upstream stimuli and signaling mechanisms. stimuli inducing physiological hypertrophy often reverse the progression of pathological hypertrophy to cardiac remodeling and heart failure. oleanolic acid (3â€²-hydroxy-olea-12-en-28-oic acid) and its isomer, ursolic acid (3â€²-hydroxy-urs-12-en-28-oic-acid), are triterpenoid compounds that exist largely in vegetable oils, and in more than 120 plant species, many of them are used in traditional medicine. since previous studies have demonstrated that oleanolic acid (oa) and ursolic acid (ua) attenuate pathological cardiac hypertrophy in vivo induced by aortic banding and transverse aortic constriction surgery, in this study, we examined the induction of physiological cardiac hypertrophy in vitro by oa and ua as a mechanism of such observations.

Methods

: neonatal rat ventricular cardiomyocytes (nrcmcs) were isolated from 2-day-old animals and cultured as confluent monolayers. cells were treated with 5 Î¼g/ml of oa and ua at day 3 and day 5 after culture initiation. induction of hypertrophic response was examined by analysis of cell surface area and protein content at 7th day.

Results

We observed that oleanolic acid and ursolic acid did not have any cytotoxic effects on cells and they could increase protein content and cell surface area of nrcmcs, 1.5 - 2 fold more than the control group, suggesting that these agents induce hypertrophy.

Conclusion

Increase in protein content and cell surface area of nrcmcs indicate oleanolic and ursolic acid induce cardiac hypertrophy. however, investigation of gene expression pattern is necessary for determination of the nature of hypertrophy. in the case of the induction of physiological hypertrophy, oleanolic acid and ursolic acid might serve as new therapeutic agents for pathological hypertrophy. increase in protein content and cell surface area of nrcmcs indicate oleanolic and ursolic acid induce cardiac hypertrophy. however, investigation of gene expression pattern is necessary for determination of the nature of hypertrophy. in the case of the induction of physiological hypertrophy, oleanolic acid and ursolic acid might serve as new therapeutic agents for pathological hypertrophy.

Keywords

: hypertrophy â€“ neonatal rat ventricular cardiomyocytes â€“ oleanolic acid â€“ ursolic acid

Omega-3 fatty acid improves oocyte maturation in vitro

Masumeh Ghorbani vahed,[1,*]

Abstract

Introduction

Omega-3 fatty acids may play a pivotal role in oocyte maturation in vitro and in vivo. however, there are controversy regarding the omega-3 fatty acids concentrations which may influence oocyte maturation. this in vitro experiment was exerted to determine the effects of low and high dose of omega-3 on oocyte maturation in vitro

Methods

Ethanol alcohol (96%) was added to content of each capsule to prepare the desired solution. nmri mice were superovulated by injection of gonadotrophin and killed 44hr later and the ovaries were removed. the oocytes were collected and cultured in Î±-men culture medium and divided into 4 groups: control (no treatment), sham (exposed to ethanol alcohol 96%), exp1 and exp2 (exposed to 10 and 100 mg/ml of eicosapentaenoic ethyl ester deco pentane ethyl ester in a ratio of 4 to 380mg/ml in pure alcohol solvent, respectively). the cells were incubated for 24 h at 38.58c under 5% co2 in humidified air and were considered mature if telophase-i or metaphase-ii stages were seen. statistical analysis was performed using anova.

Results

The rate of oocytes arrested at mii stage significantly increased in groups exposed to 10 and 100 mg/ml of omega-3 compared to control group. exposure to 10 mg/ml of omega-3 led to higher significant increase in percentage of oocytes arrested at mi stage compared to group exposed to 100 mg/ml of omega-3. the complete maturation rate of oocytes significantly decreased and increased in groups exposed to 10 and 100 mg/ml of omega-3 compared to control group, respectively.

Conclusion

Adding of omega-3 to oocytes environment improves oocyte maturation, according to which, using of omega-3 is of significant importance in female reproductive system improvement.

Keywords

Omega-3 , oocyte maturation, in vitro

Oncolytic virotherapy for cancer treatment

Sima Ebrahim abadi,[1,*] Mona akbari,[2] Rana najafi,[3] Zahra sadeghzadeh,[4]

1. Student Research Committee, Golestan University Of Medical Sciences, Gorgan, Iran.
2. Student Research Committee, Golestan University Of Medical Sciences, Gorgan, Iran.
3. Student Research Committee, Golestan University Of Medical Sciences, Gorgan, Iran.
4. Student Research Committee, Golestan University Of Medical Sciences, Gorgan, Iran.

Abstract

Introduction

Cancer is a global concern, and a big challenge faced by researchers and physicians. over time, attention has been paid to molecular approaches for cancer treatment. these approaches are based on the molecular differences of the cancer cells and healthy ones. one of the new methods of molecular treatment for cancer is the use of viruses to kill cancer cells. the mechanism of action of these viruses is the specific detection of cancer cells and then excessive proliferation in these cells, which ultimately causes the cancer cells to burst and die. on the other hand, cell bursting results in the spread of cellular remains and tumor antigens into the tumor microenvironment, which leading to the advocation of immune system toward the cancerous cells and may overcome immunosuppression in the tumor microenvironment and promote antitumor immunity. the specific detection of cancer cells by the virus is through the specific interaction of the binding ligand at the surface of the virus with the receptor of the cancer cell surface. some viruses such as adenovirus, reovirus, measles, herpes simplex, newcastle disease virus and vaccinia have now been clinically tested as oncolytic viruses. the first approved oncolytic virus is genetically not modified echo-7 strain enterovirus rigvir, approved in latvia in 2004 which shows a promising results in melanoma treatment. the drug talimogene laherparepvec (oncovex, t-vec) was the first oncolytic herpes virus (a modified herpes simplex virus), approved by the us fda and by the ema in the eu in 2015 for the treatment of advanced melanoma. some of the viruses that are used as oncolytic virus are including: herpes simplex virus (hsv) was one of the first viruses to be used as oncolytic virus because of its appealing properties like: well-studied, easy to manipulate and relatively harmless (merely causing cold sores) so causes fewer risks. t-vec is a genetically engineered oncolytic hsv, with mutations in infectious cell proteins (icp) 34.5 and 47, while expressing us11 and granulocyte macrophage-colony stimulating factor (gm-csf). gm-csf is an immunomodulator that enhances viral oncolysis. vaccinia virus (vac): in early phase i studies, itu jx-594, a genetically engineered tk-mutant/gm-csf expressing vac, demonstrated highly promising results in patients with melanoma and hepatocellular carcinoma (hcc). adenovirus (ad): oncolytic adenoviruses are been genetically modified to take advantage of the altered tumor environment. onyx-015 is an e1b55-mutant ad that can cause oncolysis of cancer cells with mutant p53. parvovirus (pv): pv b19 can induce cell death through apoptosis in erythroid cells through non-structural proteins (ns1)-induced caspase-3 activation. parvoryx01 is a first in human, phase i/iia, dose-escalation study of h-1pv given locally and systemically in patients with recurrent glioma. reovirus (rv): reovirus preferentially targets cancer cells based on their higher rates of cell division, which differs from that of normal cells. reolysin is one of the best-studied ov and several phase i and ii studies have been completed. measles virus (mv): mv enters cells through interaction of its h protein and cellular cd46 (membrane cofactor protein) and signaling

lymphocyteâ€“activating molecule (slam). a phase i study of ip mv-cea, a carcinoembryonic antigen expressing mv, to patients with recurrent ovarian cancer has been completed.

Methods

Numerous promising ways in ovs engineering are being studied. for example, several compounds have been found that allow ovs to overcome innate antiviral immune responses. moreover, ovs that directly blunt, eliminate or evade antiviral antibody responses are under development.

Results

: clinical studies have shown promising results in using immunotherapy for cancer. however, the evasion of tumor cells from the immune system is still a big challenge.

Conclusion

Oncolytic viruses are promising immunotherapeutic agents. these viruses provide unique ways to alert the immune system, which may overcome the interactions of tumor cells with the immune system. modified viruses, in terms of tumor selectivity and potency, and optimized combinations with other immune therapies may lead to further advances in oncolytic virotherapy. with the development of viruses, as well as other immune stimulatory agents, the challenge in the field will be to successfully identify the ovs and combinations that will be the most effective for patients, particularly those with tumors that are resistant to other therapies.

Keywords

Oncolytic viral therapy, cancer, cancer treatment

Ophthalmic drug delivery of ketorolac tromethamine by suitable polymeric nanofibers

Shahla Mirzaeei,[1,*] Shiva taghe,[2]

1. Pharmaceutical Sciences Research Center, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran
2. Student Research Committee School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract

Introduction

Ocular inï¬,ammation can be caused by a wide variety of factors, including autoimmune disease, infection, allergies, injury or trauma, and surgery. normally, treatment of ocular inï¬,ammation involves the use of corticosteroids and non-steroidal anti-inflammatory drugs (nsaids). ketorolac tromethamine (kt) is a non-steroidal anti-inflammatory drug from the family of heterocyclic acetic acid derivatives. aqueous ocular drops of kt are effective for topical use in inhibiting postoperative inflammation of the eyes, reducing postoperative pain, reducing conjunctivitis with no alteration of corneal opacity. the major challenge faced by todayâ€™s pharmacologist and formulation scientist is ocular drug delivery. topical eye drop is the most convenient and patient compliant route of drug administration, especially for the treatment of anterior segment diseases. delivery of drugs to the targeted ocular tissues is restricted by various precorneal, dynamic and static ocular barriers. also, the rapeutic drug levels are not maintained for longer duration in target tissues. in the past two decades, ocular drug delivery research advanced towards developing a novel, safe and patient compliant formulation and drug delivery devices/techniques, which may surpass these barriers and maintain drug levels in tissues. to overcome the ocular drug delivery barriers and improve ocular bioavailability, various conventional and novel drug delivery systems have been developed such as nanofibers, nanoparticles, liposomes, dendrimers, implants, contact lenses, nanosuspensions. nanofibers offer the prospects of prolonging the residence time of nfs ensuring optimal contact between the formulation and the mucosa resulting in adequate drug concentration in external ocular tissues. polycaprolactone (pcl) is the biodegradable and biocompatible in nature. therefore, the patch will degrade with time and come out. slow degradation rate of pcl makes it suitable for fabrication of nanofibers patch for prolonged drug delivery. the food and drug administration (fda) have approved pcl for use in the drug delivery. the objective of the present study was to develop ocular delivery for ketorolac tromethamine loaded polycaprolactone nanofibers used to treat inflammation of the eye.

Methods

Nanofibers solutions were obtained upon the composition of 10% pcl with ketorolac solved in dmf/acetone under magnetic stirring at room temperatures. preparation of the nanofibers was carried out using a customized electrospining system. the solutions were loaded with the flow rate of 1 ml/h and in to a 10 ml syringe attached to a circular-shaped polyethylene capillary tube with an inner diameter of 0.1 mm. the high voltage supply of 28 kv was applied to the metallic needle, and the aluminum foil was used

to collect the electrosprayed samples. nozzle to collector distance was adjusted to 18 cm. nanofibers characterized on the basis of fiber diameter, morphology, entrapment efficiency, percentage moisture absorption, percentage moisture loss, thickness, folding endurance and drug release behavior, etc. ketorolac tromethamine concentration was determined spectrophotometrically at Î»max of 323nm.

Results

In the present work biodegradable polymeric nanofibers were successfully developed by using electrospinning technique. the microscopic study indicated that the nanofibers were uniform in diameter with smooth surface (197-230 nm). we achieved very high drug content about 100%. the insert had a thickness varying from 0.0766Â±0.0020 mm to 0.105Â±0.0020 mm. nanofiber inserts showed the good folding endurance, which revealed that nanofibers have enough flexibility and can easily get adjusted in ocular tissue. the folding endurance nanofiber formulations are in the range of 303Â±3 to 364Â±5. degree of swelling plays an important role in the drug release behavior from the nanofiber insert. the degree of swelling was found be high in case of pcl nanofibers. moisture uptake values were found to be in the range of 0.96Â±0.016 to 1.055Â±0.044 and the moisture loss values were found in the range of 1.01Â±0.027 to 1.24Â±0.054. the results revealed that nanofibers inserts have the good physical stability at high humid and dry conditions. in addition, the study has demonstrated a slower, sustained release of kt through cornea, as compared to the solution formulation of this drug (about 54h).

Conclusion

The physicochemical properties showed that the nanofibers could be an effective carrier for ketorolac. thus, this formulation of nanofibers has a strong potential for a sustained release effect of the drug, when applied to the eye topically.

Keywords

nanofibers, ocular drug delivery, polycaprolactone, electrospinning, ketorolac tromethamine.

Oral administration of salvia hydrangea extract (an iranian sage) nrf2 in rat model of alzheimerâ€™s disease

Rana Sirous azar,[1] Afshin kheradmand,[2] Solmaz khalifeh,[3,*] Mahshid shaabanpouremam,[4]

1. Amir-Almomenin Hospital, Tehran Medical Sciences, Islamic Azad University
2. Department of pharmacology, school of pharmacy-international campus, Iran university of medical sciences, Tehran, Iran
3. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University
4. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University

Abstract

Introduction

Alzheimerâ€™s disease (ad) is the worldâ€™s most familiar dementing illness. neurodegenerative disorders are generally characterized by abnormal aggregation and deposition of specific proteins. amyloid beta (aÎ²) plaques are one major characteristic of ad pathology. aÎ² originates from proteolysis of the amyloid precursor protein and is the leading trigger of neurotoxicity and oxidative damage in ad

Methods

We used ad models of rats by injecting aÎ² to determine the nrf2 protein level by orally administration of s.hydrangea in the hippocampus and frontal cortex of male wistar rats. salvia genus is a well-known traditional chinese herbal medicine that is widely used in the clinical treatment of different diseases. in a period of ten day, two groups of rats were fed with s.hydrangea in concentration of 50mg/kg/day by oral gavage syringe directly. in this study, animals were divided into four groups: vehicle group; which received oral gavage of water (1 ml) daily for 10 days before the hippocampal injection of 3 Âµl pbs. aÎ² injected group, received oral gavage of water (1 ml) for 10 days before the injection of aÎ² (10 ng/Âµl). two other groups pretreated by 1 ml solution of s. hydrangea every day for 10 days (50 mg/kg), then received aÎ² and/or pbs in ca1 region.

Results

We have found that nrf-2 levels were increased about 1.3 fold in hippocampus and about 1.2 fold in frontal cortex in aÎ² injected rats in compare with control group. in pretreated rats with s.hydrangea cause more increase in nrf2 factor about 1.2 fold in hippocampus and 1.25 fold in frontal cortex in compare with aÎ²-injected rats.orally treatment of s.hydrangea extract in aÎ²-injected rats could change nrf2 protein level which is master regulator of antioxidant defense system.

Conclusion

In summary, orally treatment of s.hydrangea extract in aÎ²-injected rats could nrf2 protein level. for these reasons, s.hydrangea extract and its constitutive compounds can be one of therapeutic drugs and prevent neurodegeneration in rat ad model.

Keywords

Salvia hydrangea, amyloid beta, nrf2

Oral administration of salvia macilata extract changed catalase activity in rat model of alzheimerâ€™s disease

Afshin Kheradmand,[1] Raana sirous azar,[2] Solmaz khalifeh,[3,*]

1. Department of pharmacology, school of pharmacy-international campus, Iran university of medical sciences, Tehran, Iran
2. Cognitive and Neuroscience Research Center (CNRC), Amir-Almomenin Hospital, Tehran Medical Sciences, Islamic Azad Univer
3. Cognitive and Neuroscience Research Center (CNRC), Amir-Almomenin Hospital, Tehran Medical Sciences, Islamic Azad Univer

Abstract

Introduction

Alzheimerâ€™s disease (ad) is the worldâ€™s most familiar dementing illness. ad typical presentations are loss of memory and cognitive function. deposition of amyloid-beta peptide (aÎ²) in hippocampus is one of the well-validate biomarkers in pathogenesis of ad. neurodegeneration disease like alzheimerâ€™s are not treated yet.

Methods

In current study the effect of orally administration of salvia macilenta in the catalase activity of aÎ²-injected male albino wistar rats was determined. the plantâ€™s aerial parts were air-dried, protected from direct sunlight, and then powdered. rats were received oral salvia macilenta (50mg/kg/day) for 10 days and then some of them received aÎ² (10 ng/Âµl) in their hippocampus (ca1 region). catalase activity was measured spectrophotometrically at 240 nm using h2o2 (0.01 m) as substrate, which was added to the cuvette at the end of the process.

Results

Data obtained from this study showed that in the aÎ²-injected group the catalase activity was decreased about %20 while orally administration of salvia macilenta extract increased it (1.3 folds) in the rats which received aÎ² compared to the aÎ²-injected group in the hippocampus region of the brain

Conclusion

Catalase is a very important enzyme in protecting the cell from oxidative damage by reactive oxygen species (ros). orally treatment of s. macilenta extract in aÎ²-injected rats could increase catalase activity so it can be one of proposed treatment for people suffer from ad model.

Keywords

Salvia macilenta, amyloid beta, catalase, rat

Over expression of activator protein 1 in chronic hbv infected patients

Katayoun Mohajer,[1,*]

Abstract

Introduction

Activator protein 1 (ap1) and interferon regulatory factor 3 (irf3) are transcription factors that play important roles induction of immune responses, including production of inflammatory cytokines, against viral infections. therefore, the aim of this study was to examine expression levels of activator protein 1 in chronic hbv infected (chb) patients.

Methods

In this study, peripheral blood samples were obtained from 40 chb patients and 40 healthy controls in 5.5 ml tubes with and without anti-coagulant for mrna extraction and separation of serums, respectively. chb patients with hiv and hcv, cytomegalovirus, hepatitis a, c, d, and e viruses and epstein-barr virus co-infection, patients with pregnancy or breastfeeding, age younger than 18 years or older than 55 years; features suggestive of other coexistent liver disease including previous liver transplantation, alcoholic liver disease, autoimmune liver diseases, cirrhosis, evidence of hepatocellular carcinoma, and antiviral and immunosuppressive drugs users were excluded from the study. the â€œguide of prevention and treatment in viral hepatitisâ€• and previous clinical and experimental records was used for diagnosis of chb (15). the controls were selected with the same age and sex. the protocols for isolation of pbmcs from peripheral blood samples were described elsewhere (14). the protocol of this study was approved by the ethical committee of the azad university pharmacy branch and all of participants filled out the written informed consent prior to sample collection. detection of serological hbv markers: the status of hbsag and hepatitis b e antigen (hbeag) in participants were determined using the elisa technique (behring, marburg, germany) according to the manufactureâ€™s guidelines. hbv-dna extraction and real-time pcr condition: 200 Î¼l of plasma was used for hbv-dna purification using a commercial kit (cinnaclon, tehran, iran) according to manufacturerâ€™s instructions. a commercial kit from the primer design company (london, uk) was used for hbv-dna quantification. rna extraction, reverse transcription and quantitative real-time pcr: total rna purification from pbmcs was performed using a trizol ls extraction kit (invitrogen). the quality of extracted rna was examined by either electrophoresis on an ethidium bromide pretreated agarose gel or by measuring absorption at 260/280 nm. genes were quantified by qrt-pcr using beta actin as control. the qrt-pcr was carried out using a sybr premix kit (kit ampliqon master mix, denmark) the following program was programmed on a abi real time pcr (applied biosystems 7500 real-time pcr system, usa). primer sequences are presented in the table 1. data analysis and statistical methods the t-test under the spss software version 18 was used for data analysis and a p value less than 0.05 was considered as significant

Results

The results demonstrated that expression of ap1 was significantly increased in pbmcs of chb patients in comparison to healthy controls. while, expression level of irf3 was not differ between patients and controls

Conclusion

Based on the results presented here, over expression of the ap1 in the patient which it may lead to approve immune responses against hbv infection which seem impaired in the patients.

Keywords

Chronic hbv infection, irf3, ap1

Overexpression of mir-302c-5p promotes chemosensitivity to oxaliplatin by targeting abcb1 in colorectal cancer

Marzieh Ghanbarian,[1,*] Ladan teimoori-toolabi,[2] Rezvan najafi,[3]

1. Molecular Medicine Department, Pasteur Institute of Iran
2. Molecular Medicine Department, Pasteur Institute of Iran
3. Department of Molecular Medicine and Genetics, School of Medicine, Hamadan University of Medical Sciences

Abstract

Introduction

Schedules containing oxaliplatin plus 5-fluorouracil were demonstrated to enhance an objective response rate more profoundly than 5-fu monotherapy, however acquired chemoresistance mitigate drug effects in over 90% of patients with metastatic colorectal cancer. in this sense, detailed mechanism underlying resistance to oxaliplatin remain of paramount clinical importance to unveil therapeutic strategies aiming to overcome cancer cell drug resistance. the implication of mirnas has been recently found in regulation of drug metabolism and drug efflux. several studies have been emphasized on tumor suppressor properties of mir-302c in many cancers. the current study has been investigated the pharmacokinetics of mir-302c-5p in oxaliplatin resistant sw480 cell line.

Methods

Invitro oxaliplatin resistant colorectal cancer (crc) models as sw480/oxr were developed by intermittent exposure of sw480 colon cancer cells to increasing concentrations of oxaliplatin. expression of mir-302c-5p in sw480 and sw480/oxr cell lines were detected by stem-loop real-time pcr. sw480/oxr were transfected with mir-302c-5p-contained lentiviral vectors. the expression level of abcb1 were assessed by real-time pcr. oxaliplatin sensitivity was analyzed by mtt assay in these cells.

Results

Prediction of the binding between mir-302c-5p and 3-utr of abcb1 mrna was performed by bioinformatics analyses despite abcb1 upregulation, expression of mir-302c-5p was downregulated in oxaliplatin resistant crc cell line sw480/oxr as compared with its parental line sw480. overexpression of mir-302c-5p decreased the expression of abcb1 mrna in sw480/oxr cells and enhanced the sensitivity of resistant cells to oxaliplatin.

Conclusion

Serving as a key contributor of acquired resistance to oxalipalatin, abcb1 was downregulated by mir-302c-5p which sensitize resistant crc cells to oxaliplatin.

Keywords

Colorectal neoplasia, drug resistance, oxaliplatin, abcb1, mir-302c-5p

Parp inhibitors in triple-negative breast cancers: from basic research to clinical application

Mahsa Kaviani,[1,*] Mohammad amin dehghani,[2] Farzan mozaffarian,[3] Fatemeh dehghani,[4]

1. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

With an increased risk of distant metastasis, short post-recurrence survival, and early relapse, triple negative breast cancer (tnbc) encompasses 15-20% of all breast cancers. with applying synthetic lethality, parp inhibitors (parpi) target cancers with deficient homologous recombination dna repair, including brca1- and brca2-mutated tnbc. for cancers with deficiencies in the procedures of dna repair, which are managed by the brca1 and brca2 tumor suppressor genes, parpi has been clinically established as a treatment process.

Methods

in this research, english articles published in pubmed database were searched using the keywords of parp inhibitors, clinical treatment, triple negative breast cancer, brca1, anti-parp therapy, and brca2.

Results

Despite the unclear path of approving the use of parpi as a treatment for breast cancer in clinical settings, current results obtained from clinical trials have been indicative of increased interest to this issue. some of the parpi methods have been recently applied to patients with breast cancer for clinical assessment. in this respect, talazoparib and olaparib had higher effectiveness regarding advanced germline brca-mutated cancer, compared to standard chemotherapy. moreover, current studies have demonstrated the efficiency of anti-parp therapy combined with carboplatin in patients diagnosed with tnbc in the neoadjuvant setting.

Conclusion

With a specific emphasis on parpi, pharmacotherapy plays a role in the formation of new treatment methods for tnbc cases. according to the results of the study, parps was recognized as an efficient technique to target cancers with deficient dna-damage repair, such as brca1 and brca2 mutation-associated breast cancer.

Keywords

Triple negative breast cancer; brca1/2; parp inhibitors; anti-parp therapy; clinical treatment.

Partial replacement of left hemidiaphragm in dogs by either cryopreserved or decellularized heterograft patch

Hamidreza Davari,[1,*] Mohammad bagher rahim,[2] Nader tanideh,[3] Mahsa sani,[4] Ali reza rasekhi,[5] Ahmad monabati,[6]

1. Tehran University of Medical Sciences
2. Tehran University of Medical Sciences
3. Shiraz University of Medical Sciences
4. Shiraz University of Medical Sciences
5. Shiraz University of Medical Sciences
6. Shiraz University of Medical Sciences

Abstract

Introduction

Large diaphragmatic defects are still a challenging issue for reconstruction using either synthetic prosthesis or bioprosthesis. to evaluate the possibility of using diaphragm allograft as a natural bioprosthesis in humans, we conducted a two-group study and compared cryopreserved and decellularized diaphragmatic heterograft patched in a canine model.

Methods

At the end of organ harvesting from a human donor, the left hemidiaphragm was taken to the laboratory in phosphatebuffered saline solution. the next step was freezing the grafts at â^'80Â°c, and preserving them for up to 2 months in group 1. it was subjected to a detergentâ€“enzymatic method (containing sodium deoxycholate/dnase lavations) of decellularization for 25 cycles in group 2. through left thoracotomy in the eighth intercostal space, cryopreserved patches in six dogs and decellularized patches in five dogs replaced the diaphragm. during the follow-up, sonography was done in all animals, but three and two dogs in group 1 and 2 underwent computed tomography (ct) scan, respectively. the animals were euthanized after 6 months.

Results

There was no mortality. sonography showed only motion impairment of the patches in all cases. in group 1, ct scan showed mild atelectasis and scattered infiltration in the left lower lobe, fibrotic bands and minimal fluid collection under the diaphragm. in group 2, ct scan showed scattered fibrotic bands and mild to moderate elevation of the left hemidiaphragm. there was no evidence of gross disruption and complete healing of the suture line. necropsy in both groups showed patches were completely replaced with a dense fibrous tissue. in group 1, focal calcification was noticeable in every case and foreign body-type granulomas were clearly seen all over the grafted tissue. histology in group 2 animals showed less inflammatory cell infiltration and scattered foreign body granulomas in comparison with the cryopreserved patch graft.

Conclusion

He gross healing process in the decellularized heterograft is similar to the cryopreserved diaphragm but with fewer inflammatory cells and foreign body granulomas on histology. both of them can be used instead of bioprostheses with regard to the fact that the decellularized patch technique is more complex and expensive. it is recommended to compare them with commercial bioprostheses.

Keywords

Cryopreserved â€¢ decellularized â€¢ bioprosthesis â€¢ diaphragm â€¢ reconstruction

Pcr detection of cytomegalovirus in umbilical cord blood

Nava Etminan taghva,[1,*] Mohammad hassan shahhosseiny,[2] Fahimeh nemati mansour,[3]

1. Department Of Biotechnology, Faculty Of Advanced Sciences & technology, pharmaceutical Sciences Branch, Islamic Azad Uni
2. Department of Microbiology â€“ shahr-e-Qods Branch â€“ Islamic Azad University â€“Iranian Gene Fanavar Institute (IGF), Tehran
3. Department Of Biotechnology, Faculty Of Advanced Sciences & technology, pharmaceutical Sciences Branch, Islamic Azad Uni

Abstract

Introduction

Cytomegaloviruses (cmv) are herpes viruses are everywhere and common cause of human disease. the virus causes infections of the uterus and as a result, the transmission of the infection to the fetus, in the high incidence of congenital infections. for this reason, by designing this project, we are looking for cmv viral infection in the umbilical cord blood and since pcr and modern molecular techniques are a quick and accurate method, it help us to identify and diagnose viral infections early.

Methods

100 umbilical cord blood samples were prepared in sterile conditions from the operating room of mostafa khomeini hospital. dna was extracted from the umbilical cord blood ,samples using dng-plus method. the pcr test was optimized using specific primers for cmv based on the ÃŸ glycoprotein target gene. the pcr test was evaluated for limit of detection (lod) and specificity and then on extracted dna samples.

Results

The pcr test was optimized and the product of 257 bp was observed in 1.5% agarose gel electrophoresis. the lod was obtained in this study 100 copy/reaction, also primers no positive with other dna in the test of specificity. of 100 cord blood samples, 20% were contaminated by the presence of cmv virus.

Conclusion

Considering the role played by cmv in congenital infections and considering the high accuracy and high sensitivity of amplification molecular tests such as pcr and the results obtained in this study, it can be concluded that viral cmv is important for the occurrence of congenital infections.

Keywords

Cytomegalovirus, umbilical cord blood, detection, pcr

Permanent use of acellular dermal matrix for complicated wounds in plastic surgery

Afshin Fathi,[1,*]

Abstract

Introduction

Acellular dermal matrix (adm) is most commonly used in poorly vascularized wounds to improve the condition of the wound before wound coverage. as a result, the wound closure using adm is the appropriate substitute for using synthetic dressing or biomaterials or microscopic tissue transplantation. the aim of this study was to evaluate the results of use of adm and autologous skin graft for wound closure in the patients.

Methods

a prospective analysis was performed on the use of adm in the preparation of complicated wounds for wound closure. twelve patients with chronic ulcers caused by malignant skin tumors were included in this study. all patients were selected from october 2017 to september 2018 in our plastic surgery department. none of the patients had the possibility of repairing the wound with an autologous skin graft alone. the number of 38 pieces of adm produced at the center of tissue research and transplantation at tehran university of medical sciences were used. at first, the wound was debridement and after the preparation of adm in the normal saline at a concentration of 0.9%, it was placed on the wound by an autologous skin graft over it.

Results

Adm was used as a biological cover in 7 patients and as primary coverage in 3 patients. after three months, the color of the composite skin in 7 patients was similar to the color of to the normal skin, good elasticity; no composite skin graft contracture or scars were observed and very high patients satisfaction.

Conclusion

Adm can be used as a biological dressing for complex wounds that cannot be closed at any time. it seems that in addition to better preparation of the wound before autograft, prevents difficult microscopic surgery or costly dressings.

Keywords

Acellular dermal matrix , chronic ulcers , malignant skin tumors

Phage therapy as a solution for antibiotic resistance and super bugs

Foad Ramasi,[1,*] Negar ahmadian,[2]

1. Shahid Beheshti university of Tehran
2. Shahid beheshti university

Abstract

Introduction

Since 1929,with penicillin discovering, antibiotics were the most efficient drugs for bacterial infections; but abusing these drugs and evolution based on natural selection theory made antibiotic rsistant pathogens. for instance, resistance of staphylococcus aureus to methicillin. annualy, mrsa has more casualities typanites, hiv and parkinson. in this situation, to cope with this challenge, antimicrobal solutions should be provided. one of these can be phage therapies. phages are kind of viruses that target bacteria cell walls and have two circles of life:lytic and lisogenic. phages were studied a few years before antibiotics and penicillin. results show that phages can have effects on biological control and food industry immune.

Methods

Observing strange antibacterial activity against vicholerae in ganga and jumna by the year 1896, ernest hankin, supposed that an unknown substance is behind the cause of this phenomenon. after wards, deâ€™herel a canadian â€“ french scientist, when hemorrhagic dysentery prevailed among russian soldiers, made free-bacterial filtrates of their feces and incubated them with some strains of shiegella contaminated by sick people. as a part of trial proposing to make vaccines for dysentery, he spread those handmade materials on agar medium for bacterial growth; interestingly, clear areas with no bacterial growth were seen on agar medium at the end of the trial. he named those areas as plaques and declared that the phenomenon is bacteriophage (bacterium eater). these preliminaries provided sufficient interest to study phage therapy in some countries like usa, as health institute of michigan during 1920-1930 arranged an experiment in which 208 patients contaminated by staphylococcus, streptococcus, salmonella, e. coli, klepsiella, pseudomonas infections were treated using phage therapy. success rate variated between 75-100 percent and sometimes even 94%. overall phage therapy efficacy was demonstrated in a clinical trial during 1950-1960 in which 607 patients all of whom were failed to respond to conventional treatment by antibiotics, were treated by phage therapy. the results were reportedly good; 80 % of the patients recovered completely, 18 % improved, and only 2% exhibited no changes. all of these experiments and observations proved the efficacy and preference of phage therapy over antibiotic drugs.

Results

Phage therapy according to experiments, has some benefits over than antibiotics: 1. phages are more allocated, therefore they reduce secondary infections in comparison to antibiotics. 2. phages concentrate on the infection site but antibiotics circulate all over the body organs. 3. lateral effects in phage therapy

are at the minimum range but bacteral resistance, allergic reaction, anaphylaxis, and secondary infections are caused by abusing antibiotics. 4.phage mutation appears with bacterial mutation and they can predominate these resistant, mutant bacteria in necessary, but antibiotics are constant materials that are unable to challenge and combat with these kinds of bacteria. 5. phages in contrast to antibiotics have exponential growth, so they replicate in infection site and there is no need of extra injections. the substantial point is that phages curb the pathogens to the point that immune system is enable to combat them. phage therapy has some limitations and problems too but in comparison to antibiotics it can be solved by genetic engineering, as phages are able to change, in the way we want them to be. some of these issues are : 1.low host range due to high specification 2. insufficient sincerity 3. insufficient knowledge about heterogeneity ad performance of phages. the last point to say is that we can make the treatment more efficient by incubating phages and antibiotics both.

Conclusion

Along with superiority of phage therapy on antibiotic drugs we must know that only lytic phages are suitable for this way of treatment. they have exponential growth in the body, and they breeding speed is so high, therefore they are appropriate candidates for infection cure. but it worth nothing that some antibiotics are in our personal drugs that there is no bacterial resistance to them, but there is still possibility of developing a comolex genetic resistance in them. so we have not to abuse these drugs. it is also essential that great drug designing companies and laboratories should concentrate on discovering new antibiotics which can keep us from returning to the era before antibiotics.

Keywords

Bacteriophages, phage therapy, antibiotic resistance

Pharmacologic misuse for spiritual gain

Ali Niksirat,[1,*] Abdolreza ghoreishy,[2] Mehdi maghbooli,[3] Masoudasadi khiavi,[4]

1. Internist, Tehran University of Medical Sciences
2. Department of Neurology, School of Medicine, Zanjan University of Medical Sciences
3. Department of Neurology, School of Medicine, Zanjan University of Medical Sciences
4. Department of Pharmacotherapy, School of Pharmacy, Zanjan University of Medical Sciences

Abstract

Introduction

Muslim women have not opportunity to perform religious rituals during their menstrual period. however, some of them use oral contraceptive pills (ocp) to holdup menstruation and it gives rise to the brain thrombosis particularly cerebral venous-sinus thrombosis (cvst). this study was been designed to evaluate the brain thrombosis among muslim women

Methods

This cross sectional study was conducted on 32 female cvst patients admitted in a university hospital in zanjan province of iran from august 2010 (ramadan 1431 in islamic calendar) to september 2011(ramadan 1432), including two consecutive ramadan. the history of ocp consumption and the quantity of estrogen (ethynil estradiol) in last used ocp pack(remaining pills at the time of admission) were be highlighted to discover using high-performance liquid chromatography (hplc) to make the issue more clear

Results

Of 32 admitted cvst patients, 27 cases had a history of ocp consumption. a total number of 24 cases claimed low dose (ld) pills use and analysis of last used ld pills by mentioned patients revealed standard amount of ethynil estradiol in pills that used by participants except of one case

Conclusion

Accumulation of cvst rate among muslim women despite of using standard contraceptive products for delay of menstruation should considered as a case of drug abusing. it strongly recommends that women should avoid the use of ocps to delay menstruation

Keywords

Brain thrombosis, oral contraceptives, estrogen

Phenol based rna isolation is the preferred procedure for study of gene expression in human urinary sediment

Hootan Yazdani,[1,*]

1. 3. Urology-Nephrology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Evaluating the expression of genes in urinary sediment has been considered as a promising non-invasive approach for discovery of biomarkers of renal diseases. nonetheless, extracting rna from this valuable source of biomarkers is notoriously challenging due to low cellular content and other factors that affect the quality of isolated rna. hence, we compared four different methods for isolation of rna from urine sediment samples. trizol reagent with basic protocol (method 1), modified procedure of trizol (method 2), a column-based protocol (method 3) and combination of method 1 and 3 (method 4) were applied for isolation of rna from identical aliquots of five healthy urine samples. concentration and purity of isolated rnas were assessed and cdna synthesis was performed. expression level of gapdh and mir-21 was studied by quantitative rt-pcr. the highest yield of rna extraction was observed in method 1 and 2. no difference in purity of rna in different methods was noticed. quantitative rt-pcr findings revealed the lowest levels of ct values (higher expression) in samples of method 1. although concentrated rnas were isolated from samples of method 2, the declined ct values could indicate degradation of isolated rna. column based protocols (method 3 and 4) were not capable of significant recovery of rna. trizol isolation, as a phenol based method, is the most straightforward and reliable procedure for rna isolation from urinary sediment cells.

Methods

We used 4 different isolation methods for each sample and compared rna yield and purity. (i) method 1, rna isolation was performed by trizol reagent (thermo scientific, waltham, ma, usa) according to manufacturer instruction and rna pellet was dissolved in 30 Î¼l of diethyl pyrocarbonate (depc) water. (ii) method 2 was based on trizol reagent with some modifications. we have previously used this method for isolation of total rna enriched in mirnas . in this method the same procedure was used for isolation of aqueous phase (containing rna fraction). afterward, 1 ml of 100% ethanol was used instead of isopropanol and the mixture was incubated at -20 Âºc for overnight. rna pellet was precipitated by centrifugation for 45 min at 14000 Ã—g in 4 Âºc. pellet was washed with 75% ethanol and centrifuged for 8 min at 14000 Ã—g in 4 Âºc. to facilitate rna precipitation, 0.35 of glycogen (20mg/ml) was added to aqueous phase in method 1 and 2. (iii) method 3, a column based technique was performed by using fastpure rna kit (takara) per manufacturerâ€™s instruction. (iv) method 4 was an integration of method 1 and method 3. briefly, lysis of sample was carried out by trizol reagent and aqueous phase was separated according to method . then, aqueous phase was mixed with 500 Î¼l of 70% ethanol and the procedure was followed according to fastpure rna kit (takara) instruction. the rna concentration was measured by absorbance at

260 nm and the purity of rna was assessed by the ratio of absorbance at 260 to 280 nm using wpa spectrophotometer (biochrom).

Results

Rna concentrations in method 1 (219 Â± 62.8 ng/Âµl) and 2 (235.6 Â± 42.6 ng/Âµl) were significantly higher than method 3 and 4 . no significant differences in 260/280 and 260/230 ratio were observed between different isolation methods . rt-pcr of gapdh as a housekeeping gene showed positive and specific amplification in all 5 samples (a-e) of method 1 but only in one of the samples of methods 2 and 3, specific pcr products were observed. results of gapdh expression may be indicative of extensive rna degradation in method 2-4. it has been revealed that mirnas are relatively stable rna species of urine . so, we evaluated the expression of mir-21 in our samples. contrary to the expression of gapdh, mir-21 has been detected in most of samples . intriguingly, mir-21 has been detected in significantly higher levels in rna samples processed in method 1.

Conclusion

Evaluation of gene expression levels in urinary sediment would be an ideal non-invasive surrogate marker for different renal diseases . measurement of mrna expression level could be considered as better experimental tool in comparison with protein assessment especially for renal diseases as it is not affected by glomerular filtration and tubular reabsorption .

Keywords

Rna isolation, urinary sediment, quantitative rt-pcr.

Phenotypic diagnosis of esbl (extended-spectrum Î²-lactamas) enzymes and investigation of resistance gene existence (per) in the isolated klebsiella pneumonia bacteria of pulmonary patients ad mitted i

Ali Khosravi,[1,*] Fateme zaboli,[2] Ismail fattahi,[3]

1. Islamic Azad University of Ayatollah Amoli
2. Islamic Azad University of Ayatollah Amoli
3. Islamic Azad University of Ayatollah Amoli

Abstract

Introduction

Producing Î²-lactamase enzymes by klebsiella pneumoniae, especially of esbl type, (extended-spectrum Î²-lactamas) is one of the health-care problems across the world. the prevalence of this enzymes varies in different geographic regions over time. this research aims to determine the prevalence of bacteria producing esbl. among klebsiella pneumoniae strains and trace the blaper gene in the shomale specialized hospital of amol.

Methods

The present descriptive-cross sectional study have done on 20 strains of isolated klebsiella pneumonia of experimental samples of patients reffred to shomal specialized hospital of amol in 2018, and identified by biochemical-differential tests. disc diffusion method was used to avaluate organism producing esbl identified by doing verified screeing and phenotypic tests. to identify per gene produced in resistant samples of klebsiella pneumoniae. pcr method was used.

Results

According to results of this study, 14 strains of positive esbl klebsiella pneumoniae identified pcr results for identifying strains containing 3 per genes showed that.

Conclusion

: results show that production of Î²-lactamase in the isolated bacteria at studied community accompany with high prevalence. the level of blaper gene was low. thus the production of Î²-lactamase among such isolates related to other kinds of Î²-lactamase.

Keywords

Klebsiella pneumoniae, esbl, per gene, pcr

Phospholipidated curcumin inhibits cell growth of cervical cancer cells via modulation of wnt pathway

Shadi Khorrami,[1,*] Shadi khorrami,[2] Shima alinasab,[3] Mehrdad moetamani-ahmadi,[4] Amirhossein sahebkar,[5] Fatemeh daneshmand,[6]

1. Metabolic Syndrome Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Cancer Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
3. 1) Department of Biology, Payame Noor University, Taft, Islamic Republic of Iran
4. 3) Department of Biology, Mashhad Branch, Islamic Azad University, Mashhad, Iran.
5. 4) Biotechnology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
6. 1) Department of Biology, Payame Noor University, Taft, Islamic Republic of Iran

Abstract

Introduction

Cervical cancer is the fourth leading causes of cancer death among women, and it is most notable in developing countries. despite improvement in the treatment approaches including surgery, radiation, and chemotherapy the prognosis of cervical cancer remains unfavorable. therefore it is needed to identify new anticancer agents to increase the efficacy of current treatment modalities in cervical cancer. curcumin (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione), which is one of the basic materials derived from turmeric and the rhizome of curcuma longa (l), is generally used as dietary pigment as well as food additive. different studies suggest that curcumin has anti-cancerous, anti-inflammatory and anti-oxidant attributes. clinical studies demonstrated that curcumin is safe enough for humans, as it can be used at high doses, but its disadvantage is its very low bioavailability that lead to limited therapeutic usage. curcumin can induce apoptosis in tumor cells and is potential for anti-angiogenesis which lead to cancer suppression. curcumin anticancer action consists inhibition of the stat3 and nf-Îºb signaling pathways as the important molecular mechanisms in cancer development and progression. cervical cancer as the curcumin anticancer target is investigated in following article. the cervical cancers are classified into two types according to the pathology: squamous cell carcinoma (80% of cases) and adenocarcinoma (10 to curcumin increasingly mediates anti-proliferative effects owning to various pathways including,cyclooxygenase-2 (cox-2), Î²-catenin, forkhead box o3 (foxo3), transcription factors such as hif-1a and nf-kb, protein kinase b (akt), cyclin d1 expression and etc. in this study, we investigated the inhibitory activity of curcumin on nf-kb and wnt/Î²-catenin pathway in cervical cancer cell line.

Methods

The antiproliferative activity of phospholipidated curcumin was assessed in monolayer and spheroid models. the influence of the cell cycle and expression levels of cyclind1 and survivin was assessed by facs and rt-pcr, respectively.

Results

Phospholipidated curcumin suppressed cell growth in hella cells. this novel form of curcumin inhibits tumor spheroids and increased apoptosis. moreover we found that curcumin was able to reduce the expression of cyclind1 and surviving, while increased the level of e-cadherin.

Conclusion

Our finding demonstrated the therapeutic potential of novel phospholipidated curcumin in cervical cancers cells, suggesting further investigations on the therapeutic application of this agent in in vivo models.

Keywords

Cervical cancers, curcumin, anti-tumor effect, spheroid

Phylogenetic analysis of microcystin biosynthesis genes by a filamentous cyanobacterium of the genus fischerella sp. isolated from salt water of golestan province

Leila Ghanbari,[1,*] Farzaneh hosseini,[2] Bahareh nowruzi,[3]

1. Department of Biology, School of Basic Science, Science and Research Branch, Islamic Azad University, Tehran, Iran. ORCID: 0000-0001-6656-777X
2. Department of microbiology, Islamic azad university Tehran north branch.
3. Department of Biology, School of Basic Science, Science and Research Branch, Islamic Azad University, Tehran, Iran. ORCID: 0000-0001-6656-777X

Abstract

Introduction

Cyanobacteria produce an unparalleled variety of natural products, especially toxins that can cause severe health problems or death in humans and other animals. as there have been no reports of toxicity from saltwater cyanobacteria in iran, we sought to study the toxic gene of a filamentous cyanobacterium of the genus fischerella sp. isolated from salt water of golestan province. the aim of this paper is to describe the role of horizontal gene transfer in the evolutionary history of toxic natural products

Methods

In this study, fischerella sp. was assessed in phylogenetic and evolutionary perspectives. the structural gene 16s ribosomal rna (rrna), functional genes nif d, psba, nif h, rpoc1, pc-igs, rbcl and toxic genes mcy g, d and e, were selected as molecular chronometers in this study.

Results

We hypothesized that horizontal gene transfer may play a role in the distribution of toxic biosynthetic genes within the genus fischerella sp.

Conclusion

This is the first report of molecular phylogeny and evogenomics of salt water toxic heterocystous cyanobacterium of the genus fischerella sp. in iran.

Keywords

Phylogenetic analysis, microcystin biosynthesis genes, fischerella sp.

Physical activity is a non-pharmacological intervention for the treatment of obesity and metabolic syndrome in overweight girls

Mehdi Kushkestani,[1,*] Bakhtiyar tartibian ,[2]

Abstract

Introduction

Overweight and obesity in children and adolescents is one of the most important public health problems across the world. the lack of balance and increased lipoprotein-derived adipositokins can play important roles in development of diseases associated with obesity such as diabetes and metabolic syndrome. the aim of this study was to measure changes in leptin serum and adiponectin levels in overweight girls after 12 weeks of moderate endurance training.

Methods

In this semi-experimental study, 19 overweight girls aged between 8 to 12 years participated voluntarily. the levels of leptin and adiponectin serum in fasting state, pre-test, and post-test were collected after 12 weeks of aerobic training. leptin and adiponectin were measured and recorded by elisa method. pearson correlation coefficient, regression analysis and inverse t-test were used to analyze the data.

Results

The statistical analysis showed a significant increase in adiponectin levels after 12 weeks of endurance training ($p < 0.05$). there was a significant correlation between levels of adiponectin serum with leptin, fat percentage and body mass index, as well as between leptin and bmi ($p < 0.05$).

Conclusion

The findings of this study indicate that moderate intensity aerobic exercise induces significant changes in adipokines, body composition and body mass index in overweight girls in pre-pubertal ages, which in fact suggests the positive effect of aerobic exercise in moderating and treating diseases-related obesity.

Keywords

Leptin, adiponectin, fat, girls, physical activity

Phytoremediation, a technology for reduce cancer and improve community health

Rasoul Sadeghi dehcheshmeh,[1] Sakineh saeidi-sar,[2,*] Nahid masoudian,[3] Bostan roudi,[4] Mostafa ebadi,[5]

1. Young Researchers and Elite Club, Damghan Branch, Islamic Azad University, Damghan, Iran
2. Department Biology, Faculty of Dr. Shariaty Technical college, University of tehran Technical and vocational
3. Department Biology, Faculty of Science, University of Azad Islamic Damghan
4. Department Biology, Faculty of Science, University of Azad Islamic Damghan
5. Department Biology, Faculty of Science, University of Azad Islamic Damghan

Abstract

Introduction

Phytoremediation is a new technology in reducing the environmental contaminants, especially heavy metals from the environment. these contaminants, which are entered into the environment naturally or by human can enter the human body through entering the food chain, drinking water, or breath and create tension. the durability of heavy metals in the human body is very long and accumulate in different tissues overtime.

Methods

There are many reports on the presence of cancer and other diseases caused by these metals in humans. in a simple explanation, these metals can cause secondary oxidative stress and genetic mutations at the cell surface and create cancer cells. the increasing incidence of these contaminants in nature has been reported in the context of an ever-increasing rate of cancer, which may indicate a correlation between these two issues.

Results

A lot of expenses are annually spent throughout the world on discovering and producing anticancer drugs, although there is still no definitive treatment for cancer, it is admirable. however, phytoremediation technology can be preventative and prevention is always prioritized to the treatment of disease.

Conclusion

Phytoremediation technology can control the contaminants in food, water, and even air and manage some of the essential nutrients, which are rare in developing countries, in plant product resulting in public health. this technology needs to be thoroughly investigated and applied.

Keywords

Phytoremediation, pollutants, cancer, health

Platelet lysate incorporating with alginate sodium- chondroitin sulfate hydrogel improve mechanical properties and enhances chondrocyte differentiation

Shahrbanoo Jahangir,[1] David eglin,[2] Mauro alini,[3] Ali samadi kochaksaraei,[4] Mohammadreza baghaban eslaminejad,[5] Majid safa,[6,*]

1. Department of Tissue engineering & Regenerative Medicine, Faculty of Advanced Technologies in Medicine, Iran University of Medical Sciences, Tehran, Iran
2. AO Research Institute Davos, Davos Platz, Switzerland
3. AO Research Institute Davos, Davos Platz, Switzerland
4. Department of Tissue engineering & Regenerative Medicine, Faculty of Advanced Technologies in Medicine, Iran University of Medical Sciences, Tehran, Iran
5. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.
6. Department of Hematology, Iran University of medical science, Associate Professor of Hematology. Tehran/ Iran

Abstract

Introduction

Platelet lysate (pl) is a rich component in growth factors and anti-inflammatory cytokines can improve chondrocyte differentiation, but mechanically unstable, in contrast, alginate (alg) is a natural polysaccharide exhibiting excellent biocompatibility and biodegradability that use for a broad range of applications as a biomaterial for tissue repair and regeneration such as articular cartilage regeneration, yet there are no enough intrinsic biological signals. in another hand chondroitin sulfate (cs) as an extracellular matrix of cartilage enhance chondrogenicity and mechanical properties of hydrogel. we hypothesized that the advantage of this system maybe combined in one hydrogel which can be easy translated into clinical setting.

Methods

The three parts hydrogel have been prepared with combination of alg (1.5%w/v), cs(1%w/v) and pl(20%v/v) and analyzed in terms of mechanical compression and rheometer properties. the cellular behavior on hydrogel was evaluated with live/dead assay, and chondrogenicity was subsequently evaluated under in vitro conditions by real-time pcr, gag assay and collagen content assay. we have done all experiment in 4 different groups: 1- alg, 2- alg-cs, 3- alg-pl, and 4- alg-cs-pl.

Results

The result of mechanical analysis of hydrogels confirmed higher mechanical strength of alg-cs-pl hydrogel. live/dead assay demonstrated the viability of hbm-mscs in the four different hydrogels. chondrogenic activity of hbm-mscs that included collagen and gag content significantly increased in the

alg-cs-pl hydrogel. real-time pcr also confirmed alg-cs-pl hydrogel increase expression of chondrogenic genes such as coll2, aggrecan, and decrease coll 10, alp,and coll1 compare to another group.

Conclusion

Therefore, alginate hydrogel that contained pl and cs promoted chondrogenic differentiation of human-bone marrow derived mesenchymal stem cells.

Keywords

Platelet lysate, chondrogenesis, mesenchymal stem cells, tissue engineering

Polymeric nanoparticles for the drug delivery to the central nervous system

Negar Zamani,[1,*] Mehrnaz zamani,[2] Zeynab karamzadeh,[3]

1. Nanomedicine Department,Tehran pharmaceutical science university
2. Nanomedicine Department,Tehran pharmaceutical science university
3. Nanomedicine Department,Tehran pharmaceutical science university

Abstract

Introduction

1.5 billion people are suffering from cns disorders, in fact, 98% of drugs are not able to cross the blood â€“ brain barrier (bbb) owing to their molecular or chemico-physical properties.the unique structure of this epithelium is based on the presence of the tight junctions (tj). the present review deals with the different strategies that have been developed in order to allow np drug carriers entry into the cns parenchyma.

Methods

In vivo and invitro brain drug delivery with nanoparticles.a considerable number of drugs so-far have been transported into the brain across the bloodâ€“brain barrier using nanoparticles. these drugs include anticancer drugs, analgesics, protease inhibitors, several macromolecules, and others pbca nanoparticles were loaded with dalargin (a compound with opioid activity), coated with polysorbate 80, and delivered intravenously polyesters such as poly(lactic acid) (pla) and poly(glycolic acid) (pga), and their copolymer poly(lactic-co-glycolic acid) (plga) and pcl have also been widely studied because of their history of safe use. high density positive charge have been reported to cross the bbb. chitosan is a naturally occurring biodegradable, biocompatible polysaccharide

Results

Detection, demonstrated that in the absence of polysorbate 80 coating, there was a significant decrease in the number of pbca nanoparticles that crossed the bbb. delivery of estradiol-loaded chitosan nanoparticles leads to significant amounts of estradiol within the cns. also the surface properties of the nanoparticles play the paramount role for the ability of the particles to deliver drugs to the brain. apart from polysorbate 80, also polysorbate 20, 40, and 60 and poloxamer 188 were able to achieve antinociceptive effects in mice after binding of dalargin following intravenous injection, whereas other surfactants such as poloxamers 407, , cremophorÂ® ez, cremophorÂ® rh 40, did not yield such effects.

Conclusion

Polymeric np have been shown to be promising carriers for cns drug delivery due to their potential both in encapsulating drugs, hence protecting them from excretion and metabolism, and in delivering active agents across the bloodâ€“brain barrier without inflicting any damage to the barrier.

Keywords

Polymeric nanoparticles- drug delivery - central nervous system

Polymorphisms in mirna binding sites may contribute to the pathobiology of aml : evidence based on in-silico analysis

Majid Gholizadeh,[1] Mahsa tahmasebivand,[2] Zahra bahmanpour,[3] Mehdi allahbakhshian farsani,[4,*]

1. Department of hematology and blood banking ,faculty of allied medicine,shahid beheshti university of medical sciences,Tehran,Iran
2. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
3. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
4. Department of hematology and blood banking ,faculty of allied medicine,shahid beheshti university of medical sciences,Tehran,Iran

Abstract

Introduction

Micrornas (mirnas) are a class of small (âˆ¼22 nucleotide) non-coding rnas that have key role in the posttranscriptional regulation of gene expression. the crucial step in the process of mirna-mediated regulation of gene expression is recognition of the target transcript by mirna. polymorphisms in microrna-binding sites (mirsnps) in target genes may alter the strength of microrna interaction with target genes thereby affecting protein levels. mirsnps, have attracted increasing attention due to their possible involvement in the development of various types of hematologic malignancy including acute myeloid leukemia (aml). in this study, through in-silico analysis we introduce novel mirsnps involved in aml.

Methods

Review of the current literature, showed that nucleophosmin (nmp1) could be important gene in aml. following this, mirnas associated with npm1 was distinguish in gene expression omnibus (geo) database, and other validated mirnas were obtained from mirtarbase, and finally common mirnas among them identified by venn diagram. in the next step, snps resided in target site of mirnas were listed from polymirts database, and for more investigation of mirnas related to aml obtained from disease-related databases such as mircancer. the resulting mirna: mrna: snps were further evaluated for the functional evidence supporting their involvement in aml.

Results

In-silico analysis revealed that hsa-mir-15b, rs:75508733/ hsa-mir-25, rs:186933329/ hsa-mir-27a-3p, rs:202141313/ and hsa-mir-302c-3p, rs:99971565 may have a functional interaction pertaining to the aml pathogenesis

Conclusion

Results showed that rs:75508733, rs:186933329, rs:202141313, rs:99971565 may potentially disrupt a functional interaction between mir-15b, mir-27, mir-27a, mir-302c and npm1, leading to dysregulation of npm1, and these snps may potentially contribute to the pathogenesis of aml and can be considered as significant progressive and prognostic factors in aml. in this study, a number of novel mir-snps have been introduced which could be considered by researchers for experimentation and validation studies.

Keywords

Mirsnps, in silico, acute myeloid leukemia (aml)

Porous 3-d graphene electrodes for electrochemical detection of h2o2

Maryam Rezaei,[1,*] A. nekahi,[2] M.a. mohammadmirzaie ,[3]

1. Chemical and polymer engineering group, Yazd University, Yazd, Iran
2. Nanostructure coating institute, Yazd PayameNoor University, Yazd, Iran
3. Chemical and polymer engineering group, Yazd University, Yazd, Iran

Abstract

Introduction

H2o2 is an essential marker for age-related diseases such as alzheimer, cardiovascular disorders and cancer.[1] electrochemical sensors have been developed to detect hydrogen peroxide due to high sensitivity and selectivity and low cost. over the last years, the researches focused on graphene nanostructures owing to specific surface area. agglomeration of graphene sheets during drying reduces the surface area for electrochemical reactions.[2] 3-d graphene foams (gf) with porous structures were introduced with high porosity and huge surface area.[3] therefore, 3-d foams with different structures were produced in this research and were used for the fabrication of non-enzymatic biosensing electrodes for h2o2 detection. electrochemical properties of such electrodes with different foam structures were investigate

Methods

2.1. graphene foam go was prepared by modified hummers method [4]gf was prepared by hydrothermal method. 12 ml go suspension in 1:1 water: ethanol (gf1) and in water (gf2) was poured in autoclave and maintained at 180 Â°c for 12 hr. the produced aerogels were freeze dried at -80 Â°c for 18 hr. 2.2. electrode preparation ag paste on glass was used as substrate for all electrodes. a 3-electrode system consists of a platinum wire as counter electrode, gf on ag paste as working electrode and calomel reference electrode was used

Results

3.1. characterization the porous structures of gf1 and gf2 were characterized by scanning electron microscopy (sem). fig. 1 shows highly porous structures of gf1 and gf2. gf2 has more uniform porosity and larger pore size than gf1. solidifying water immediately after zero point resulted to drying graphene aerogel on the uniform solid iced structure in freeze dryer. also, water expansion approximately about 9 % in the temperatures lower than 4 Â°c led in bigger pores. due to ethanol freezing at much lower point, drying the aerogel was performed with less uniformity and smaller pores. fig.1- porous structures of gf1 (left) and gf2 (right). 3.1. electrochemical behavior electrochemical properties of gf electrodes were evaluated by cyclic voltammetry (cv) in n2-saturated 0.1 m pbs solution. a cathodic peak is shown in fig. 2 at 0.07 v for ag based electrode related to the reduction of ag paste. porous structures in gfs led to the shift of cathodic peak to lower potential. much higher current density was measured for gf electrodes due to huge surface area and high electron mobility on porous graphene structure. cathodic current for gfs

were 10 times more than the ones obtained for conventionally gc electrodes. in order to study h2o2 detection, cv was carried out in different concentration of h2o2 (fig. 2). addition h2o2 to buffer resulted to increasing cathodic peak current in all electrodes. the electrodes are capable of detecting h2o2 at different concentrations with high current density especially for gfs. higher surface area and charge transfer of gfs help more electrochemical reactions on the electrode surfaces. fig. 2- cv diagrams for ag-based and gfs electrodes in 0.1 m pbs with different concentration of h2o2

Conclusion

Simple non-enzymatic biosensors were produced by 3-d porous graphene foams for h2o2 detection. taking advantage of high electro-catalytic activity of ag based electrode, in addition to high conductivity and huge surface area of gf, much higher cathodic current in detection of h2o2 was obtained.

Keywords

Nanobiosensor; graphene foam; hydrogen peroxide.

Possible mechanisms underlying the vasorelaxant effect of the aqueous extract of artemisia annua in adult male rats

Forouzan Sadeghimahalli,[1,*] Hossein khaleghzadeh-ahangar,[2]

1. Educational Development Center, Mazandaran University of Medical Sciences, Sari, Iran
2. Departmet of physiology, School of Medicine, Babol University of Medical Sciences, Babol, Iran

Abstract

Introduction

The use of artemisia annua as a drug is considerable due to containing extensive therapeutic effects, including anti diabetic and cardiovascular ones. a recent study showed that the aqueous extract of this plant reduces the contractile response of the aorta to phenylephrine (Î±1-adrenoceptor agonist); while its mechanisms were not assessed. therefore, at the present study we investigated the mechanisms underlying the vasodilatation effect of aqueous extract of artemisia annua in adult male rats.

Methods

The studied wistar rats were divided into 2 groups: vehicle-treated group (receiving saline by intra peritoneal, daily for a month), intact extract-treated (receiving an aqueous extract of artemisia annua 100mg/kg by intra peritoneal, daily for a month). at the end of the experimental duration, the isolated thoracic aorta was split into rings with and without endothelium. then contractile responses of aorta rings to phenylephrine concentrations (10-4 to 10-9 Î¼mol) were recorded at present and/or absence of l-name as a no synthase inhibitor and indomethacin as a cyclooxygenase inhibitor. the recording of the contractile response was done by an isometric transducer f-60.

Results

Comparison of contractile responses after and before adding l-name and indomethacin showed that contractile responses aorta rings with endothelium at present of these drugs significantly increased at all concentrations of phenylephrine ($p<0.05$â€“$p<0.0001$). furthermore, in endothelial aortic rings, the contractile response to some concentrations of phenylephrine was significantly increased in the presence of indomethacin ($p<0.05$).

Conclusion

It seems that one of the mechanisms involved in the vasorelaxation effect of this plant is indirect and dependent to endothelium by increasing the synthesis or release of no. in addition, artemisia annua can dilate the vessels directly and independent endothelium by releasing cyclooxygenase vasodilator products. so, with exploration of possible mechanisms of vasodilation effect of this medical plant, perhaps we can declare the mentioned plant is usable for cardiovascular disorders in metabolic defects.

Keywords

Artemisia annua, vasodilatation, no synthase, cyclooxygenase.

Potent anti-colorectal cancer agents of saffron

Aboozar Khajeh,[1,*]

1. Department of chemical engineering, Birjand University of technology, Birjand, Iran

Abstract

Introduction

Colorectal cancer is the second common cancer in women and the third in men, continues to represent the large cause of mortality in the world. the use of essential oil agents, as one of the main sources of chemopreventive drug, is an extremely promising strategy for cancer prevention. saffron (the dried red stigmas of crocus sativus l. flower) has attracted continuing attention, in addition to its use as a food coloring and flavoring agent, due to treatment of numerous illnesses including cancers. recent studies provided evidence that saffron inhibited the growth of colorectal cancer cells. however anti-colorectal activity of saffron was justified, the investigation on anticancer activity of the saffron phytochemicals is very scarce. the virtual screening of saffron compounds, uses computer-based methods, can simply speed up the search procedure, before a company commits funds to the more expensive screening on actual compounds.

Methods

In this work a qsar model is created for the prediction and virtual screening of potent anti-colorectal cancer compounds in saffron against the ht-29 cell line. the constituents of saffron were taken from previous articles. the qsar model was constructed by a data set containing 179 compounds, 86 of them considered as anti-colorectal cancer agents(ic50 <= 0.005 Âµm) and 93 inactive. for each molecule more than 1000 molecular descriptors were calculated utilizing padel software. the data set was randomly divided into two sets: a training set of 131 compounds for model generation and a test set of 48 compounds for evaluation of the prediction ability of obtained model. in order to virtual screening of compounds in saffron essential oil against the ht-29 cell line, the developed qsar model was used.

Results

The best qsar model with 5 descriptors was developed using the gfa method. this model could correctly classify 131 of 131 compounds (100%) in the training set, while in the prediction set 43 of 48 compounds (89.53%) were correctly classified. with regard to the good quality and predictive power of the developed model, it was used to discovering the potent anti-colorectal cancer constitutes of saffron. the results of classification indicated alpha-isophorone and tetracycloheptane can be considered as anti-colorectal cancer compounds in saffron against the ht-29 cell line.

Conclusion

In this work, a quantitative structure-activity relationship (qsar) model has been developed to virtual screening of anti-colorectal cancer compounds based on a data set of 179 components. high accuracy of developed model indicated it is suitable for discovery of the potent anti-colorectal cancer compounds. therefore it is used for screening the compounds of saffron essential oil and two compounds indicate anti-colorectal cancer activity. however more computational and experimental studies needed to validate these results.

Keywords

Colorectal cancer, virtual screening, saffron, essential oil;

Potential application of genetically engineered e.coli sm10 s1 luminescent biosensor for evaluating the toxicity of conium maculatum and urtica diocia hydro-alcoholic extract

Shima Shayestehpour,[1,*] Mansour mashreghi,[2]

1. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

Herbal plants have often been selected for drug development programs. conium maculatum, is used for various types of cancer treatment, and urtica dioica is used to treat anemia, which also increases production of breast milk. medicinal plants will have different effects depending on the dose which is consumed. by using genetic engineering methods, a microbial biosensor can be designed for toxicity testing. this system will be sensitive to various materials that affect the general system of bacteria, especially toxic and mutagenic substances. in this research, the cytotoxicity effect of hydro-alcoholic extract of conium maculatum and urtica dioica on luminescent e. coli sm10 s1 have been studied.

Methods

: e.coli sm10 s1 has been genetically engineered. hydro-alcoholic extract of c. maculatum and u. dioica was prepared by soxhlet method, and various concentrations (0, 001, 0.01, 0.1, 0.25, 0.5 and 1 %) were prepared. 50 Î¼l of the biosensor were mixed with 450 Î¼l of different concentrations of the extracts and the bioluminescence light was measured by a luminometer.

Results

The results showed a slight increase in light output at 0.001, 0.01% concentration of u.dioica hydro-alcoholic extract and 0.001, 0.01, 0.1% of the c. maculatum extract. however, 0.1, 0.25, 0.5 and 1% concentration of u. dioica extract decreased the rate of luminescence slightly which was dose dependent. but c. maculatum hydro-alcoholic extract at concentration of 0.25, 0.5, 0.75 and 1% caused a sudden and significant reduction in light output independent of dose.

Conclusion

The results of this study indicated that luminescent bacterial biosensor can be used for evaluating the potential toxicity of medicinal plant extracts such as c. maculatum and u. dioica.

Keywords

Conium maculatum, urtica dioica, luminescent biosensor, e.coli sm10 s1

Practical criteria for mirna designing in personalized medicine

Kambiz Banihashemi,[1] Leila.alimardanian,[2,*] Abouee mehrizii s,[3] Ebrahimi p,[4] Jamshidabadi sh,[5]

1. MD, ATU, MSRT
2. PhD, SRBIAU, Department of molecular genetics
3. MD, Parseh Medical Genetics Clinic
4. PhD, Parseh Medical Genetics Clinic
5. 5. MSC, Parseh Medical Genetics Clinic

Abstract

Introduction

Personalized medicine comprises fine genetic- environment interactions end in exclusive individual phenotype. this dynamic entity yields personal profile, provides the opportunity to improve conventional therapy concepts into patient-tailored option protocol. micro rnas are epigenetic tools used widely in personalized medicine treatment with limitations in clinical practice. this paper tries to elucidate mirna designing specifications

Methods

Our analysis was focused on retrieving main specifications of mirnas in therapeutic aspects in previously published papers including designing criteria. the summation of previous researches showed two main group of criteria; firstly basic structural characteristics and the second adaptive functional activities among the most important elements in mirna designing.

Results

The results showed vast variety of major and minor structural and functional specifications. considering major structural points one may find out chain stability, avoiding gcs, avoiding interference with coding areas, using "a/u" repeats, assessing native mirna/mirna and mirna/target duplexes, thermodynamic rules, like Î”g at beginning and end of the chain and seed sequence topography. major functional characteristics were transcription intervention level through target affinity and loci classification, disorder specificity and sensitivity, spatial-temporal pattern of activity and also minimum off-target possibility of action.

Conclusion

Considering the essential purpose of using epigenetic tools in clinical and treatment settings, our search showed great spectrum of structural and functional prerequisites in designing the therapeutic mirnas. in order to control the clinical side effects and retrieving the highest therapeutic outcomes, the successive steps of mirna designing should include this relatively comprehensive and applicable guideline.

Keywords

personalized medicine, mirnas, epigenetics

Prediction of novel polymorphisms in micrornas targeting the rit2 interactions network: a bioinformatics approach

Zahra Bahmanpour,[1] Yousef daneshmandpour,[2] Fatemeh radnia,[3] Bahare khademi,[4] Mahsa tahmasebi,[5] Babak emamalizadeh,[6,*]

1. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
2. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
3. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
4. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
5. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran
6. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

Rit2 protein is a neuron-specific small guanosine triphosphatase and a member of the ras superfamily that has been proved to be expressed in a subset of neurons including retinal ganglion cells (rgcs) and selected neurons in the brain. rit2 has also been indicated to have important roles in neuronal differentiation and function. multiple variations in different neurologic and psychiatric disorders have been reported in rit2 gene and its correlated network. mirnas and single nucleotide polymorphisms (snp) located in mirna coding genes or their target sites have been developed as a class of variants conferring susceptibility to various disease. to date, no study has yet analyzed the possible effect of mirnas and mir-snps on rit2 and its network. so, in the current study we have conducted an in-silico study in order to predict the possible role of mirnas and mir-snps on rit2 network.

Methods

At first, in order to explore the network of interactions of rit2, pathway commons database was applied and its related genes were selected and were reviewed in articles to ensure their roles in neurological disorders. then, mirnas that target the genes involved in this network are identified thorough mirtarbase, tarbase, target scan and other similar databases. subsequently, mirdsnp, dbsnp and mirsnp databases were employed for identifying mirsnps affecting candidate genes.

Results

The resulting mirna: mrna: snps were further evaluated for the functional evidences supporting their involvement in rit2 network interaction. the analysis showed that some mirsnps in selected genesâ€™ seed regions including hsa-mir-3163: rit2: rs140706543, hsa-mir-200c-3p: ntrk2: rs77542010, hsa-mir-124-3p: bdnf: rs11030100, hsa-mir-4680-3p: atp12a: rs2722, hsa-mir-548as-3p: rfx1: rs115028104, hsa-mir-615-3p: tcf3: rs113708250, hsa-mir-485-3p: ntrk3:rs28521337, hsa-mir-548as-3p: tfap4 : rs417083 may potentially contribute to the pathogenesis of neurological disorders.

Conclusion

Rit2 and its network play important role in neuron cells and has been contributed to multiple neurologic disorders. in current study we have predicted possible role of mirnas and mir-snps in rit2 and its correlated network. these predictions may be good experimental targets in order to find new biomarkers for neurologic diseases. but, further experimental studies are required to validate the achieved results.

Keywords

Mirnas, mir-snps, rit2, neurodegenerative disorder, psychiatric disorder, bioinformatics

Preparation and characterization of dox loaded pla-peg-fa copolymer containing superparamagnetic nanoparticles for cancer treatment

Mohammad Khaledian,[1] Seyed mohammad sadegh nourbakhsh,[2] Reza saber,[3] Hadi hashemzade,[4] Mohammad hasan darvishi,[5,*]

1. M.A student of Semnan University
2. Assistant Professor of Biomedical Engineering Faculty of New Sciences and Technology Semnan University
3. Research Center for Science and Technology in Medicine, Tehran University of Medical Sciences, Tehran, Iran
4. Ph.D. student at Tarbiat Modares University
5. Nanobiotechnology Research Centre, Baqiyatallah University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Iron oxide nanoparticles have potential for various biomedical applications, including hyperthermia, targeted drug delivery, magnetic resonance imaging(mri) contrast enhancement, biological separation. the therapeutic concept of superparamagnetic iron oxide nanoparticles (spions) to cancer treatment is based on the evidence that cancer cells are more sensitive than normal cells to temperatures higher than 41-42Â° c. the delivery of hyper thermic spions to a specific target site with minimal side effects is an important challenge in cancer cells hyperthermia. poly lactic acid(pla) is a linear polymer, due to good biodegradability, low toxicity and good biocompatibility, low immunity has been confirmed by the food and drug administration of the united states(fda) for use in tissue engineering and pharmaceutical carriers. hydrophilic polymers such as pegs are used to reduce the high hydrophobicity of pla and to protect it from being removed by a macrophage system. on the other hand, targeted drug delivery using nano carriers is achieved by functionalizing the carrier surface with a tissue recognition ligand. among these ligands, vitamins have frequently been used due to their small size and ease of handling and conjugation. moreover, the vitamin receptors are usually overexpressed in a wide variety of human tumors. folic acid a member of b-vitamin family is a growth promoter of cells. cancer cells often overexpress folic acid receptors on the cell surface. interestingly, the presence of folic acid on the particle surface not only does not increase surface potential, while it is sufficient to increase the particle uptake by cancer cells. one of the most commonly used chemotherapy drugs in the world is doxorubicin(dox). its use in a wide range of cancers includes small cell lung cancer, breast, ovarian, bone, gastric, liver and kidney cancers have been approved by the fda. in this study, the pla-peg-fa/spions nano carrier containing dox is used for targeted chemotherapy and hyperthermia, simultaneously.

Methods

Poly lactic acid(pla), nh2-peg-oh (bi-functional peg), folic acid were obtained from sigma aldrich, fecl3.6h2o, fecl2.4h2o were purchased from merk, dox was purchased from ebeve pharma. the synthesis of iron oxide nanoparticles by co-precipitation of ferrous and ferric ions was optimized in aqueous

medium and the optimum size range required for magnetic ï¬,uid hyperthermia (mfh) was considered. bi-functional peg during the ring-opening polymerization process as an intermediary, from one side attached to fa ligand and then from other hand establishes chemical bond with pla monomers. the pla-peg-fa-coated magnetic nanoparticles were prepared as carriers of doxorubicin (pla-peg-faâ€“dox mnps) through water-in-oil-in-water (w/o/w) emulsiï¬• cation method.

Results

The synthesized fe3o4 nanoparticles and pla-peg-fa/spion nanoparticles have an average size of 41.98(nm) and 238.5(nm) in dls analysis, respectively. meanwhile, the drug content and encapsulation efficiency of nanoparticles can be achieved by varying the feed weight ratios of pla-peg-fa and dox. the results indicate that drug loading content(dlc) and encapsulation efficiency(ee) for (10:1), (20:1), (50:1) copolymer:drug samples were 4.86%, 2.81%, 1.5% and 48.62%, 61.17%, 75.29, respectively. these pla-peg-fa-dox mnps also demonstrated sustained release of dox at 37Â° c in buffer solution during the dialysis bag process. accordingly, the release of the drug in 120 hours for (10:1), (20:1), (50:1) copolymer:drug samples were 85%, 63%, 65% than the only dox that was equal to 95% in 2 hours. also the heat produced by fe3o4 nanoparticles with concentrations of 10, 12.5, 17.5, 20(mg/ml) were 40.6, 41.2, 45.1, 48.4Â° c and for fe3o4 loaded pla-peg-fa nanoparticles (pla-peg-fa/spion nanoparticles) with the same fe3o4 concentrations were 34.7, 37.3, 41.4, 44.1Â° c.

Conclusion

The delivery of spion nanoparticles to a specific target site with minimum side effects and heating is an important challenge in targeted hyperthermia. moreover, much higher therapeutic outcomes can be reached with combinatorial treatment of cancer cells by employing lower doses of chemotherapeutic drugs and hyperthermia incorporated in the developed delivery system. the results showed that pla-peg-fa-dox mnps have the ability to generate sufficient heat for killing cancer cells under magnetic field and sustained drug release in a week. therefore, pla-peg-fa/spion would be promising delivery system for combinational targeted cancer therapy with hyperthermia and chemotherapy.

Keywords

Poly lactic acid(pla), folic acid(fa), doxorubicin(dox), hyperthermia, targeted delivery

Preparation and characterization of drug loaded- bacterial cellulose nanofiber sheet as transdermal drug delivery

Sana Pirmardvand chegini,[1,*] Jaleh varshosaz,[2] Rokhsareh meamar ,[3]

1. Department of Pharmaceutics, Faculty of Pharmacy, Isfahan University of Medical Sciences, Iran
2. Department of Pharmaceutics, Novel Drug Delivery Systems Research Center, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran
3. Isfahan endocrine and metabolism research center, Isfahan university of medical science, Isfahan, Iran

Abstract

Introduction

It is obvious that bacterial cellulose nanofiber sheet (bcs) has been very useful in wound healing. the possessions of such a system can easily be adapted to transdermal drug delivery as it prevents loss of moisture, escapes from external infection and contamination. in this study doxycycline (dox) and venlafaxin (ven) as antibiotics and antidepressants for the treatment of infection and neuropathic pain caused by diabetic foot ulcer, were loaded in bcs. for investigation of ph effect on drug loading and drug release from bcs, different ph was assessed.

Methods

Bcs was purchased from nanonovin polymer co. ven was gift from farabi pharmaceutical co. and dox was purchased from dupharma co. drugs was loaded in nanofiber by passive drug loading technique. ven and dox separately and together were dissolved in deionized water, then nanofibers were immersed in drugs solution and were stirred for 24 hrs. in next step drugs were loaded together in ph 2, 4, 6, 7, 8, 9 and 11 and three different ratio of two drugs and also three different ratio of drugs to carrier. loading efficacy% (le %) for both drugs were determined by sampling of residual solution and measuring the amount of free drug in the clear solution by ultraviolet spectrophotometer (uv mini 1240, shimadzu, japan) at 341nm and 228 nm for dox and 228nm for ven. ftir spectra of ven and dox powders and atr - ftir spectra of nanofiber and drug loaded nanofiber sheets were taken by ftir and for studying of release rate of ven and dox from the drug loaded â€“ bcs, each formulation was putted in the dialysis bag(12 kda) and in pbs (ph 7, at room temperature). the morphology and diameter of the nanofibers and drug loaded â€“ nanofibers were assessed using fe-sem. samples were coated with gold under vacuum before imaging.

Results

Drugs were loaded with a ratio of 1:2 total drugs to dried nanofiber and ratio of ven to dox was 1:1. nanofibers sheets were immersed in drugs solution which adjusted at ph 7 and were stirred for 24 hrs. in room temperature. nanofiber surface was washed to removing unloaded drug on nanofiber surface and then freeze dried. the results confirmed the loading of ven in bcs was successful. drugs were loaded together in ph 2, 4, 6, 7, 8, 9 and 11 and was stable just in ph 6, 7and 8. . burst release in beginning hours for two drugs were seeing and could related to release of the drugs located near the surface of the

nanofibers. in two formulation, ven have shown more burst release and around 50% of ven was released in first 20 hrs. after that release manner altered to sustain release and continued up to 130 hrs. in c1 v1 d1 ph7 case about 12% of dox was released in first 2 hrs. and on the other hand 34.5% of c1d1v2ph 8â€˜s dox was released slowly during 132h. release rate of ven decreased and about 60% of the drug was released until the 67th hours and this release continued slowly at the end of the 132 h about 83% of the ven was released from the formulation. morphology and size of bcs were studied by the fe-sem and the results shown the diameter of these nanofibres is about 100 to 150 nm.

Conclusion

Bcs because of appropriate properties is a good candidate for drug delivery system and wound dressing.

Keywords

Bacterial cellulose nanofiber sheet , bcs, doxycycline, venlafaxine, wound dressing

Preparation and characterization of liposomes containing essential oil of satureja to improve the therapeutic effect

Komeil Aghaei kouhi,[1] Seyed mohammad moosavi zadeh,[2] Raheleh ehsani,[3] Elyas sharifi,[4] Bibi fatemeh haghiralsadat,[5,*]

1. Department of Loboratory Sciences, School of Paramedicine, Shahid Sadoughi university of Medical Sciences, Yazd, Iran
2. Department of Loboratory Sciences, School of Paramedicine, Shahid Sadoughi university of Medical Sciences, Yazd, Iran
3. Nano-biotech foresight company biotechnology campus, Sciences and Technology park of Yazd
4. Nano-biotech foresight company biotechnology campus, Sciences and Technology park of Yazd
5. Department of Advanced Medical Sciences, School of Paramedicine, Shahid Sadoughi university of Medical Sciences, Yazd, Iran

Abstract

Introduction

Herbal essential oils have a wide spectrum of biological activity in several fields, from food chemistry to pharmaceutics. the essential oil of satureja possesses various antioxidant and antibacterial properties. however, most essential oils are biologically unstable, poorly soluble in water, sensitivity to oxidation and they are distributed ineffectively to the target sites. the new methods have been developed in order to overcome these challenges, among these is the encapsulation of the essential oils in nanoliposomes. nanoliposomes are one of the most important drug carriers. the aim of this research was the encapsulation of satureja essential oil in nanoliposome to improve their stability and therapeutic index.

Methods

Essential oil of satureja was extracted by steam distillation method using a clevenger apparatus and then gas chromatography and mass spectroscopy were used to identify the extracted compounds. liposomal vesicles containing satureja essential oil were prepared using (phosphatidylcholine) spc, cholesterol by thin film hydration method and the size was reduced by sonication device. nanoparticles were analyzed for particle size, zeta potential, encapsulation efficiency, morphology and in vitro release.

Results

Results showed that the mean volumetric diameters of liposomes were at the range below 200 nm and the surface charge of nanoparticle was negative. the encapsulation efficiency of entrapped essential oil was 42.86%. the release of satureja essential oil from liposome was controlled and time-dependent.

Conclusion

The results of this study indicated that the encapsulation of satureja essential oil into nanoliposomal carriers lead to improving the stability, solubility and therapeutic effect of satureja essential oil and reduces its volatility.

Keywords

Drug delivery, essential oil, liposome, satureja, stability

Preparation and characterization of superparamagnetic nanoparticles modified with pcl-peg copolymers containing cisplatin and its effectiveness evaluation on a549 lung cancer cell line

Sonia Fathi karkan,[1,*] Reza maleki baladi,[2] Azizeh rahmani del bakhshayesh,[3]

1. Department of medical Nanotechnology, faculty of Advanced Medical Science, Tabriz Medical University, Tabriz, Iran
2. Young Researchers and Elite Club, Tabriz Branch, Islamic Azad University, Tabriz , Iran
3. Department of medical Nanotechnology, faculty of Advanced Medical Science, Tabriz Medical University, Tabriz, Iran

Abstract

Introduction

Magnetic iron oxide nanoparticles have become the main operational implements in biomedical and biological uses, and the mix of hyperthermia and controlled delivery of medicine is a favorable recent strength in cancer therapy. the purpose of the study was to examine whether cisplatin-encapsulated nano-particles enhanced the anti-carcinogenic impact of free cisplatin in lung cancer cells or not

Methods

Triblock copolymer pcl-peg-pcl was prepared using ring-opening polymerization of É›-caprolactone (cl) in the presence of poly (ethylene glycol). the bulk features of the copolymers were characterized by fourier transform infrared spectroscopy.cisplatin-loaded nanoparticles (nps) were prepared by double emulsion solvent evaporation technique and specified for drug entrapment efficiency(%), the content of medicine, size, and surface morphology. in vitro release outline of cisplatin-loaded np, formulations were specified. cytotoxic tests were evaluated in lung carcinoma (a549)-treated cells using mtt assay technique. furthermore, the particles were specified by scanning electron microscopy. fourier transform infrared spectroscopy and x-ray powder diffraction.

Results

The anti proliferate effect of cisplatin performed much earlier when the medicine was encapsulated in magnetic nanoparticles compared to when it was free. cisplatin-encapsulated magnetic nano-particles improved the reduction in ic50 rate significantly. the in vitro cytotoxicity experiment revealed that fe3o4-pcl-peg magnetic nano-particles did not have cytotoxic effects and were biocompatible. the chemotherapeutic result of free cisplatin on cancerous lung cell is improved by its encapsulation in corrected magnetic nanoparticles.

Conclusion

This approach has the capability to defeat some main constraint of foreseeable chemotherapy and can be a desirable approach for future applications in the treatment of lung cancer.

Keywords

Cisplatin- lung cancer- drug delivery

Preparation and comparison of antibiotic inserts by electrospinnig and solvent casting as potential ocular drug delivery vehicles

Shiva Taghe,[1,*] Shahla mirzaeei,[2]

1. Student Research Committee School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran
2. Pharmaceutical Sciences Research Center, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract

Introduction

Ciprofloxacin (cpfx) is a fluoroquinolone antibiotic against external infections of the eye, such as conjunctivitis, bacterial keratitis and keratoconjunctivitis. in addition to high potency, a desirable characteristic of topical fluoroquinolones is that concentration of the antibiotic should be maintained for sufficient long time above the minimum inhibitory concentration for relevant pathogens. efficacy of the ophthalmic fluoroquinolone products, mostly aqueous solutions, is limited by poor ocular bioavailabilitz, compelling the frequent dosing regimen and the concomitant patient compliance. drug delivery systems that improve the time spent staying on the cornea can have a significant impact. the recovery time before the cornea can increase the absorption of drugs through the perylum tissue. the availability of an improved drug can reduce the frequency of drug use. ophthalmic inserts are defined as sterile preparations, with a thin, multilayered, drug-impregnated, solid or semisolid consistency devices placed into cul-de-sac or conjuctival sac and whose size and shape are especially designed for ophthalmic application. nanofibers (nfs) are ultrafine solid fibers notable for their very small diameters. they have significantly large surface area to volume ratio, porosity, surface functionality, and superior mechanical properties. sodium alginate was chosen as a vehicle for ophthalmic formulations since it exhibits several favourable biological properties such as biodegradability and non-toxicity. a prolonged precorneal residence of formulations containing alginic acid was looked for, not only because of its ability to gel in the eye, but also due to its mucoadhesive properties. several researchers have developed nanofibers of pva by electrospinning because pva has good fiber-forming characteristics. the aim of the present work was to develop cpfx loaded ocular nanofiber and solvent cast polymeric inserts (scis) composed of blends of pva, and alginate and evaluate and comparison of their potential for ophthalmic drug delivery.

Methods

Nanofiber and solvent cast inserts of ciprofloxacin were fabricated using a blend of alginate (alg) and poly-vinyl alcohol (pva) contained 10% drug. for preparation of nanofibers, pva-alg solutions were loaded with the flow rate of 1.5 ml/h in to a 10 ml syringe attached to a circular-shaped polyethylene capillary tube with an inner diameter of 0.1 mm. the high voltage supply of 30kv was applied to the metallic needle, and the aluminum foil was used to collect the electrosprayed samples. nozzle to collector distance was adjusted to 18 cm. for solvent cast polymeric inserts (scis) preparation, the pva-alg solutions were poured on an acrylic mold and were placed on a leveled surface at 60Â°c temperature and let dry for 12 h.

inserts were characterized for morphology, thickness, infrared (ir) spectroscopy, and in vitro drug release. ciprofloxacin concentration was determined spectrophotometrically at Î»max of 275nm.the inserts were sterilized by uv radiation for 15 minutes and tested for sterility.

Results

Nanofibers were found to be smooth, homogeneous and uniform. the smooth surface of nfs would be favorable for the ocular use compared to non-homogenous and rough surface scis. the rough surface of scis was also evident from the sem image. scis were found to be brittle and posed difficulty in handling. on the contrary, nfs possessed good folding endurance and this makes the insert safe and comfortable for ocular use. the thicknesses of cpfx-loaded nfs were found to about 100 Î¼m, respectively with good folding endurance. inserts prepared using the solvent casting technique was brittle with thickness values greater than 200 Î¼m. the inserts were found to be sterile for up to 30 days. in case of scis and nfs, the major peaks observed in the spectrum of the inserts are due to either alg or pva. the error bars in nfs are smaller representing the consistent and predictable release of the drug from inserts. the cpfx loaded nfs exhibited sustained release of the drug for more than 36 hours and could be used as a suitable alternative for treating of external infections of the eye.

Conclusion

Based on the results obtained, we conclude that nanofibers are better than inserts obtained by solvent casting technique and could be utilized as a potential delivery system for treating anterior segment ocular diseases and are capable of delivering drugs in a sustained.

Keywords

Nanofibers, ocular drug delivery, ciprofloxacin, solvent cast polymeric inserts.

Prevalence and antimicrobial resistance properties of extended-spectrum beta-lactamases (esbl) producing escherichia coli isolated from the cases of urinary tract infections

Fateme Pourhatami,[1,*] Mohammad javad gharavi,[2] Bahareh tavakoli-far,[3]

1. 1Department of Basic Sciences, Faculty of Pharmacy, Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran
2. Department of Parasitology, Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
3. Department of Physiology and Pharmacology, Alborz University of Medical Sciences, Karaj, Iran.

Abstract

Introduction

Extended-spectrum beta-lactamase (esbl) producing escherichia coli is the most prevalent cause of urinary tract infections (utis). the present research was done to study the prevalence and antibiotic resistance properties of esbl and non-esbl producing escherichia coli strains isolated from the cases of utis.

Methods

Five-hundred and one urine samples were collected and cultured for e. coli. positive samples were analyzed for presence of esbl. antibiotic resistance pattern of strains was analyzed using disk diffusion method.

Results

Three-hundred and twenty-seven out of 501 (65.26%) urine specimens were positive for e. coli. older than 40 years male (65.21%) and also younger than 20 years female (96.77%) had the highest prevalence of e. coli. prevalence of esbl and non-esbl producing strains were 15.29% and 84.70%, respectively. esbl e. coli harbored the highest prevalence of resistance against ampicillin (100%), ceftriaxone (100%), cefalexin (98%) and piperacillin (96%). non-esbl e. coli strains harbored the highest prevalence of resistance against ciprofloxacin (76.89%), ampicillin (72.92%) and gentamicin (68.95%).

Conclusion

Imipenem, nitrofurantoin and tobramycin had good activity against both esbl and non-esbl producing e. coli strains. further researches are required to found other epidemiological aspects of esbl and non-esbl producing e. coli strains isolated from utis.

Keywords

Extended-spectrum beta-lactamase, escherichia coli, antibiotic resistance, urinary tract infections.

Prevalence of blastocystis hominis in alborz province, iran

Mahsa Moghaddam,[1,*] Ferial rahimian,[2]

1. Department of Microbiology, Faculty of Sciences, Islamic Azad University, Karaj Branch, Karaj, Iran
2. Parasitology and Entomology Department, Medical Sciences Faculty, Tarbiat Modares University, Tehran, Iran.

Abstract

Introduction

Blastocystis homonis is a protozoan intestinal parasite in humans and various mammals. pathogenesis, genetic diversity, and available treatment options of this parasite is not clearly known. humans can acquire blastocystis.sp infections through several transmission routes like waterborne or food borne transmission.

Methods

The data of this descriptive cross-sectional study was obtained from 2000 patients referred to health centers and laboratories from october 2016 to november 2017 in karaj. stool specimens had been detected by routine microscopic examination with saline or lugol.

Results

The prevalence of blastocystis. hominis in the total sample was 0.12% (240/2000). out of 240 infected patients, 121 (50.41%) were males, and 119 (49.58%) were female. the distribution of b. hominis infection was high in adults aged between 30 to 40 years.

Conclusion

Blastocystis hominis is one of the most prevalent protozoan parasite found in patients with gastrointestinal symptoms, and also in healthy individuals. to find the real prevalence of the disease, an extensive parasitological research should be done into the connection between the diseases and symptomatic and asymptomatic cases. also molecular techniques could be used to determine the route and source of infection.

Keywords

Blastocystis, prevalence, karaj

Prevalence of chlamydia trachomatis symptomatic and asymptomatic in feale

Hadi Safdari,[1,*] Mona hashemzadeh,[2]

1. Paramedical School of Mashhad University.
2. Paramedical School of Mashhad University

Abstract

Introduction

: genital chlamydia trachomatis infection (gcti) is one of the most prevalent stis and known as the most common treatable. chlamydia trachomatis infections are the most prevalent sexually transmitted bacterial infections in the world that cause urogenital infections in both men and women. it appears that infertility is a complication of these infections. the aim of this study is determining prevalence of ct (chlamydia trachomatis) infection in two groups of females (symptomatic and asymptomatic) and related risk factors.

Methods

From may 2016 to feb 2018, 200 female patients age (18-52), in this cross sectional study married women includes; 100 symptomatic female and the similar number of asymptomatic female using vaginal swabs from females for testing by polymerase chain reaction (roche amplicon pcr, all tested done in quam hospital mashhad.

Results

Chlamydia positivity was 7% for 200 femaleâ€™s swabs the prevalence of ct was 9% in symptomatic and 5 %in asymptomatic female respectively. (7% in total).

Conclusion

Our study chlamydia positivity was 7% for 200 females in our study women aged less than 35 years of age. witch all included younger women at high risk of chlamydia. which the positivity for internet participants ranged from a low of 4.4% in baltimore in 2005 to a high of 15.2% baltimore in 2007. family planning clinic prevalence in baltimore and maryland ranged from a low of 3.3% in baltimore in 2006 to a high of 5.5% in baltimore in 2008 . suggestion: men at moment have secretion should see a doctor as soon as possible, in order to minimize the chlamydial infection to his wife.

Keywords

Chlamydia trachomatis, screening, pcr, men.

Prevalence of gad antibodies in gestational diabetes mellitus and its correlation with postpartum diabetes mellitus

Malihe Mohammadi,[1,*] Farnoosh farzam,[2]

1. Department of biology, Faculty of basic science, University of Sistan and Baluchestan
2. Department of biology, Faculty of basic science, University of Sistan and Baluchestan

Abstract

Introduction

Gestational diabetes mellitus (gdm) refers to any degree of glucose intolerance that is first diagnosed during pregnancy. the prevalence of gdm have been reported between 1 to 14% among pregnant women, due to factors including the population studied, diagnostic criteria, the ethnic and racial characteristics. gestational diabetes is associated with adverse maternal and neonatal outcomes and some women with gdm develop diabetes in the future. although gdm shares many features with type 2 diabetes, some studies have shown that a variable percentage of women with gdm develop specific autoantibodies towards pancreatic Î²-cell. among various autoantibodies, glutamic acid decarboxylase autoantibody (gada) was the most common reported single autoantibody in women with gdm. presence of mentioned antibodies in gdm has a high positive predictive value for type 1 diabetes after delivery. various studies have shown gada positive women more frequently require insulin to treat their diabetes during pregnancy. however, there have been no studies carried out regarding the prevalence of gad antibodies during gdm and relation between the possession of it and the frequency of develop diabetes after pregnancy in iran. therefore, the aim of this study was to assess the prevalence of gad autoantibody during pregnancy and to estimate the later development of diabetes after delivery.

Methods

147 female patients diagnosed with gdm and 147 control healthy pregnant women were selected and gada assessment was used for diagnosis autoimmune patients. gad antibodies were determined in all women with gestational diabetes using isletest gad diagnostic kit (diametra co., italy). also the need for insulin therapy during and after gdm was recorded. in post pregnancy follow-up, the prevalence of diabetes in these groups was determined. the classification of diabetes was done according to the guidelines of the american diabetes association. this study is carried out in a teaching hospital and primary health centers in torbatâ€“e heydarieh city (razavi khorasan province, iran). all statistical analyses were performed with statistical package for social science (spss) 16.0 and $p < 0.05$ was considered as statistically significant level.

Results

Of 147 women with gdm, 9 ones (6.1%) were gada positive. during pregnancy 14.3% (21 of 147) of the women with gdm were treated with insulin. of these, 5 women were autoantibody positive and 16 ones were gada negative. therefore gada positive women with gdm required more frequent insulin therapy than

gada negative women (55.6% vs 11.6%). 33.3% of gdm that treated with insulin (7 of 21) developed diabetes after pregnancy. of all women with gdm one woman (0.7%) developed type 1 diabetes and 7 subjects (4.8%) developed type 2 diabetes in follow-up. none of the gada negative women developed type 1 diabetes after pregnancy but 2.9% (4 of 138) of them developed type 2 diabetes, while in autoantibody positive group, 33.3% (3 of 9) developed type 2 diabetes and 11.1% (1 of 9) developed type 1 diabetes after delivery.

Conclusion

In different studies has been reported that the frequency of gad autoantibodies in gdm ranges between 0 to 38%. in this study prevalence of gada in gdm was 6.1% that is conformably to other studies of world. our data showed that the presence of gad antibodies in gdm is related with need for insulin therapy during pregnancy and can increases the risk of developing diabetes in the future. therefore, in order to faster and better treatment of patients, screening of autoantibodies in women with gdm and post-pregnancy follow-up can be useful for early diagnosis of diabetes.

Keywords

Gestational diabetes mellitus, diabetes mellitus, glutamic acid decarboxylase antibodies, prevalence

Prevalence of hav ab, hev (igg), hsv2 igg, and syphilis among sheltered homeless adults in tehran, 2012.

Elahe Malek makan,[1,*] Reyhameh khosravi zadeh haghighi,[2] Seyed mohamad sadegh hashemi nobandegani,[3]

Abstract

Introduction

Homeless includes people who have no place to sleep and sleep in public or private shelters. they are including mental health disorders, alcoholics1 and in iran, mostly injecting drug users, and immigrants.2 the life expectancy of homeless people is much shorter than the general population, and rates of infectious diseases are higher among them.3 high risks of infectious diseases among homeless people are related to their living condition, poor sanitation and living within the group that makes them susceptible to many communicable diseases, outbreaks of hiv, tuberculosis, and viral hepatitis have been reported among them in many countries.1,3,4 homeless people are also at higher risk than the general population for viral hepatitis and syphilis due to social and behavioral factors that influence the occurrence of these diseases.5-7 homeless people are at high risk for viral hepatitis (a, b, and c) because their lifestyles might include injection drug use (idu) and poor hygiene, but data on hepatitis e virus (hev) and hepatitis a virus (hav) prevalence among them are limited.7-9 syphilis and herpes simplex virus type 2 (hsv2) are common sexually transmitted infections (stds).10,11 treponema pallidum infects at least 12 million persons annually. hsv2 seropositive persons have a lifelong risk of infecting their sexual partners.12 genital ulcer disease due to both syphilis and hsv2 is associated with an increased risk of obtaining hiv.11 findings of a previous study among homeless people of this study showed a high prevalence of hiv among them.7 there is no precise estimate on the number of homeless people and the rate of their risky behaviors in iran. due to a lack of updated information on infectious diseases, and the absence of a study on the situation of infectious diseases among homeless people in iran, the aim of this study was to investigate the prevalence of hav, hev, hsv2 and syphilis among sheltered adult homeless people in tehran and to evaluate the high-risk behaviors associated with these infections among them.

Methods

In this cross-sectional study, 596 homeless were recruited in tehran. a researcher-designed questionnaire was used to study demographic data. using enzyme-linked immunoassay, and rapid plasma reagin (rpr) test, we evaluated the seroprevalence of hav anti-body, hev igg, herpes, hsv2 igg, and syphilis among sheltered homeless in tehran. the associations between the participantâ€™s characteristics and infections were evaluated using logistic regression and chi-square.

Results

a total of 569 homeless, 78 women (13.7%) and 491 men (86.3%) were enrolled into the study from june to august 2012. their age mean was 42 years and meantime of being homeless was 24 months. seroprevalence of syphilis, hev igg, hsv2 igg and hav ab was 0.55%, 24.37%, 16.48%, and 94.34%,

respectively. history of drug abuse was reported in 77.70%; 46.01% of them were using a drug during the study and 26.87% of them had history of intravenous drug abuse. among people who had intravenous drug abuse, 48.25% had history of syringe sharing.

Conclusion

the prevalence of hav, hev and hsv2 were higher than the general population while low prevalence of syphilis was seen among homeless peoples who are at high risk of sexually transmitted infection (std). our findings highlighted that significant healthcare needs of sheltered homeless people in tehran are unmet and much more attention needs to be paid for the health of homeless people.

Keywords

Hepatitis a virus (hav), hepatitis e virus (hev), herpes simplex virus type 2 (hsv2), syphilis, home

Prevalence of hospital-acquired infections in hospitalized patients in different wards of ghaeem hospital of mashhad 2017-2018

Neda Movahedi saber,[1,*] Mahbubeh honarmand,[2] Fatemeh amiri moghadam,[3] Zahra khadem,[4]

1. Master of Microbiology Biotechnology
2. Clinical Supervisor of Ghaem Hospital
3. Clinical Supervisor of Ghaem Hospital
4. Health ducational Supervisor of Ghaem Hospital

Abstract

Introduction

Hospital-acquired infections (hai) are a major public health challenge especially in developing countries, which increased length of stay and hospital costs and increase the mortality rates. the aim of this study was to determine hai prevalence in hospitalized patients in ghaem hospital of mashhad.

Methods

This cross-sectional study was performed from march 2017 to april 2018 in ghaem hospital of masshad. infections were surveyed according to the definitions of the centers for disease control and prevention (cdc). the bacteria were identified to the species level based on a standard bacteriological method. data were recorded and analyzed by spss.

Results

In this study the incidence of in this study the incidence of nosocomial infections was 3/6%. the most common type of infection was nosocomial pneumonia (np) 607(37%) urinary tract infection 558 (34%) followed by blood infection 187(11%) and wound infection 241 (14%). the most common microorganisms were acinetobacter with 392 cases (24/32%) followed by klebsiella pneumoniae (274 cases, 16/83%) and candida albicans (221 cases, 13/57%) escherichia coli (205,12/59%). the most prevalent nosocomial infection was observed in icus (707, 43/3%), emergency department (313, 19/2%), surgical ward (269, 16/5%), internal ward (247 cases, 15/17%).

Conclusion

The prevalence of nosocomial infection in different hospitals depends on the type of the service provided; therefore, comparing the between different hospitals even those located in the same city is not feasible. the overall prevalence of nosocomial infection found in this study is comparable with the results of other studies.

Keywords

Hospital-acquired infections; nosocomial pneumonia ; acinetobacter;

Prevalence of htlv-1 in blood donors in golestan province

Hossein Mehrabi habibabadi,[1,*] Zohreh sharifi,[2] Masoud parsania,[3] Ali akbar pourfathollah,[4] Setareh haghighat,[5]

1. Department of Microbiology, Faculty of Advanced Science and Technology, Tehran Medical sciences , Islamic Azad University ,Tehran,Iran
2. Blood Transfusion Research Center, High Institute for Research and Education in Transfusion Medicine, Tehran, Iran
3. Department of Microbiology, Faculty of Medicine, Tehran Medical sciences , Islamic Azad university ,Tehran,Iran
4. Blood Transfusion Research Center, High Institute for Research and Education in Transfusion Medicine, Tehran, Iran and Department of Immunology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
5. Department of Microbiology, Faculty of Advanced Science and Technology, Tehran Medical sciences , Islamic Azad university ,Tehran,Iran

Abstract

Introduction

Human t-cell lymphotropic virus type 1 (htlv-1) is a complex leukemogenic retrovirus with a single stranded positive sense rna genome that expresses unique proteins with oncogenic potential. approximately 5 to 10 million people are infected with htlv-1 worldwide. htlv-1 infection is observed throughout all parts of the world; however, southwestern japan, caribbean basin, south america, and central africa have been identified as being endemic regions for the virus. in addition to these regions, the virus is known to be endemic in northeast iran especially in the cities of mashhad and neyshabour . htlv-1 is the etiological agent for adult t-cell leukemia (atl) and htlv-1-associated myelopathy/tropical spastic paraparesis (ham/tsp) . despite this, more than 95% of infected individuals remain as asymptomatic carriers for the duration of their lives. the infection can be transmitted through the transfusion of contaminated blood or blood products, unprotected sexual contact, sharing of contaminated syringes and other instruments, or via transmission from mother to child. receiving red blood cells, platelet, and whole blood compared to plasma products is also thought to be associated with a higher risk of transmission. this study was conducted to identify prevalence of htlv-1 infection among donors who referred to blood transfusion centers in golestan province.

Methods

This cross-sectional study was conducted among 890 blood volunteers who had been referred to blood transfusion centers of golestan province, iran between january 2018 and february 2018. automation elisa method (diapro htlv i-ii ab kit, italy) was used as a primary detection tool of htlv-1 antibodies and reactive samples rechecked via the same kit. for confirmation of reactive results, western blot was done on samples. all blood donors were routinely visited by the physician of the blood transfusion center before

donation and also, were checked for the presence of the possibility of blood-borne infections such as hbv, hcv, hiv and treponema pallidum.

Results

A total of 890 blood donations were studied, about 843(94.7%) persons were male and the remaining47 (5.3%) were female that the male to female ratio was 19:1 .also, and the average age was 22-45 years. just one blood volunteers sample was htlv -1positive in this population and the total prevalence of this virus was found to be 0.11%.

Conclusion

There is no defined treatment for patients infected with htlv-i, but the accurate knowledge of seroprevalence rates in different population groups may be helpful in establishing prophylactic measures to reduce rates of viral transmission from infected individuals. this infection is endemic in certain parts of the world as well as in a northern provinces of iran. findings showed that the prevalence of htlv-1 infection among donors who referred to blood centers in golestan province was 0.11%. it is recommended to perform research on more samples.

Keywords

Htlv-1, blood donation, golestan province

Prevalence of overweight and obesity in the personnel of south pars petrochemical industries in assaluyeh and factors related to it

Sedighe Hashemi,[1,*] Mohamadreza mozafarian,[2]

1. Department of HSE, South Pars Petrochemical Industries Health Organization, Iran
2. Department of HSE, South Pars Petrochemical Industries Health Organization, Iran

Abstract

Introduction

Considering the protection of, and safeguarding, the health of industrial workforce, this study was conducted to determine the prevalence of overweight and obesity in the personnel of south pars petrochemical industries in the south of iran and factors related to it.

Methods

The study included 1000 petrochemical industries staff members randomly selected based on the yearly occupational health examination records. the information recorded included anthropometric measurements and blood test results; in addition, breslow lifestyle and global physical activity (gpaq) questionnaires were completed for each subject

Results

The mean body mass index (bmi) was 27.3 for men and 28.5 for women. the prevalence of obesity and overweight were 14.9% and 60.2%, respectively.the prevalence of dyslipidemia and hypertension and diabetes were 53.5% and 13.1% and 7.9%, respectively. overweight and obesity were associated with age, fasting blood glucose level, lipid profile and hypertension (in all cases $p < 0.001$).

Conclusion

The prevalence of overweight and obesity among south pars petrochemical industries staff is higher as compared to the mean values in the general population in iran or to personnel of other industries globally. development and implementation of public educational programs with particular emphasis on high-risk individuals, such as middle-aged people and those with a low socioeconomic status, and focusing on healthy lifestyle and rotation shift workers can be effective, resulting in improvements in physical and general health of the personnel

Keywords

Obesity, body mass index, lifestyle,

Prevalence of pseudomonas aeruginosa isolated from burn patients and environment of in ghaem and imam reza hospital mashhad

Hadi Safdari,[1,*] Aylin safdari,[2]

1. Paramedical School of Mashhad University.
2. Paramedical School of Mashhad University

Abstract

Introduction

: pseudomonas aeruginosa is an important pathogen which causes nosocomial infections in immunocompromised patients, especially in hospitalized burn patients. in recent times, it has emerged as a widespread multi drug resistant (mdr) pathogen which requires antibiotic susceptibility testing on a regular as well as a periodic basis aim of the study: the present study was undertaken to determine the antibiogram of p. aeruginosa which was isolated from inpatients and environmental sources, and to type the strains, based on their antibiogram patterns.

Methods

A prospective study was undertaken with 625 samples (blood and wound swabs) which were taken from 70 patients who were admitted to in ghaem hospital and emam reza mashhad hospital with burn injuries and with 101 samples which were obtained from environmental sources viz. surgical instruments, dressings, suction devices, sinks, antiseptic solutions, etc. 2016-2017 the strains were cultured and identified by standard microbiological techniques and kirby- bauer disc diffusion antibiotic susceptibility testing was done for each.

Results

59 strains and two strains, respectively, of p. aeruginosa were isolated from inpatients and environmental samples (one strain from sink and one strain from door wall, among the two) respectively. in total, 60 (81%) p. aeruginosa strains were found to be resistant to aminoglycosides, 44-70% were resistant to beta-lactams - piperacillin, ceftazidime, and aztreonam, 36.5% were resistant to piperacillin-tazobactam, 11.06% were resistant to ciprofloxacin and 12-18% were resistant to carbapenems. all strains were sensitive to colistin. p. aeruginosa was resistant to three of the four â€˜in-useâ€™ drugs i.e. piperacillin+tazobactam, imipenem, ceftazidime, and gentamicin, which was taken as mdr, which depicted mdr percentage as 35 (21/58).

Conclusion

Strategies of optimal prescribing, including control of antibiotic usage, coupled with periodic studies on mdr p. aeruginosa infections in burn patients, appear to be leading priorities which help in improving therapeutic gains in such patients.

Keywords

Pseudomonas aeruginosa, antibiotyping, multidrug resistance.

Preventing bacterial infections

Daniyal Afrazeh,[1,*] Zahra mobin,[2]

1. Young Researchers and Elite Club, Zahedan Branch, Islamic Azad University, Zahedan, Iran
2. Young Researchers and Elite Club, Zahedan Branch, Islamic Azad University, Zahedan, Iran

Abstract

Introduction

Hospital infections are referred to as infections that occur during the hospitalization period. these hospital infections are a threat to the spread of infection in the society. medical and therapeutic interventions and patient characteristics are among the most common causes of these infections. these infections can have a different origin, including the bacterial, viral, fungal origin, which we are going to refer to the bacterial origin here.

Methods

Data collection has been reviewed through the use of new scientific sites and articles.

Results

The most common bacteria which are the cause of hospital infections is the opportunistic enterobacteriaceae, especially e. coli that live in human intestines, and they can infect if they are transferred to the sterile areas of the body. staphylococcus aureus at the skin surface of 20% of adults can cause surgical wound infections or a lung infection under proper conditions. pseudomonas aeruginosa usually lives in the body of 5% of adults. it can be easily replicated in water and in wet environments like (distilled water or artificial inhaler tubes) and when water or contaminated equipment is used it can cause severe and fatal infections in people with immune deficiency. particularly, it is easily transmitted among patients in the burn section and causes many deaths in this section.

Conclusion

To prevent and control of hospital infections, we can mention the following: on time and quick use of medical interventions, washing hands, continuous monitoring of hospitals, controlled use of antibiotics and using of a nurse for every patient.

Keywords

Hospital infection, prevention, bacteria

Prevention of cervical cancer related to hpv infections

Melika Ziaoddini,[1,*] Ahmad ziaoddini,[2] Sara zamani,[3] Hassan ziaoddini,[4]

1. Pharmaceutical sciences branch, Azad University, Tehran, Iran
2. University of Medical Sciences, Tehran, Iran
3. Department of Microbiology and Microbial Biotechnology, Faculty of Life Sciences and Biotechnology, Shahid Beheshti University, Tehran, Iran
4. Health Psychology Department, Research Centre of Education Ministry Studies, Tehran, Iran

Abstract

Introduction

Human papillomavirus (hpv) infection is an important sexually transmitted infection worldwide. hpvs are divided into high-risk and low-risk genotypes. high-risk types are responsible for cancers like cervical cancer. cervical cancer is one of the most common cancers in women in the world. this cancer is developed through pre-malignant lesions known as cervical intraepithelial neoplasia from grades i to iii. about 663 new cervical cancers are diagnosed in each year in iran. despite of the introduction of pap smear test from many years ago, cervical cancer still has a high mortality worldwide. until now, three hpv vaccine types are produced in the world. hpv vaccine types and their characteristics are shown in table 1. table 1. names and characteristics of hpv vaccines which are used for prevention of cervical cancer. name characteristics approved by food and drug administration vaccine efficacy gardasil quadrivalent hpv4, prevention of infections caused by hpv types 6,11,16,18 2006 95% cervarix bivalent hpv2, prevention of infections caused by hpv types 16,18 2009 95% gardasil 9 ninevalent hpv9, prevention of infections caused by hpv types 6,11,16,18,31,45,52,58 2014 98% the aim of this review study is to review topic of hpv vaccines (immunogenicity, safety, efficacy and cost), which are useful for prevention of cervical cancer worldwide and also in our country.

Methods

We reviewed the papers without time limitation about cervical cancer prevention. our research contained papers with the relevant keywords: cervical cancer, hpv vaccine, gardasil, cervarix and gardasil 9. the data bases of science direct, medline scopus and google scholar were searched. the title and abstract of the papers were reviewed. some of the papers that investigated cervical cancer prevention were used in this study.

Results

Most topics of some papers about hpv vaccine worldwide: two studies in 2009, declared that cervarix and gardasil both are safe and effective for womenâ€™s health. in 2011 gee et al, performed a post-licensure safety assessment of gardail. in their study, no statistically significant increased risk for any of the pre-specified adverse events after vaccination was detected. stokley et al declared that hpv vaccines can be safety co-administered with other routinely recommended vaccines. in 2015, cuzick showed that gardasil

9 improved protection against cervical cancer precursor lesions and high-grade cervical disease. petrosky et al investigated efficacy of gardasil 9 comparing with gardasil. they illustrated that, hpv 6, 11, 16 and 18 seroconversions for gardasil 9 are higher than gardasil. most topics of some papers about hpv vaccine in iran: rasekh et al in 2014 said that, despite a quadrivalent hpv vaccine was added to the iran drug list, but it has not been added to the national immunization program until now. they investigated cost-effective of hpv vaccine in iran and they suggested gardasil is not cost-effective in iran based on the base-case parameter value. hamkar et al in 2017 showed that vaccination could have a great impact on the prevention of cervical cancer in iran. yousefi et al in 2017, updated parameters on cost- effectiveness of hpv vaccine. they showed hpv vaccination can be cost-effective in iran due to the new method by the world health organization.

Conclusion

Hpv vaccines are part of national immunization program in some countries. the vaccination program before the first sexual contact is more effective in the prevention of cervical cancer. despite gardasil is available in iran, it is not in the national immunization program. the reasons may be due to low incidence of cervical cancer in iran, lack of awareness and high cost of hpv vaccination. cervical screening is emphasized for all women above21 years of age with sexual activity in iran. cervical cancer screenings like hpv testing and pap smear tests are common in our country. we recommend that cervical screening should be free of charge with a full insurance coverage for iranian women.

Keywords

Cervical cancer, vaccine, gardasil, cervarix

Probing the binding of docetaxel to a calf thymus dna-histone h1 complex by circular dichroism (cd) spectroscopy and viscometric studies

Sara Kharazmi-khorassani,[1] Reza asaran darban,[2] Jamshidkhan chamani,[3,*]

1. Department of Biology, Faculty of Sciences, Mashhad Branch, Islamic Azad University, Mashhad, Iran
2. Department of Biology, Faculty of Sciences, Mashhad Branch, Islamic Azad University, Mashhad, Iran
3. Department of Biology, Faculty of Sciences, Mashhad Branch, Islamic Azad University, Mashhad, Iran

Abstract

Introduction

Cancer is a major health challenge around the world. docetaxel is a chemotherapy drug which are effective for some cancers including breast, lung, head and neck, and ovarian cancer. dna is a macro molecule that has an important role in the biochemical process because of its uses in various types of therapy (1). small molecules such as docetaxel have the ability to bind to dna to indicate the structural features of dna, the sources of some diseases and the mechanism of action of some drugs. histones are alkaline proteins that are found in nuclei of eukaryotic cell which package and order the dna nucleosomes. in this study we evaluated the interaction between docetaxel and calf thymus dna (ct -dna) in the absence and presence of h1 using circular dichroism (cd), viscosity measurement to found a different affinity of docetaxel to ct-dna with various sides in ct-dna.

Methods

The circular dichroism (cd) spectra was done through a jasco j-815 spectropolarimeter using a quartz cell (japan) at the room temperature. the absorption range of all cd spectra were between 240 to 300 at the nitrogen atmosphere with a distance of 1 nm at a scan rate of 50 nm m-1. the spectrum of buffer solution (tris-hcl, ph = 6.8) was registered and subtracted from the spectrum of ct-dna-docetaxel and (ctdna-h1) docetaxel and h1 with docetaxel. the viscosity measurements were performed through an oswald viscometer at constant temperature of 298 k. in the absence and presence of docetaxel, the concentration of ct-dna and the ct-dna-h1 complex in trisâ€“hcl buffer solution (ph = 6.8) were fixed at 0.5 mm and for measure the flow time a digital stop watch was used.

Results

The circular dichroism methodology demonstrated the conformational changes in ctdna and h1-ct dna complex on the interaction with docetaxel. this results suggested an intercalative binding mode of docetaxel to the ctdna structure. viscosity was used as a method to explain the binding mode of docetaxel to ctdna and the complex of h1-ct-dna. docetaxel bound to ctdna by intercalative binding but in the presence of h1 docetaxel bound to ctdna by groove binding.

Conclusion

In summary, the research of the interaction between docetaxel with ctdna and the complex of h1-ct dna as binary and ternary systems would showed useful information in further understanding the mechanism of action and pharmacokinetics to design anti-cancer drugs.

Keywords

Docetaxel; ctdna; viscometry; cd

Probiotic pretreatment with lactobacillus helveticus r0052 and bifidobacterium longum r0175 alleviates neuronal apoptosis in rat model of lipopolysaccharide

Ghazaleh Mohammadi,[1,*] Marjan nassiri-asl ,[2] Taghi naserpour ,[3] Leila dargahi ,[4] Amir peymani ,[5]

1. Cellular and Molecular Research Center, Department of Molecular Medicine, Qazvin University of Medical Scienc
2. Cellular and Molecular Research Center, Department of Pharmacology, Qazvin University of Medical Sciences
3. Medical Microbiology Research Center, Qazvin University of Medical Sciences
4. NeuroBiology Research Center, Shahid Beheshti University of Medical Sciences
5. Medical Microbiology Research Center, Qazvin University of Medical Sciences

Abstract

Introduction

The beneficial effects of probiotics on modulation of host health in various conditions from gastrointestinal and systemic dysfunctions to neurological disorders have been documented. but, recently, probiotic biotherapy with lactobacillus and bifidobacteria seems to be a promising and feasible approach to improve neuronal pathways related to neurodegenerative diseases via the gut-brain axis. apoptosis has been reported as an important pathway in several neurodegenerative disorders. thus, this study was designed to evaluate the effect of gut microbiota manipulation with probiotic (l. helveticus r0052 + b. longum r0175) on the expression levels of hippocampal proteins critical to apoptosis in lipopolysaccharide (lps)-induced rat model.

Methods

Four groups of animals were administrated orally by placebo or probiotic (109 cfu/ml/rat) for 2 weeks. after a single dose of saline or lps, the expression levels of apoptotic proteins were assessed in hippocampus region by western blotting.

Results

Prophylactic administration of combined l. helveticus r0052 and b. longum r0175 significantly reduced lps- induced apoptosis by lowering the expression of bax and cleaved caspase-3, while increasing the level of anti-apoptotic bcl-2 protein and procaspase-3 in hippocampal rats.

Conclusion

These results suggest that oral bacteriotherapy with this probiotic has neuroprotective effect on brain function and can be used to alleviate neuronal apoptosis in some neurodegenerative diseases including alzheimer â€™disease. in addition, gut microbiota manipulation with specific probiotics could be a

potential strategy for the application of beneficial bacteria to improve nutritional function and medical health.

Keywords

Probiotic, neuronal apoptosis, lipopolysaccharide

Probiotics, introduction and usages

Morteza Rabiee lalehdashti,[1,*] Hanieh roudabadi tanha,[2] Amir arasteh,[3] Salman ezzati,[4]

1. Islamic Azad University
2. Islamic Azad University
3. Islamic Azad University
4. Islamic Azad University

Abstract

Introduction

It has been known for many years that the digestive system performs many functions for human health and hosts a variety of microbes. there are products in various forms of food- pills and capsules that are developed to be specifically for animals even pets. if we know probiotics we also accept good bacteria because they have a spread role in strengthening the immune system. what is probiotic? probiotic is a live-food supplement that produces positive effects on the host by producing inhibitor compounds-competing with pathogens- regulating the microbial balance of the digestive tract and etc. probiotics micro-organisms: the bacteria are classified into two general categories of lactobacillus and bifidobacterium which still has subgroups. according to numerous studies, lactobacillus-bifidobacterium and saccharomyces bulllardii have the greatest impact and the least harm. why probiotics were a factor for health? probiotics have long been proven to have no side effects and have high resistance. also the ability to compete with pathogens attachment to epithelial cells-create balance in the intestinal microflora-suppress inflammation and anti-cancer effects and generally strengthen the immune system are the benefits of probiotics. probiotics in the gastrointestinal tract: in the human digestive system, there are many beneficial bacteria called microbial flora. the probiotic is a member of a group called synbiotic. synbiotic is referred to as probiotic and prebiotic. probiotic is derived from the greek word for per bios and unlike antibiotics which means (antivital) biotic means life. mechanism of probiotics effects: lactic acid bacteria which include lactobacillus-bifidobacterium and streptococcus compete with pathogens by converting glucose to acid lactic and creating an acidic environment. types of probiotics: probiotics are divided into three categories: dairy-nondairy and pharmaceutical products. dairy products include yogurt-ice cream- cheese-and nondairy include soy milk and herbal drinks. the third group is the probiotic drugs. kidi lact) contain seven strains of probiotics and special for the immune system of children. kidi lact zinc) a synbiotic compound with zinc sulfate. its features are gastroenteritis treatment-immune boost-bone growth-skin-hair and nail health in children. pedi lact) an oral drops of synbiotic. helps eliminate digestive problems in infants. vita lact) it contains a high level of three useful types of probiotics-a variety of vitamins and necessary salts. vitamins help metabolize in the body. this product improves digestive disorders and strengthens the immune system. daily test) improving the symptoms of gastroenteritis-helicobacter pylori eradication-improving ibs symptoms and skin and hair health and dental health are the usages of this product. lactocare) a synbiotic that is used to provide a better immune response. seven strains of bacteria-along with prebiotic and oligosaccharide. what is the lactocare superiority to other compounds? given the fact that seven strains and three bacterial families are used a widespread efficacy of probiotics can be observed.

Methods

According to studies by researchers lactocare has no side effects and can be consumed in all ages and there are no drug interactions with any groups. for examples in a meta-analysis-that included four studies the relationship between probiotics and diarrhea was investigated. in another study tolerate and treatment of patients with chemotherapy was supplemented with lactobacillus in the terms of the frequency of diarrhea. in another study probiotics were studied for the treatment of constipation. also in another study the effectiveness of probiotics in the treatment of ibs was studied.

Results

In the first study it was found that probiotics reduce the length and frequency of diarrhea. in the second study the frequency of chemotherapy-induced diarrhea was reduced by the use of lactobacillus. also abdominal pain decreased. in the third study consumption of four to twelve weeks of probiotics improved the symptoms of constipation and stool consistency. in the fourth study taking one to six months of probiotics reduced the symptoms of ibs.

Conclusion

Probiotics have been considered for many years ago and now they have vast usage in our life and health. our body is full of beneficial bacteria that the synthesis of vitamin k is just one of their advantages. so in order to strengthen the immune system and in general we must use probiotics to maintain our health according to age.

Keywords

Probiotics, ibs, synbiotic, digestive system, microflora

Production, purification and validation of anti-tuberculosis igy for diagnostic purposes

Ehsan Aryan,[1,*] Mahdi kouhi-noghondar,[2] Mojtaba sankian,[3] Amir-ali arian,[4] Zahra meshkat,[5]

1. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
2. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences
3. Immunology Research Center, Mashhad University of Medical Sciences
4. Faculty of Medicine, Mashhad University of Medical Sciences
5. Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences

Abstract

Introduction

Developing new tb diagnostics is a research priority because traditional methods suffer from low sensitivity or being time-consuming. to introduce an applicable diagnostic reagent for tb, this study was designed for production, purification and validation of anti-tb igy.

Methods

Chicken egg yolk immunoglobulins (igy) have added advantages of being economical and ethical compared to their mammals analogues. white leghorn laying chickens were immunized intramuscularly with formalin-inactivated cells of mycobacterium tuberculosis (mtb). eggs were collected before immunization and at different time intervals after immunization. igy antibody was purified from egg yolks using isopropyl alcohol-ammonium sulfate-caprylic acid method. the purity of igy was assessed on sodium dodecyl sulphate-polyacrylamide gel electrophoresis in each step. igy concentration was estimated by bradford protein assay.

Results

An average purity of about 87% was determined by densitometric scanning of sds-page analysis. the maximum production of 2.91 mg/ml igy (58.2 mg/each egg yolk) was obtained in this study. a minimum of 104 cfu/ml mtb cells could be specifically detected by capture enzyme-linked immunosorbent assay (elisa) using the polyclonal anti-tb igy and hrp-conjugated rabbit anti-mtb igg. moreover, the specific reactivity of the polyclonal anti-tb igy against mtb and eight non-mycobacterium clinical isolates was confirmed by indirect elisa and dot-blot assay using hrp-conjugated rabbit anti-chicken igy (igg).

Conclusion

The resulting anti-tb igy can be used for a wide range of applications including immunomagnetic separation of mtb from specimens, especially in paucibacillary tb cases such as extrapulmonary or hiv co-infected tb pateints.

Keywords

Tuberculosis, diagnosis, igy

Prognostic value of osteopontin for different types of cancer

Rahil Ghanbarnasab behbahani,[1,*] Amir danyaei,[2]

1. Ahvaz Jundishapur University of Medical Sciences
2. Ahvaz Jundishapur University of Medical Sciences

Abstract

Introduction

Cancer is a complex pathologic disorder caused by genetic or non-genetic changes. cancer progression depends on an increase of metastasis promoting cell signaling molecules that target signal transduction pathways via their gene overexpression. osteopontin (opn) is a phosphoglycoprotein produced by a variety of tissues including osteocytes, osteoblasts, fibroblasts, bone marrow cells, dendritic cells, macrophages, smooth muscle, skeletal muscle myoblasts, endothelial cells, and placenta. furthermore, opn is overexpressed in a set of cancers, such as breast cancer, colorectal cancer, stomach cancer, lung cancer and prostate cancer. recent studies, have shown that the overexpression of opn may be associated with invasive attitudes of tumor, mainly metastasis, migration, angiogenesis, and poor prognosis.

Methods

Using the relevant keywords (osteopontin, opn, spp-1, cancer, overall survival (os), prognostic value and prognosis) the relation of opn and the prognosis of different types of cancer, was retrieved by searching pubmed, scopus, and science direct data bases and google scholar search engine, as well. in this review, all related english articles published during the last five years were evaluated. the inclusion criteria for published studies were as follow: a) all human cancers were evaluated; b) the study was focused on the association between opn expression and prognosis and only original articles were assessed; and c) at last, the protein expression pattern in tumor tissues was evaluated. a total of 212 studies in the last five years which met the inclusion criteria were entered in the review. in vivo studies on animals, and in vitro studies were excluded.

Results

Among 70 relevant studies 65 studies demonstrated an inverse correlation with prognosis, four studies showed no association, and only one study indicated a direct relation between opn expression level and prognosis. we also found that opn expression was inversely correlated with either os or disease free survival (dfs).

Conclusion

Based on the results of this study opn may be considered as a valuable biomarker in prognosis of some important cancers. therefore, it may be suggested to add up the measurement of opn expression level (mrna and/or protein) as a new diagnostic test. however, the most studies until now are concentrated on

lung adenocarcinoma and breast cancer, further investigations should be carried out to elucidate the prognostic value of opn expression in other common cancers.

Keywords

Osteopontin, cancer, prognosis, overall survival

Promoter methylation quantification of four tumor suppressor gene in papillary thyroid cancer tissues

Fatemeh Khatami,[1] Ladanteimoori-toolabi,[2] Bagher larijani,[3] Ramin heshmat,[4] Mahsa mohammadamoli,[5] Seyed mohammad tavangar,[6,*]

1. Chronic Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute,TUMS
2. Molecular Medicine Departments, Pasteur Institute of Iran, Tehran, Iran
3. Endocrinology and Metabolism Research Center, Endocrinology and Metabolism Clinical Sciences Institute, TUMS
4. Chronic Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute, TUMS
5. Endocrinology and Metabolism Research Center, Endocrinology and Metabolism Clinical Sciences Institute, TUMS
6. Departments of Pathology, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Endocrine tumors are endocrine system related malignancies like thyroid that is the most common type with mounting trends over the last three decades all over the world. papillary thyroid cancer (ptc) is making four fifths of all thyroid cancers. finding some detection markers in order to discriminate malignant from benign one before metastasis could be really important for thyroid cancer patients and clinicians. epigenetic silencing through aberrant dna methylation of tumor suppressor genes linked to a variety of devastating consequences of human cancer. we determined the quantity of methylation in twelve candidate promoter regions of four tumor suppressor genes using the methylation-sensitive high resolution melting (ms-hrm) assay.

Methods

Fresh frozen tissues of 57 ptc patients and 45 goiter patients were collected after surgery. dna was extracted using the dneasy blood & tissue kit according to the manufacturerâ€™s protocol. dna purity and quantity was determined using a thermo scientificâ„¢ nanodropâ„¢ spectrophotometers 2000c spectrophotometer and then stored at -80Â°c. for bisulfite treatment dna from each sample were treated with sodium bisulfite conversion kit. the ms- hrm analyses were run based on the three main steps of holding, cycling, and melt curve. statistical analysis were done by statistical package for science software (spss) version 16.0. and p <0.05 was measured statistically significant.

Results

Results: promoter methylation of four slc5a8, rassf1, mgmt and dnmt1 genes has meaningful differences between ptc cases and goiter controls. promoter region methylation* ptc cases number (percent) goiter

cases number (percent) p-value slc5a8 u 17(29.8%) 35(77.8%) 0.002 m 40 (70.2%) 10 (22.2%) rassf1 u 13(22.8%) 38 (84.4%) <0.001 m 40 (70.2%) 10 (22.2%) mgmt u 8 (14.0%) 35 (77.8%) 0.001 m 49 (86.0%) 10 (22.10%) dnmt1 u 29 (51.8%) 32 (74.4%) 0.018 m 27 (48.2%) 11 (25.6%)

Conclusion

Conclusion: among the different selected promoter region of four tumor suppressor genes the slc5a8 (b), slc5a8 (c), rassf1 (a), rassf1 (b) , mgmt (a), mgmt (c), mgmt (d), and dnmt1 (b) methylation status were meaningfully different between ptc cases and controls. in spite of the fact that dnmt1 is a denovo methyl trasferase enzyme its promoter hypermethylation was not as significant as slc5a8, rassf1, and mgmt. acknowledgments: this article was a part of a larger project which was granted by the national institute for medical research development (nimad, grant number: 957222).

Keywords

Ptc, ms-hrm, slc5a8, rassf1, mgmt, dnmt1

Prosthetic heart valve in pregnancy

Fatemeh massomeh Akbarzadeh,[1,*] Fatemeh kazemi navaei,[2] Kolsoom salehi,[3]

1. Azad University of Babol
2. Azad University of Babol
3. Azad University of Babol

Abstract

Introduction

Women in pregnancy age may use mechanical or biological valves due to congenital and acquired diseases of heart valves. this study compares the complications and implications of prosthetic heart valves in pregnancy.

Methods

This review paper was extracted after searching in pubmed, scopus, sid, medline, and google scholar databases with keywords of prosthetic heart valve, pregnancy, side effects, and implication. 15 new articles with more relevance with the subject studied were selected of the 29 related articles that were reviewed and used in writing the article.

Results

Arrhythmia, heart failure, bleeding, thromboembolism, endocarditis, and death are the side effects of many types of artificial valves in pregnancy. mechanical valves have more durability compared to biological valves, they tolerate hemodynamic changes very well, and the probability of their failure in pregnancy is low. but they need anticoagulant drugs due to the high risk of thromboembolism. unlike heparin, the use of warfarin increases the abortion, preterm labor, stillbirth, warfarin embryopathy and fetal bleeding, but the risk of thromboembolism in mother is greatly reduced.

Conclusion

Pregnant women with a various artificial valves require special cares. given the side effects of warfarin, most studies have recommended the use of heparin during pregnancy period. warfarin has no contraindication during breastfeeding.

Keywords

Prosthetic heart valve, pregnancy, complications, implication.

Protective effect of spirulina (arthrospira platensis) on in vitro fertilization (ivf) and embryo development in female mice treated with cyclophosphamide

Golchin Moosavi toomatari,[1,*] Shapoor hasanzadeh,[2] Hasan malekinejad,[3] Gholamreza najafi,[4] Parisa saghaei ,[5]

1. Department of Basic Sciences, Faculty of Veterinary Medicine, Urmia University, Urmia Iran
2. Department of Basic Sciences, Faculty of Veterinary Medicine, Urmia University, Urmia Iran
3. Department of Pharmacy ,Urmia University of Medical Sciences
4. Department of Basic Sciences, Faculty of Veterinary Medicine, Urmia University, Urmia Iran
5. Department of Veterinary Medicine, Azad University of Shabestar

Abstract

Introduction

Cyclophosphamide is an extensively used chemotherapeutic agent against wide varieties of neoplastic ailments, which has been known to cause ovarian damages and infertility in mammals. the purpose of this study was to investigate the protective effects of spirulina platensis on in vitro fertilization (ivf) and embryo development in adult mice exposed to cyclophosphamide.

Methods

40adult female mice were divided into 8 groups each comprised 5 animals. the first group was considered as control. the groups 2, 3 and 4 were received spirulina at rates of 200, 400 and 800 mg/kg respectively through oral route, daily for 28 days. the 5th group was received cyclophosphamide (150 mg/kg, ip) in a single-dose. groups 6, 7 and 8 were received cyclophosphamide and spirulina together with aforementioned doses. in vitro fertilization and embryo development were assessed in all groups at the end of experiment.

Results

The groups which received spirulina at rates of 200, 400 mg/kg beside cyclophosphamide in comparison to group which received merely cyclophosphamide, the number of oocytes, percentages of fertilization, two-cell embryos, blastocysts and hached embryos were reduced and this reduction were significant ($p<0.05$) in fertilization, two-cell embryo, but at dose of 800 mg/kg was not able to reduce damages brought by cyclophosphamide.

Conclusion

According to the results of this study, spirulina encourages protective effects on cyclophosphamide induced reprotoxicity on in vitro fertilization approach.

Keywords

Spirulina, cyclophosphamide, in vitro fertilization, mouse

Protective effects of intraperitoneal administration of soybean oil on ischemia/reperfusion injury in ovaries: histological and biochemical assessments in a rat model

Azad Bahrampour,[1,*]

1. Graduated student, Faculty of veterinary Medicine , Sanandaj Branch, Islamic Azad University, Sanandaj, Iran

Abstract

Introduction

Ovarian torsion must be diagnosed and treated as much early as possible. the aim of the present study was to investigate effects of intraperitoneal administration of soybean oil on ischemia-reperfusion injury in rat ovaries.

Methods

Thirty healthy female wistar rats weighing approximately 200g were randomized into six experimental groups (n = 5): group sham: the rats were undergone only laparotomy. group i: a 3- hour ischemia only. group i/r: a 3-hour ischemia and a 3-hour reperfusion. group i/soybean oil: a 3-hour ischemia only and (0. 3 mmol/lit) intraperitoneal administration of soybean oil 2.5 hours after induction of ischemia. group i/r/soybean oil: a 3-hour ischemia, a 3-hour reperfusion and (0. 3 mmol/lit) intraperitoneal administration of soybean oil 2.5 hours after induction of ischemia. then, the ovaries were dissected out for histopathological and biochemical assessments.

Results

Soybean oil treated animals showed significantly ameliorated development of ischemia and reperfusion tissue injury compared to those of other groups ($p<0.05$). the histologic design of the ovarian tissue in the sham animals was normal. ovarian tissues in the ischemia group showed condensed hemorrhage and severe vascular congestion along with degenerative and necrotic changes in many of the cells. the tissues in the i/r group showed histopathological changes of condensed hemorrhage, infiltration of inflammatory cells along with degenerative and apoptotic cells. polymorph nuclear leukocytes (neutrophils) were dominant cell types. in i/soybean oil group general histologic and cellular structures of the tissues were not normal in appearance, however, moderate vascular congestion and edema were observed. in i/r/soybean oil group only a mild hemorrhage was around ovarian follicles. the general histologic structure of the ovarian tissue in this group was normal and no important pathologic findings in the structural level were observed except for only a mild inflammation, vascular congestion and edema. the histopathological damage were significantly lower in i/r/soybean oil animal compared to those of other groups ($p<0.05$). the significant higher values of sod and gst were observed in i/r/soybean oil animals compared to those of other groups ($p<0.05$).

Conclusion

Essentially, early diagnosis and treatment of ovarian torsion plays an important role to provide urgent protection against life-threatening complications from ischemia and to prevent future infertility. intraperitoneal administration of soybean oil could be helpful in minimizing ischemia-reperfusion injury in ovarian tissue exposed to ischemia.

Keywords

Intraperitoneal, ischemia-reperfusion, ovary, rat, soybean oil

Proteome profiling of early-stage serous ovarian cancer

Haniyeh Bashi zadeh fakhar,[1,*] Hakimeh zali,[2] Mostafa rezaee tavirany,[3] Roya faraji,[4]

1. Department of Laboratory Science, Chalous branch, Islamic Azad University, Chalous, Iran
2. Proteomics Research Center, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences,
3. Proteomics Research Center, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran
4. Reproductive Health Research Center, Department of Obstetrics and Gynecology, Guilan University of Medical Sciences, Ra

Abstract

Introduction

Background: serous carcinoma, the subtype of ovarian cancer have the highest occurrence and mortality in women. proteomic profiling using mass spectrometry (ms) has been used to detect biomarkers in tissue from patients with ovarian cancer. we, therefore, aimed to integrate interactome (protein-protein interaction (ppi)) and (ms) data to construct and analyze ppi networks for early stage serous ovarian cancer.

Methods

For proteome profiling in early stage serous ovarian cancer we used 2de and mass spectrometry. differentially expressed proteins which determined only in early stage serous ovarian cancer and experimental group separately integrated with ppi data to construct the query-query ppi (qqppi) networks. the networks were further analyzed.

Results

We found 6 hub-bottlenecks proteins with significant centrality values, based on centrality parameters of the network (degree and between),such as transgelin (tagln), keratin (krt14), single peptide match to actin, cytoplasmic 1(actb), apolipoprotein a-i (apoa1), peroxiredoxin-2 (prdx2), and haptoglobin (hp) .

Conclusion

This study showed these six proteins were introduced as hub-bottleneck protein, can be concluded that regulation of gene expression, can play a vital role in the pathology of early stage serous ovarian cancer.

Keywords

Proteome -profiling - early-stage serous ovarian cancer

Psychosomatic and physical symptoms of the couvade syndrome

Saideh Mehrabadi,[1] Mina ghalenovi,[2,*] Farzane ghavami shirazi,[3]

1. Master of midwifery, faculty member of sabzevar university of medical sciences, Sabzevar, Iran.
2. Master of midwifery, faculty member of sabzevar university of medical sciences, Sabzevar, Iran.
3. Msc, faculty of nursing and midwifery, Shahid Beheshti university of medical sciences, Tehran, Iran.

Abstract

Introduction

Couvade syndrome or expectant father is an involuntary disorder that includes psychological and physical symptoms associated with his wife pregnancy. this disorder usually occurs in developed and industrialized countries and its prevalence has a wide range in different countries. usually, the symptoms of this syndrome are more intense in the first and third trimesters compared to the second trimester. while, none of the symptoms has been caused by tissue damage. the aim of the study is to provide an overview of the research that has explored physical and psychological changes of fathers in couvade syndrome.

Methods

A literature review search was conducted through pubmed and google scholar, medline, scopus, science direct to identify signs and symptoms of couvade syndrome and related studies.

Results

Different studies have reported symptoms of the couvade syndrome, including: abdominal pain, weight gain, change in appetite, flatulence, toothache, nausea, anxiety, insomnia, bad mood and nervousness. it is contradictory to relationship the couvade syndrome with socio-demographic factors. studies showed fathers were more involved with the process of pregnancy and childbirth due to their participation in classes and congregations related to pregnancy and childbirth in recent years. they have created deep emotional engagement with the spouse and pregnancy but some fathers reach the negative aspects of couvade syndrome.

Conclusion

Because father has more interaction in pregnancy your wife and these variation are considered a significant part of pregnancy, it is advisable to pay more attention to family health by focusing on individual members during pregnancy and postpartum period.

Keywords

Couvade syndrome, expectant father, sympathic pregnancy

Purification and cell-based functional assay of recombinant human epidermal growth factor

Sara Pouranvari,[1,*] Mahdieh sadat taghavi,[2] Firuz ebrahimi,[3]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Biology Research Center, Basic Science Faculty, IHU, Tehran, Iran

Abstract

Introduction

Human epidermal growth factor (hegf) is a thermo stable 53 amino acid residue polypeptide with various medical and cosmetic applications such as wound healing. scientists have used recombinant dna technology to produce hegf efficiently. following this development, a variety of hosts (prokaryotic and eukaryotic), vectors, and purification methods were used. then, investigators checked the activity of recombinant hegf (rhegf) via different tests. if e.coli cells is used as host, recombinant human epidermal growth factor is expressed as inclusion body.

Methods

In present study, after transferring recombinant vector pet24a (+) into e. coli cells, protein expression was done under standard conditions. recombinant human epidermal growth factor was expressed as inclusion body. purification of inclusion bodies was performed using detergent washing with sodium deoxicholate. we try to solubilize inclusion bodies using urea (8 molar) and refolding were carried out using gradient dialysis against the urea (4 m, 2 m, 1 m, and 0 m). after dialysis a single band of rhegf was observed in sds page. the final purified rhegf was quantified by rp-hplc. finally, to ensure that rhegf had been properly folded and was therefore functionally active, mtt assay was performed by nih 3t3 cell line. growth-promoting activity was monitored on both day 1 and day 3.

Results

Solubilization and purification of rhegf were performed properly. rp-hplc chromatogram showed a main single peak. this peak was related to rhegf, as it completely matched commercial rhegf. mtt assay results showed cell viability of our rhegf were significantly (p-values were < 0.0001) higher than the control.

Conclusion

In conclusion, via our purification protocol, a sufficient amount of bioactive rhegf was obtained in few steps with superlative purity. it seems, proper folding of rhegf in purification process leads to higher proliferation of nih-3t3 cells compared with control.

Keywords

Recombinant human epidermal growth factor, refolding, mtt assay, nih 3t3 cell line

Purification of peroxidase enzyme from different radishes for preparation of elisa kit

Hoda Sotoudeh,[1,*] hossein amini ,[2] Fatemeh mirkhani ,[3] mohammad arjmand ,[4] Sedigheh sadeghi ,[5] zahra zamani ,[6]

1. Pasteur Institute of Iran
2. Pasteur Institute of Iran
3. Pasteur Institute of Iran
4. Pasteur Institute of Iran
5. Pasteur Institute of Iran
6. Pasteur Institute of Iran

Abstract

Introduction

Peroxidases are used widely in medical diagnostic kits and research applications. plant peroxidases (ec 1.11.1.7) are heme containing oxidoreductases enzymes that oxidize a variety of organic and inorganic compounds using hydrogen peroxide. this enzyme is one of the glycoprotein hemoprotein that the prostatic group contains protopurephyrin fe ix. in the structure of this enzyme there is a calcium atom that is essential for the third protein structure. this enzyme has many applications in the field of immunoassay labroatory testing in the eliza technique for measuring hormones including thyroxin, insulin, hcg, estrogen, progesterone and toxin bacteria in addition to detecting tissue antigens and activating macrophages against cancer tumors in types of pathology and hematology and immunology are used. horseradish root is commonly used as a source of peroxidase as it is a rich source of this enzyme. turnip roots and horseradish roots are part of the brassicaceae family are also a good source of this enzyme. a comparative study was carried out on peroxidase enzyme was purified from two different sources of horse radish and turnip roots.

Methods

Horseradish and turnip roots were obtained from the local market. 620g of each were thoroughly washed with distilled water and cut down into small pieces and homogenized in a blender with potassium phosphate buffer ph 7.5. three precipitation steps were carried out using ammonium sulfate followed by ion exchange chromatography using both deae- cellulose (fig 1) and cm- cellulose columns (fig 2). activity of enzyme was carried out after each step at 420 nm using pyrogallol oxidation test. protein concentration was measured using photometric method at 280 nm. both purity and molecular weight were estimated using sds-page and silver staining.

Results

The molecular weight of the protein purified by the sds-page method was determined with a concentration of 10% gel by coloring the silver nitrate at about 44 kda (fig 3). the enzyme activity for horseradish root

22.01 u/ml, the amount of protein concentration 0.124 mg/ml, specific activity 177.5 u/mg and its yield 51.23% was obtained. the activity of turnip root peroxidase 20.17 u/ml, the amount of protein concentration 0.1023 mg/ml, specific activity 197.165 u/mg and its yield 54.62% was acquired (table 1).

Conclusion

Purification of peroxidase enzyme in horseradish and turnip has been reported from horseradish and turnip roots. the calculated results have shown that the fractions with the highest enzyme activity after dialysis was passed through cm-cellulose column for horseradish and turnip roots peroxidase. it seems that the specific activity of the turnip is more than horseradish roots.

Keywords

Peroxidase enzyme- purification- horseradish- turnip

Quercetin -loaded chitosan-alginate-stpp nanoparticles ameliorate memory deficits and reduce glial activation in pentylenetetrazol-induced kindling model of epilepsy

Mona Hashemian,[1,*] Atefeh akbari,[2] Seyed raheleh ahmadian,[3] Maryam ghasmi-kasman,[4]

1. Student Research Committee, Babol University of Medical Sciences, Babol, Iran
2. Student Research Committee, Babol University of Medical Sciences, Babol, Iran
3. Student Research Committee, Babol University of Medical Sciences, Babol, Iran
4. Neuroscience Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Abstract

Introduction

Despite several beneficial effects of quercetin, its medical application has been hampered due to low water solubility. to improve the aqueous solubility of quercetin, it has been loaded on chitosan (cs)-alginate (alg) - sodium tripolyphosphate (stpp) nanoparticles (nps). then, the effect of quercetin nps on memory improvement and glial activation was investigated in pentylenetetrazol (ptz)-induced kindling model.

Methods

Male nmri mice have received the daily injection of quercetin nps at dose of 25 or 50 mg/kg. all interventions were injected intraperitoneally (i.p), 10 days before ptz administration and the injections were continued until 1 h before each ptz injection. animals have received 12 injections of ptz and then, brain tissues homogenates were provided for assessment of oxidative stress markers, including thiobarbituric acid-reactive substances (tbars) indicator of lipid peroxidation (lpo) and ferric-reducing ability of plasma (frap) indicator of total anti-oxidant capacity. also, brain tissues were removed for histological evaluation. nissl staining was used to determine the level of cell death in hippocampus and immunostaining method was performed against neun and gfap/iba1 for assessment of neuronal density and glial activation respectively.

Results

Behavioral results showed that quercetin nps exhibit anticonvulsant activity and prevent cognitive impairment in fully kindled animals. the level of cell death and glial activation reduced in animals which have received quercetin nps compared to those received free quercetin. the level of tbars decreased and frap increased in animals which have received quercetin nps.

Conclusion

To conclude, these findings suggest that quercetin nps effectively ameliorate memory impairment and attenuate the level of activated glial cells in a mice model of chronic epilepsy.

Keywords

Quercetin nanoparticles, memory improvement, anticonvulsant, glial activation, pentylenetetrazol

Quercetin reverses p-glycoprotein-mediated multidrug resistance via up-regulation of pten expression

Marziyeh Khazaei,[1,*] Bahman yousefi,[2] Haniyeh jafary,[3]

1. Department of Biology,Science and Research Branch,Islamic Azad University,Tehran,Iran
2. Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran;
3. Department of Biology,Science and Research Branch,Islamic Azad University,Tehran,Iran

Abstract

Introduction

: multidrug resistance (mdr) in tumor cells is still a big challenge in cancer treatment. therefore, identification of safe and effective mdr reversing compounds with minimal side effects is an important approach in cancer treatment. here, we investigated the role and potential mechanisms of quercetin in doxorubicin (dox) resistant human myelogenous leukemia (k562/dox) cells.

Methods

The effect of doxorubicin on cell viability following treatment with quercetin was evaluated using trypan blue and mtt assays. rhodamine123 (rh123) assay was used to determine the activity of common drug efflux membrane transporters p-glycoprotein (p-gp). pten mrna/protein expression levels were measured by quantitative reverse transcription polymerase chain reaction (qrt-pcr) and western blot analyses. annexin-v/fitc assay was also employed to investigate apoptosis

Results

Quercetin considerably enhanced the cytotoxicity of dox. quercetin also significantly down-regulated p-gp expression and activity in k562/dox cells and reduced mdr through elevation of intracellular dox in cells. furthermore, upon quercetin treatment, pten expression could be restored in k562/dox cells

Conclusion

Quercetin could reverse mdr by inducing pten and ppar/pten signaling pathway. these findings suggest that targeting pparÎ³ might serve as an effective approach for circumventing mdr in chemotherapy of cancerous patients

Keywords

Quercetin; pten; p-gp; mdr.

Quercetin-loaded nanoparticles attenuate glial activation and improve myelin repair in lyolecithin-induced focal demyelination model of rat optic chiasm

Mona Hashemian,[1,*] Atefeh akbari,[2] Seyed raheleh ahmadian,[3] Maryam ghasemi-kasman,[4]

1. Student Research Committee, Babol University of Medical Sciences, Babol, Iran
2. Student Research Committee, Babol University of Medical Sciences, Babol, Iran
3. Student Research Committee, Babol University of Medical Sciences, Babol, Iran
4. Neuroscience Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Abstract

Introduction

Quercetin has been introduced as effective anti-inflammatory agent in treatment of several inflammatory disorders. despite the wide range pharmacological activities, clinical application of quercetin is restricted mainly due to the low water solubility of this substance. more recently, we could remarkably improve the aqueous solubility of quercetin by its encapsulation in chitosan-alginate-sodium tripolyphosphate nanoparticles (cs-alg-stpp nps). in this study, the anti-inflammatory and myelin protective effects of quercetin-loaded nps were evaluated in lysolecithin (lpc)-induced focal demyelination model.

Methods

Pharmacokinetic of quercetin was assessed using high performance liquid chromatography (hplc). local demyelination was induced by injection of lpc into optic chiasm of rats. animals were pre-treated with intraperitoneal (i.p.) injections of quercetin or quercetin-loaded nps at dose of 25 mg/kg. the injections were continued for 7 or 14 days post lesion.

Results

Immunostaining against activated glial cells including astrocytes and microglia were carried out for assessment of inflammation level in lesion site. myelin specific staining was performed to evaluate the effect of quercetin-loaded nps on myelination of lpc receiving animals. hplc results showed the higher plasma concentration of quercetin after administration of nps. histological evaluation demonstrated that, the extent of demyelination areas was reduced in animals under treatment of quercetin-loaded nps. furthermore, treatment with quercetin-loaded nps effectively attenuated glial activation and inflammation in lpc-induced demyelination model compared to quercetin receiving animals.

Conclusion

Overall; these findings indicate that treatment with quercetin-loaded nps preserve myelinated axons through amelioration of glial activation and inflammation in demyelination context.

Keywords

Quercetin nanoparticles, lysolecithin, demyelination, glial activation, myelin repair

Rapid and sensitive detection of enterotoxin b by lamp assay: optimization by taguchi experimental design

Fatemeh Sheikhi,[1,*] Mehdi zeinoddini,[2] Hamide rouhani nejad,[3] Ali reza saeedinia,[4] Arina monazah,[5]

1. Department of Bioscience and Biotechnology, Malek Ashtar University of Technology
2. Department of Bioscience and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran

Abstract

Introduction

Food poisoning caused by bacterial contamination is one of the risk factors that is considered as a global problem both economically and in terms of human health. staphylococcus aureus is the most important bacteria that cause food contamination and poisoning. the enterotoxin type b (seb) of s.aureus is one of the most common causes of food poisoning in the world. in this study we optimized lamp reaction with taguchi experimental design for detection of seb.

Methods

in this work 9 combined tests were designed using taguchi method and qualitek -4 software. in this experiment with the aim of lamp reaction optimizing, three factors were considered: mgso4 concentration, incubation temperature and time.

Results

the data showed that 6 mm mgso4 and incubation at 65Â°c for 40 min, is the best and optimum condition for identification of enterotoxin b (seb) from s.aureus.

Conclusion

In conclude, the lamp method can be used as a molecular diagnostic test for detection of seb in food samples. advantages of this method are amplification takes place under a constant temperature, therefor it does not require thermal cycler, and also amplification in lamp is more specific because four primers design that recognizes six specific regions on the target gene.

Keywords

Enterotoxin b, lamp, food poisoning , taguchi experiments.

Rapid detection of microbial contamination in water samples with bioluminescence method

Fatemeh Araghi,[1,*] Saman hosseinkhani,[2] Maryam monsefshokri,[3]

1. Department of Biochemistry, Science and Research branch, Islamic Azad University.
2. Department of Biochemistry, Faculty of Biological Sciences, Tarbiat Modares University.
3. Department of Biochemistry, Science and Research branch, Islamic Azad University.

Abstract

Introduction

In pharmaceutical and food companies, the colony count technique is a common method for evaluating microbial contamination. however, this technique has some disadvantages such as being time-consuming, tedious and need skills. therefore, there is a need for a rapid and sensitive method to measure bacterial communities in samples. bioluminescence is one of the few types of luminescence that light is produced by living microorganisms. atp reacts with luciferin-luciferase enzymatic complex and the light emitted is measured by the device. atp is composed of an adenine ring, a ribose sugar, and three phosphate groups, and work as cellular energy currency in living cells. atp is available in both intracellular and extracellular forms that extracellular atp doesnt need to be extracted, but intracellular atp needs extraction due to its placement in the cell. atp production is heavily controlled in cells, its measurement can indicate the number of live cells in the environment. in this method, atp produced by biological systems is rapidly measured by enzyme measurement in the presence of luciferase. the amount of atp measured can be used to evaluate cell proliferation, apoptosis, cell toxicity and detection of microbial contamination. the simplicity of operation, fast, sensitive, specific are some advantages of this method. therefore, the atp bioluminescence method can be used to detect the concentration of atp by the cell_solver agent to identify contamination in various aquatic environments.

Methods

Material and instrumental all chemicals were of analytical grades obtained from commercial sources. luminometer fb14 (berthold) and a centrifuge mpw260r (med instrument) were used for measuring the emission and pre-concentration process. expression and purification of luciferase e. coli strain bl21 was transformed with pet-28a. bacteria containing pet-28a plasmid were initiated by adding 10Î¼l of an overnight culture to 10ml of lb broth with ampicillin. this culture was grown at 37 Âºc for four hours, then lactose was added to a medium culture for an overnight for expression of a protein. then the bacteria were centrifuged and bacterial suspension was sonicated. after sonication, the lysed cell was centrifuged and kept the supernatant for purification. in this method, the protein was purified using an affinity column (ni-nta- sepharose). sds-page was used to confirm the presence and purity of the sample. total bacterial atp measurement procedure in this method, 5 Î¼l of bacterial sample was added to the cell and first treated with of cell_solver as the extraction solvent, then the extract was neutralized by addition of the diluent. aliquot of 10 Î¼l of luciferin-luciferase reagent was added to the cell and the bioluminescence was measured as total atp. for measuring of extracellular atp, the bacterial sample was added to the cell and

mixed with luciferin-luciferase reagent without any extraction solvent and bioluminescence was measured.

Results

Purification of protein a fraction of 1 to 5 purification luciferase enzyme a bond is about 62kda and its purification is more than 95%. expression enzyme has his-tag binds. histidine tags have an affinity for a nickel. the supernatant was transferred to the column, then washing and elution buffer was used to remove impurities isolate the luciferase protein from the column, respectively. effect of type and concentration of stabilizer on assay the effect of type and concentration of stabilizer on the assay were studied while other operating conditions were kept constant. bsa, sucrose, and cyclodextrin were compared instability of the enzyme. the fig1 showed that the emission when used sucrose is more than another component. for the concentration of sucrose, as indicated in fig2, luciferase activity increased up to 3 mm of sucrose and decreased at higher concentrations, at lower volumes. figures of merit under to optimum conditions, the detection limit was . the calibration graph was linear in the range . analysis of water samples various water samples such as urban, pool, well, seawater were measured in the linear range of the atp calibration curve using cell_solver. in all samples, except for urban water samples, the atp was found with this method.

Conclusion

A sensitive method of atp bioluminescence for detection of microbial contamination in aqueous samples has been described. the simplicity of operation, fast, specific and selective are some advantages of this method. our results show that the bioluminescence system may be employed as a rapid method to detect bacterial in samples without cultivation.

Keywords

Atp, bioluminscence, luciferase.

Recent advance in metabolic bone disease and an overview of clinical and imaging findings

Maryam Taburak,[1,*]

1. General practitioner, Kermanshah University of Medical Sciences

Abstract

Introduction

Metabolic bone disease encompasses a broad spectrum of inherited and acquired disorders that disrupt the normal homeostasis of bone formation and resorption. some of these processes primarily affect bone; others are secondary to nutritional deficiencies, a variety of chronic disorders, and/or treatment with some drugs. some of these disorders are rare, but some present public health concerns (for instance, rickets) that have been well known for many years but still persist. osteoporosis, the most common metabolic bone disease, results in generalized loss of bone mass and deterioration in the bone microarchitecture. impaired chondrocyte development and failure to mineralize growth plate cartilage in rickets lead to widened growth plates and frayed metaphyses at sites of greatest growth. osteomalacia is the result of impaired mineralization of newly formed osteoid, which leads to characteristic looser zones. hypophosphatasia is a congenital condition of impaired bone mineralization with wide phenotypic variability. findings of hyperparathyroidism are the result of bone resorption, most often manifesting as subperiosteal resorption in the hand. renal osteodystrophy is the collection of skeletal findings observed in patients with chronic renal failure and associated secondary hyperparathyroidism and can include osteopenia, osteosclerosis, and rugger jersey spine. hypoparathyroidism is most commonly due to iatrogenic injury, and radiographic findings of hypoparathyroidism reflect an overall increase in bone mass. thyroid hormone regulates endochondral bone formation; and congenital hypothyroidism, when untreated, leads to delayed bone age and absent, irregular, or fragmented distal femoral and proximal tibial epiphyses. soft-tissue proliferation of thyroid acropachy is most often observed in the hands and feet. the findings of acromegaly are due to excess growth hormone secretion and therefore proliferation of the bones and soft tissues. vitamin c deficiency, or scurvy, impairs posttranslational collagen modification, leading to subperiosteal hemorrhage and fractures. the purpose of this paper is to review the imaging features and characteristics of the most common types of metabolic bone disease with highlights of clinically relevant information so that readers can better generate appropriate differential diagnoses and recommendations.

Methods

For this review, a thorough literature search for the most up-to-date information was performed on several key types of metabolic bone disease: osteoporosis, osteomalacia, rickets, scurvy, renal osteodystrophy, hyperparathyroidism, pagetâ€™s disease, osteogenesis imperfecta, acromegaly, and osteopetrosis. although they all affect the bone, these diseases have both shared characteristic features that can be discerned through imaging.

Results

Bone is a dynamic organ of the endoskeleton, playing an important role in structural integrity, mineral reservoirs, blood production, coagulation, and immunity. for patients affected by these processes, radiologic imaging plays a central role in diagnosis, monitoring treatment, and risk stratification. radiologists should be familiar with the diseases, intimately aware of the imaging findings, and possessive of multimodality expertise to wisely guide the best practice of medicine. the purpose of this paper is to review the imaging features and characteristics of the most common types of metabolic bone disease with highlights of clinically relevant information so that readers can better generate appropriate differential diagnoses and recommendations.

Conclusion

: metabolic bone disease is a diverse spectrum of pathology affecting bone homeostasis. imaging is essential for the diagnosis, evaluation, and treatment of these patients. knowledge of the diseases, recognition of the imaging findings, and expertise to appropriately guide the imaging evaluation and treatment are fundamental to the role of the radiologist.

Keywords

Bone disease, metabolic, clinical and imaging finding

Recent advances in aunps based nanomaterials for photodynamic therapy

Maryam Mansouri,[1] Hossain ali rafiee-pour,[2,*] Sedigheh falahi,[3]

1. Biotechnology Division, Department of Cell and Molecular Biology, Faculty of Chemistry, University of Kashan, Kashan, I. R. Iran
2. Biotechnology Division, Department of Cell and Molecular Biology, Faculty of Chemistry, University of Kashan, Kashan, I. R. Iran
3. Biotechnology Division, Department of Cell and Molecular Biology, Faculty of Chemistry, University of Kashan, Kashan, I. R. Iran

Abstract

Introduction

Photodynamic therapy (pdt) is a minimally invasive cancer treatment with high selectivity and low side effect. pdt involves the use of photochemical reactions mediated through the interaction of photosensitizing agents, light and molecules like reactive oxygen species (ros) and reactive nitrogen species (rns) which causes selective damage to the target tissue. these molecules play an important role in killing cells through the apoptosis pathway. for their effective delivery to tumor cells, different nanostructures are employed such as gold nanoparticles (aunps), carbon-based nanomaterials, polymeric nanoparticles and etc. among these nanostructures, aunps have gained an increasing attention due to their intrinsic properties such as shape, size, electronic, optical, physicochemical, non-toxic and non-immunogenic nature and the high permeability and retention effect which results in easy penetration and accumulation of drugs.

Methods

This review summarizes the design and fabrication strategies of nanocomposites based on aunps which finally deliver rns or produce ros, leading to the apoptosis and necrosis of tumor tissue. also cytotoxicity potential of these nanomaterials for cancer therapy is compared.

Results

Pdt has many advantages over current cancer treatment methods, such as surgery, chemotherapy, and radiation therapy. as a result of development in nanotechnology engineered nanoparticles efficiently, metallic nanoparticles have been widely exploited for biomedical application and among them, aunps are highly remarkable. the aunpâ€™s biocompatibility and low toxicity are of prime significance for unhindered therapeutic applications. high surface to volume ratio ensures the immobilization of plenty of different molecules on aunps which could be carried (especially, if they contain thiol or amino groups) to the targeted tissue. binding of an antitumor agent onto the aunps can prevent their deterioration route to the tumor and at the same time to reduce the toxicity for healthy cells.

Conclusion

Development of gold based nanocomposites became an important strategy in pdt and could be translated into clinical strategies for cancer therapy.

Keywords

Photodynamic therapy; reactive oxygen species (ros); no releasing; gold nanocomposites; tumor cell.

Recent approaches to ameliorate vision by stem cell therapy

Negar Foroughi,[1,*] Maede fekri abras,[2]

Abstract

Introduction

Casting a close glance at the soaring number of people who are suffering from vision impairment in the elderly all around the world, has given us the importance of regenerating traumatized tissues with age-related macular degeneration deploying human embryonic stem cells due to its self-renewal ability. in recent years omnipotent embryonic stem cells have been holding a great promise to treat an array of disorders. they can differentiate into any cell with different features to regenerate a specific tissue giving people with age-related macular degeneration (amd) and stargardt macular dystrophy (stdg1) a vision improvement by engraftment of human embryonic stem cell-derived retinal pigment epithelium into subretinal space.

Methods

This review was written based on recent discoveries in the field of photoreceptor transplantation therapy from 2006 to 2018 of 57 specifically-related articles to amd stem-cell therapy in asian, european and american countries from ncbi, elsevier, and pub med sites. valid data of each article, which was clinically successful in recovering vision to some extent, was selected and brought here in addition to the results of the experiments.

Results

Hescs-derived rpe mao9 were generated and cryopreserved. thawed rpe differentiated colonies were picked up by means of collagenase. in addition, nic (nicotinamide) stimulated the appearance of pigmentation within the differentiating clusters. 99% of hrpe were stained for their expressed markers such as zo1, pa-6, mite, and bestrophin in fluorescence-activated cell sorting (facs) and fluorescein angiography in a heterogeneous fluid mixture, or phagocytized the fluorescently labeled beads in phagocytosis assay kit. preretinal pigmented cell growth was seen in a few eyes near the injection site, but does not exert an adverse influence over their vision nevertheless. a number of selected individuals both with adm degeneration and stdg dystrophy were undergone pars plana vitrectomy, including surgical induction of posterior vitreous separation from the optic nerve, in order to inject rpe while immuno-suppressive drugs have been administered before and after the surgical procedure. in some eyes, small pigmented clumps were observed in the fundus photographs in optical coherence tomography (oct) and resolved within 11-12 months. despite developing visually remarkable progression cataract and the following decrease in visual acuity (va) for a few eyes, eyesight improved after the cataract surgery. some eyes were infected and led to severe inflammation which treated by taking antibiotic drops and discontinuation of immunosuppression. in some cases, a cessation of immunosuppression was done because of repeatedly elevated creatinine levels in serum, blood urea nitrogen (bun) levels, and potassium as well as bone marrow suppression. small patches of pigmented growth lining aspects of bruch

membrane, was seen in a few eyes. treated eyes were trialed with electroretinography (erg) measuring the electrical response imaging of rods and cones. after all, most patients va has improved and no diminution of visual has reported except in a few rare cases, though transplanted patients must be assessed by plenty of examinations including; tomography, flow cytometry.

Conclusion

Importance of precarious challenges of stem cell therapy has led to some suggesting ideas to alleviate the possible risks, like; hyperproliferation of the cells which might develop tumors or even retinoblastoma. one of the main concerns is the probability of tissue rejection which immunosuppression drugs administered to reduce the allograft rejection. also, h1 and h9 hescs, which does not cause an immunological response, could be used due to the low expression of the major histoincompatibility complex (mhci) and no expression of mhcii. if we use autologous hescs from saved umbilical cord or adult bone marrow cells, rpe cells will not be recognized by the immune system so that there would be no need for immunosuppressive drugs to weaken the immune system which raises the possibility of infection and inflammation. choroidal neovascularization is associated with rpe atrophy in adm patients that may be a result of defects in bruch membrane during the hrpe injection procedure. in some patients, the cataract may happen in association with retinal dystrophy. after the cataract surgery, their vision will recover completely.

Keywords

Macular degeneration, retinal stem cell therapy, retina regenerative medicine, retinal engraftment.

Relation between polymorphism rs2227284 of il4 and prostate cancer

Neda Khayat hesari,[1] Zahra tahmasebi fard,[2,*] Iman salahshouri far,[3]

1. Department of biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.
2. Department of Biology, Roudehen Branch, Islamic Azad of university, Roudehen, IRAN
3. Department of biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.

Abstract

Introduction

Inflammation in tissues is one of the cancer factors. interleukins secreted by t helper cells like il4 can have notable impacts on cancer patients. this interleukin with its dual role, in early stages of prostate cancer, prevents the progression of the tumor but in late stages facilitates the growth. in this research, the relationship between polymorphism of rs2227284 (-33c/t) in the il4 gene and prostate cancer incidence was deliberated.

Methods

100 blood samples from prostate cancer patients and 100 samples from healthy people in the same range of ages were randomly selected under the supervision of a specialist physician. dna samples were extracted by salting out method and their purity did examine and proved by spectrophotometry and electrophoresis. then using appropriate primers the selected sequence was multiplied and digested with specific enzyme nla iv. results obtained were processed by spss software, statistic x2 calculations, logistic regression and â€¦

Results

Mutant genotype cc in rs2227284 polymorphism showed a meaningful relation between patients and control samples (p-value: 0.004, or: 2.31, ci95%: 1.309-4.077) chance of developing prostate cancer was 2.31 times more than other genotypes. this genetic change showed no meaningful statistic relation with age (p-value: 0.063) body mass index (p-value:0.732) cancer grade (p-value:0.570) and histopathologic chances (p-value:0.277).

Conclusion

Genetic change from t to c in the location 132677033(nt) of the il4 gene is seemingly related to prostate cancer occurrence in iranian patients.

Keywords

Rs2227284, prostate cancer, rflp-pcr

Relationship between clinical endometritis and bun index and microbial characteristics of uterine discharge on post partum cows on shahrekord indusrtrial herd of dairy cow

Mehrdad Ostadpoor,[1,*] Taghi taktaz,[2] Mohsen jafarian,[3]

1. Azad University of shahrekord
2. azad university of shahrekord
3. Azad University of shahrekord

Abstract

Introduction

Due to meaningful associations between the clinical endometritis and bun and microbiological charecteristics of uterine discharge during past calving period.

Methods

in total 100 cows were selected and categorized into two groups of 50 in 60 days prior to lactation period and 60 days into lactation period. blood sampales and uterine discharge samples were sent to the laboratory for measuring bun and culture and antibiogram tests respectively.

Results

it turned out that the sizable proportion approximately 90 % of clinical endometritis have no bacteria etiology. it can be concluded that an induction of heat can be useful in treating eformentioned clinical condition. e.coli and clostridium were found in our samples and ceftiaxone and enrofloxasin and florfenicel proved to be most effective in elimination of mentioned bacteria. furthermore the average bun in blood samples of culture positive cows was remarkably higher in comparison with culture negative cow 19.51 and 14.45 in order which were even higher than global standards of 14-16 miligram per deciliter. this could in turn induce bacteria endometritis in culture positive cows.

Conclusion

in conclusion the elimination of factors which can lead elevation of bun is in regarded as an essential preventive measurement.

Keywords

Endometritis, bun, uterine discharge cow

Relationship between hbv and breast cancer in isfahan province

Pegah Hoseinpouri,[1,*] Seyed hesamaldin hejazi,[2] Faranak hadi,[3]

Abstract

Introduction

Breast cancer is the most commonly diagnosed cancer and also a leading cause of cancer death among females worldwide. breast cancer alone account 25% of all cancer case and 15% of all cancer deaths among females. viruses are the accepted cause of many important cancers including cancers of the cervix, the liver, some lymphomas, head and neck cancers and indirectly human immunodeficiency virus associated cancers. for over 50 years, there have been serious attempt to identify viruses which may have a role in breast cancer. hepatitis b infection is a major global health problem. it is assumed that the potential mechanism of indirect oncogenesis of hepatitis b virus in causing breast cancer through its persistence as occult infection and continuous replication with long term subtle liver damage. hbv may also directly affect the breast cells through hbx which may act as oncoprotein. this study was performed for 40 tumor paraffin embedded tissues from women in isfahan province with breast cancer. after extraction of dna with salting out method and amplification of housekeeping gene(beta actin) all samples were examined to detection of dna-hbv virus applying pcr(polymerase chain reaction) method. dna hepatitis b virus in none of the samples was not observed. the presence of hbv gene in a significant subset of women with breast cancer in isfahan province shows that hepatitis b virus can not on of the reasons for breast cancer. but more studies are needed to demonstrate the relationship between virus and breast cancer

Methods

This study was performed for 40 tumors paraffin embedded tissues from woman with breast cancer. after extraction of dna with salting out method and amplification of housekeeping gene, all of samples were examined to detection of dna-hbv applying pcr. to check the accuracy of dna extraction, pcr was performed using two specific primers for housekeeping beta-actin gene with sequence 5Ê¹ agacgcaggatggcatggg 3Ê¹ and 5Ê¹ gagaccttaaacaccccagcc 3Ê¹ then pcr was done for evaluation of present hbv genome in tissue samples with two specific 5Ê¹ttgtcctccaacttgtcctg 3Ê¹ and 5Ê¹ ccaataccacatcatccatatagc 3Ê¹ after multiply dna by pcr, all of the samples from detect dna were electrophoresis.

Results

1-to investigate the quality of dna extraction, about 1 Âµl of dna is deposited in a nanodrop and the amount of dna absorbance was measured at 260 to 280 wavelengths. 2-dna extraction of cancerous samples were used for amplification of beta-actin gene using specific primers. result showed that 39 of the 40 tumor samples were optimally reproduced and the band with a size of 161bp was observed. 3-then, tumor samples were used to amplify hepatitis b virus dna by specific primer, non of the samples were not positive for of the hbv infection.

Conclusion

Breast cancer is the second leading cause of death from cancers and almost one in eight women in the united states will beÂ diagnosed with breast cancer in her lifetime. many studies have been conducted to identify the risk factors for this cancer, but known risk factors for less than half of all cases are justifiable and the known molecular mechanisms of breast cancer are very rare. the involvement of various viruses in human breast cancer has been widely studied and very variable results have been reported, some evidence agrees or disagrees with this, so the issue is controversial. few studies, have evaluated the relationship between hbv infection and breast cancer. in the present study, which was performed on the basis of pcr, non of the 40 tumor samples, were positive for hbv infection. further studies are needed to apply our finding to other regions or races and to clarify the underlying pathophysiological mechanisms behind the association of infection viral hepatitis with breast cancer.

Keywords

Breast cancer, hepatitis b virus, pcr

Relationship between hbv and breast cancer in khuzestan province

Pegah Hoseinpouri,[1,*] Farank hadi,[2] Seyed hesamaldin hejazi,[3]

Abstract

Introduction

Breast cancer is one of the most common cancers and the leading cause of death in women worldwide. several internal and external factors contribute to the development of this cancer. internal factors such as age, hormonal effects, lifestyle, obesity, alcohol consumption, smoking, gender, anxiety and stress, genetic predisposition(mutation in brca1, 2 and other genes). breast cancer is a multi-stage disease and the viruses can be in one of the stages one have a role. hepatitis b infection is a major global health problem. it is assumed that the potential mechanism of indirect oncogenesis of hepatitis b virus in causing breast cancer through its persistence as occult infection and continuous replication with long term subtle liver damage. hbv may also directly affect the breast cells through hbx which may act as oncoprotein. this study was performed for 40 tumor paraffin embedded tissues from women in khuzestan province with breast cancer. after extraction of dna with salting out method and amplification of housekeeping gene (beta actin) all samples were examined to detection of dna-hbv virus applying pcr(polymerase chain reaction) method. dna hepatitis b virus in none of the samples was not observed. the presence of hbv gene in a significant subset of women with breast cancer in khuzestan province shows that hepatitis b virus can not on of the reasons for breast cancer. but more studies are needed to demonstrate the relationship between virus and breast cancer.

Methods

This study was performed for 40 tumors paraffin embedded tissues from woman with breast cancer. after extraction of dna with salting out method and amplification of housekeeping gene, all of samples were examined to detection of dna-hbv applying pcr. to check the accuracy of dna extraction, pcr was performed using two specific primers for housekeeping beta-actin gene with sequence 5Ê¹ agacgcaggatggcatggg 3Ê¹ and 5Ê¹ gagaccttaaacaccccagcc 3Ê¹ then pcr was done for evaluation of present hbv genome in tissue samples with two specific 5Ê¹ttgtcctccaacttgtcctg 3Ê¹ and 5Ê¹ ccaataccacatcatccatatagc 3Ê¹ after multiply dna by pcr, all of the samples from detect dna were electrophoresis.

Results

1-to investigate the quality of dna extraction, about 1 Âµl of dna is deposited in a nano drop and the amount of dna absorbance was measured at 260 to 280 wavelengths. 2-dna extraction of cancerous samples were used for amplification of beta-actin gene using specific primers. result showed that 39 of the 40 tumor samples were optimally reproduced and the band with a size of 161bp was observed.3-then, tumor samples were used to amplify hepatitis b virus dna by specific primer, non of the samples were not positive for of the hbv infection.

Conclusion

Breast cancer is the second leading cause of death from cancers and almost one in eight women in the united states will beÂ diagnosed with breast cancer in her lifetime. many studies have been conducted to identify the risk factors for this cancer, but known risk factors for less than half of all cases are justifiable and the known molecular mechanisms of breast cancer are very rare. the involvement of various viruses in human breast cancer has been widely studied and very variable results have been reported, some evidence agrees or disagrees with this, so the issue is controversial. few studies, have evaluated the relationship between hbv infection and breast cancer. in the present study, which was performed on the basis of pcr, non of the 40 tumor samples, were positive for hbv infection. further studies are needed to apply our finding to other regions or races and to clarify the underlying pathophysiological mechanisms behind the association of infection viral hepatitis with breast cancer.

Keywords

Breast cancer, hepatitis b virus, pcr

Relationship between the status of helicobacter pylori baba2 and oipa genes and gastric cancer risk in iran

Omolbanin Feili,[1,*] Saber zahri,[2] Saeid latifi-navid,[3] Seyedeh zahra bakhti,[4]

1. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
2. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
3. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
4. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran

Abstract

Introduction

Helicobacter pylori (h. pylori) plays an essential role in the development of digestive diseases, such as non-atrophic gastritis (nag) and gastric cancer (gc). it has been shown that baba and oipa are the two important outer membrane proteins of h. pylori and are involved in the pathogenesis of the bacterium. the aim of present study was to analyze the relationship between h. pylori baba2 and oipa status and development of gc.

Methods

A total of 223 strains were obtained by culturing gastric biopsy specimens; then dna extraction and genotyping were performed.

Results

Frequency of baba2 and oipa genes in strains obtained from patients with nag (34.7%, and 63.9%, respectively) was higher than those with gc strains (6.3%, and 44.3%, respectively). the presence of baba2 and oipa genes showed a significant negative relationship with the risk of gc in logistic regression analysis; with odds ratio of 0.127 (95% ci= 0.048-0.335) and 0.450 (95% ci= 0.257-0.756), respectively.

Conclusion

In this study, we showed that infection with h. pylori strains carrying baba2 and oipa genes cannot threaten the risk of gc in iranian patients.

Keywords

Helicobacter pylori, gastric cancer, baba2, oipa, iran.

Relationship of polymorphism cyp1b1*2 (ser119; rs1056827) on the pathway of estrogen metabolism with breast cancer risk in iranian women

Fereshteh Moheb afzali,[1,*] Zahra tahmasebi fard,[2]

1. Department of Molecular and Cellular Biology , Faculty of Advanced Science and Technology , Tehran Medical Sciences , Islamic Azad University , Tehran , Iran .
2. Department of Biology , Roudehen Branch , Islamic Azad University , Roudehen , IR Iran

Abstract

Introduction

The high prevalence of breast cancer and its heterogeneity, and considering that the population of iran is genetically and nutritionally different from other populations in the world, therefore, the study of genetic factors and the effect of polymorphisms on the function of proteins, as well as the effect of these enzymes on food metabolism can play an important role in controlling diseases. identification and screening of people before the onset of cancer or preventing the development of a disease with appropriate treatment can be effective in controlling cancer. the common polymorphism in the pathway of estrogen metabolism at the site of ala 119 ser)cyp1b1 * 2) codon results in a 2- to 4- fold increase in the the activity of the cyp1b1 enzyme compared to the natural enzyme. this results in a 2- to 4- fold increase in the hydroxylation of the procarsinogen to carcinogeniccompounds and the production of active metabolites that can damage shuffling and fracturing in single-stranded dna increases the risk of genetic mutations, including the potential for breast cancer. therefore, the aim of this study was to determine the relationship between homozygous genotypes and heterozygote polymorphism (rs 1056827) in breast cancer patients compared to controls, so that the results could be used for early screening and if found a meaningful relationship, this polymorphism was identified as one of the factors involved in breast cancer.

Methods

79 patients with breast cancer and 79 healthy women who were referred to shohada tajrish hospital were selected. their blood samples were then obtained, and a sample of their dnawas extracted. the genotypes of people were determined by assist of pcr-rflp techniques. our data was analyzed with x2 statistical test by spss 19 software.

Results

In the patient group, age range was 32 - 70 years with average49.68 years and in the control group was 30 - 65 years with average 47.34 years. in the patient group the meanweight of the participants was 68 _ 8 kg and 61 _ 2 in the control group. according to the medical records of the patient group, estrogen receptor expression was observed in 58% and progesterone receptor expression in 42% of them. of the patient group, 26 (32.91%) had invasive lobular carcinoma, 45 (56.97%) had invasive ductal carcinoma, 5(6.33%) had ductal carcinoma in situ and 3 (3.79%) had lobular carcinoma in situ. 38 patients had metastatic breast cancer, 16 patients had grade iii breast cancer, 13 patients had grade ii/iii breast cancer

and 12 patients had grade ii breast cancer. the frequencies of alleles and homozygote and heterozygote genotypes in this study comply with the rule of hardy-weinberg. in the cancer group, it was calculated that there were 42 cases (53.16%) of the tt genotype, 16 cases(20.25%) of the gg genotype and 21 cases (26.59%) of the tg genotype, whereas in the control group, there were 18(22.79%), 48 (60.76%) and 13 (16.45%) cases of tt, gg and tg genotypes, respectively. within this result, the risk was increased from 3.85-fold (95% ci 1.94-7.65, p value=0) in tt homozygote to 0.16 fold (95% ci 0.08-0.33, p value =0) in homozygotes for gg. the frequency of the g allele in the patient group was0.34, while in the control group it was 0.69. the frequency of the t allele in the patient and control groups were 0.66 and 0.31 respectively.

Conclusion

The results of statistical analysis showed that the presence of t allele in the polymorphism (rs 1056827) in exon2 (codon g119t) is associated with a risk of breast cancer. it seems that the catalytic functional differences of this enzyme in the presence of polymorphism is one of the reasons for the effect on estrogen metabolism and the creation of dna damaging agents.

Keywords

Gene cyp 1b1, polymorphism , pcr-rflp, breast cancer

Removal heavy metals from water,using magnetite nanosphers

Nazanin Zamani,[1,*] Negar zamani,[2]

1. tabriz university of medical science,faculty pharmacy
2. tehran university of medical science

Abstract

Introduction

Exposure to heavy metals is one of the most severe global environment problems.heavy metals are non-biodegradable in nature.(pb2+) is commonly used in households and many industries.lead is commonly used in battery manufacturing, paints,pulps and paper industries. wastewater discharge from battery and paint manufacturing industries are the major anthropogenic lead sources. thus industrial wastewater is considered to be a potential source of lead pollution.excess lead consumption causes anemia,irritability,dizziness and renal sickness. usepa has set the maximum permissible limit of lead in drinking water at 0.015 mg/l. who and the bis have set the maximum permissible limit of pb2+ in drinking water at 0.01 mg/l. chemical precipitation,ion exchange,adsorption, ultrafiltration,membrane separation have been used for metal removal.adsorption is often superior since it is effective,easy handling,flexible and selective.many adsorbents have been used for cr6+ and pb2+ removal, but keen interest exists in improve and advanced low cost adsorbents with high surface areas and sorption capacities. nanosorbents are sought because small particle sizes and high surface areas enhance chemical reactivity and adsorbate interactions and these remove contaminants over a wide concentration range rapidly. we considered nano sized fe304 particles to remove heavy metals due to their magnetic properties, high surface area,chemical stability,easy synthesis and low toxicity.

Methods

Several scientists studies were reviwed in thisretrospective article and some efficinet methods were used for reaching their goal and some of them are written here. first group is yana bagbi and etal that(fe304)nanoparticles were synthesized using a co-precipitation method reported elsewhere. briefly,16.2g fec13 and 6.3g fec12 were dissolved in distilled water and stirred. fe3+-fe2+ solution ph was adjusted to 8.0 using aqueous naoh.after magnetite slurry formation,color turned into black.then ultrasonicated. the liquid phase was separated by centrifugation.the leftover residue was washed to remove any excess alkalinity.then dried. the band gap energy of magnetite nps was determined. ferric chloride hexahydrate, sodium acetate and polyvinylpyrrolidone were added to ethylene glycol.this mixture was covered and stirred on a magnetic stirrer.the color and solution changes from yellowish-brown to dark-brown.the solution was transferred to teflon-lined stainless-steel autoclave and heated in the furnace.the solution was cooled and the black precipitate was separated from the solution by applying external magnetic field,washed with ethanol and vacuum dried. chromium and lead adsorption isotherms were obtained in the 10-100 mg/l concentration range.a known quantity of magnetite nanospheres was added to working solution and shaken at specific temperature for specified time.following magnetic separation,the filtrate was analyzed on a flame atomic absorptionspectrometer.chromium and lead

adsorbed was determined.the ground water contains a complex system of ions,which may compete with cr6+/pb2+ during adsorption.to check the interference of other ions on magnetite nanosphere removal efficiency,a groundwater sample was collected from the sahibabad, district ghaziabad,uttar pradesh,india.cr6+ and pb2+ adsorption studies were conducted using spiked samples.a known weight of nanospheres was added to the spiked samples,followed by agitation.magnetic particles were removed using a simple magnet and solutions were analyzed.initially,metals were adsorbed on nanoparticles from solutions.then nanoparticles were stripped using naoh(for cr)and hn03(for pb) by agitating.the nanoparticles were separated and supernatants metal ion concentration was analyzed.

Results

Lead sorption studies were conducted to investigate the effect of initial phs, contact time,temperature and adsorbent concentrations. ground and surface waters contain a complex mixture of ions.these may innuence the adsorption of cr6+ and pb2+ on magnetite nanospheres. therefore, the efficiency of the magnetite nanospheres for cr6+ and pb2+ removal was investigated. a groundwater sample from sahibabad, uttar pradesh, india was analyzed and then spiked with cr6+ and pb2+, separately.the optimum parameters were selected to remediate cr6+ and pb2+ using magnetite nanospheres. and removal of cr6+(up to 65%) and pb2+(up to 70%) was achieved.this can be increased to 100% by increasing the dose of nanospheres.thus, these nanospheres work well to remove cr6+ and pb2+ in presence of other ions.

Conclusion

Finally,our previous studies showed cr(vl) was partially reduced to trivalent chromium cr(iii). further studies are required to address whether those iron oxides can remove pb,cr using either the reduction or adsorption process. moreover,despite that one of the most widely used methods is coprecipitation,magnetite nanoparticles synthesized using different methods or synthesis conditions may display different abilities due to their different sizes and structures.

Keywords

Magnetite nanospheres,solvothermal method,mesoporous, sorption,lead and chromium removal.

Report the amount of potassium in the urinary of pregnant women

Elnaz Abedini,[1] Mohammad asadi,[2,*]

1. 19 mayÄ±s univercity of Turkey
2. shahid beheshti uni

Abstract

Introduction

Considering the importance of the role of potassium in pregnant women for maternal and infant health, this study was aimed determination and comparison of urinary potassium concentration (upc) in pregnant women.

Methods

This cross-sectional study was done during march 2015and may 2016. inclusion and exclusion criteria to be considered and upc were measured by spectrophotometry in 110 and 158 pregnant women in miandoab and mahabad cities, iran. sampling method for this study was all of pregnant women in miandoab and random stratified sampling in mahabad. data were collected using a structured questionnaire. all statistical analyses were performed using spss software, version 20.0 (ibm spss, armonk, ny, usa). chi-square test, pearson's correlation coefficient and logistic regression were used for associations and differences.

Results

The mean upc was 200.21 Âµg/l in pregnant women of miandoab and 238.79 Âµg/l in pregnant women of mahabad. 22.7% of pregnant women were with low concentrations of potassium, 57.8% within the normal range and 19.5 percent were with high potassium concentrations in miandoab . while 5.3 percent of pregnant women were with low concentrations of potassium, 54.5% were within the normal range and 40.1% were with high upc in mahabad. there were no significant differences between demographic variables and upc in the two regions (p> 0/05). multivariate regression models showed significant connections between the residence and upc pregnant women (p< 0.001).

Conclusion

The results of this study showed that upc in pregnant women of miandoab was significantly lower than mahabad and the place of living can be considered as a predictor of upc in pregnant women

Keywords

Upc pregnant women

Resveratrol attenuates visfatin and vaspin genes expression in adipose tissue of rats with type 2 diabetes.

Sonia Salari,[1,*] Hosein mohammadi,[2] Yaser mohassel ,[3]

1. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran
2. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran
3. Department of Clinical Biochemistry, Faculty of medicine, Kermanshah University of Medical Sciences, Kermanshah- Iran

Abstract

Introduction

Visfatin and vaspin are secreted by adipose tissue and play key roles in glucose homeostasis and subsequently are potential targets for diabetes treatment. resveratrol (rvs) corrects insulin secretion and improves insulin sensitivity. we investigated the rvs effects on serum antioxidants, insulin and glucose levels, also visfatin and vaspin genes expression in adipose tissue of streptozotocin-nicotinamide (stz-na) induced type 2 diabetic rats.

Methods

Diabetes was induced in wistar rats (n=32) using stz (60 mg/kg body weight) and na (120 mg/kg body weight); rats were divided into 4 groups (n=8). eight untreated normal rats were used as control group; four diabetic rat groups (2-5) were treated with 0, 1, 5 and 10 mg/kg body weight of rvs, respectively for 30 days. after treatment blood and adipose tissue were prepared from all animals. serum glucose, insulin, homa index, total antioxidant capacity (tac), and malondialdehyde (mda) were measured. visfatin and vaspin genes expression in adipose tissue were evaluated using real-time pcr.

Results

Rvs reduced blood glucose significantly and increased insulin level, resulting in insulin sensitivity improvement. furthermore rvs increased weight and tac, while reducing serum mda in the diabetic groups. visfatin gene expression increased in the diabetic group, and rvs treatment reduced it. vaspin gene expression was reduced in rvs receiving diabetic groups.

Conclusion

The results indicated that rvs has potential hypoglycemic effect, probably by increasing insulin level and changing gene expression of visfatin and vaspin. moreover rvs showed antioxidant effects through reduction in peroxidiation products and augmented antioxidant capacity.

Keywords

Vaspin genes, visfatin and vaspin

Retrobulbar secondary plasmacytoma:a case report and systematic review of literature

Soodeh Enayati,[1,*] Afshin karami,[2] Mehrdad payandeh,[3] Noorodin karami,[4]

Abstract

Introduction

Retrobulbar secondary plasmacytoma: a case report and systematic review of the literature multiple myeloma is a tumor of malignant plasma cells that consider as the second most common hematologic malignancy. this disease has an age-adjusted incidence of 4.7 cases per 100,000 populations. it occurs more often in adults, and the mean age at diagnosis is 70 years. one of the most prominent features of this disorder is the presence of more than 10% clonal plasma cells in the bone marrow or biopsy associated with end-organ damage. also, in 1846, dalrymple and bence jones discovered an uncommon plasma cell tumor known as plasmacytoma. the etiology of plasmacytoma remains largely unknown, but factors such as viral pathogenesis have been noted and genetic agents may also play a role. the purpose of this paper is to report a 62-year-old man with a clinical and pathological history of mm, who presented evidence of a mass in the retrobulbar area of the eye.

Methods

In january 2018 a 62-year-old man was referred to our clinic of hematology and oncology, with one week of back pain history, loss of consciousness in neurological exam. further analysis was done that founded a sign of kidney failure. initial laboratory investigations he had normocytic normochromic anemia with hb: 9.6g/dl, normal wbc and a decrease in platelet count (wbc: 8,300/mm3; platelet count: 79,000/mm3). renal function tests (rft) and serum electrolytes were done usually in multiple myeloma. the results of these tests showed hypergammaglobulinemia (5g/dl) and an increase in blood urea nitrogen (bun) and serum creatinine (cr) levels (bun 64 mg/dl, cr 8.1 mg /dl). magnetic resonance imaging of the lumbar spine shows vertebral collapse at t12 and l2. examination of a bone marrow aspirate and bone marrow biopsy revealed a high percentage of plasma cells (>20% plasma cells) were negative for cd19, and positive for cd38, cd138.

Results

We made a diagnosis of multiple myeloma and immediately started treatment with bortezomib, cyclophosphamide, and dexamethasone (the approved vcd is preferable as induction therapy for newly diagnosed multiple myeloma especially with renal failure). also, zoledronic acid was used to reduce bone pain. after 6 cycles, the initial response to treatment was relatively good. five months later, the patient referred to an ophthalmologist with symptoms such as swelling of the right eyelid with ptosis, diplopia and blurred vision. in fundus examination, few scattered hemorrhages were seen in the left eye and results of his left eye examination were as follows visual acuity (cc): od: 6/10, os: 4/10. the results of orbit computed tomography (ct) demonstrated of a 26 Ã— 12 mm soft tissue mass in the retrobulbar of the left eye in fine needle aspiration cytology (fnac) of the mass, mature and immature plasma cells were seen,

which indicate diagnosis of secondary extramedullary plasmacytoma. so, the patient underwent surgical debulking, the lesion was removed from the retrobulbar area and the result was successful. currently, condition of patient condition is good and he is continuing next chemotherapy cycles with bortezomib and dexamethasone.

Conclusion

Eventually, the important point in these cases is that multiple myeloma should be investigated during differential diagnosis.

Keywords

Plasmacytoma, neoplasm, multiple myeloma, extramedullary

Review : application of ngs and challenges related to dna typing of biological samples in legal genetics

Azam Soleimani,[1,*]

1. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.

Abstract

Introduction

During recent decades, development in molecular genetic related techniques have provided a hope for solving the challenges of genetic science. one of the most recent achievements is the next generation sequencing generation (ngs) technology. low levels of dna or the destruction of many of the samples referred to forensics resulted in unsuccessful function current capillary electrophoretic system for snps detection. therefore, any protocol and technology that covers this limitation is very helpful in solving a large number of legal cases. the purpose of this review is to evaluation the applications of ngs and the challenges associated with dna typing biologic samples in legal genetics.

Methods

Related studies from various databases were obtained and studied

Results

Ngs has been able sequencing low-input dna of biologic specimens referenced to forensics, especially for mass disasters. this method can simultaneously analyze the low-input dna with different genetic markers including strs, snps, mutations and ect. therefore, the benefits of ngs technology include high efficiency, simultaneous detection of a large number of strs in autosomal and sexual chromosomes, the ability to detect alleles with similar length, and ect.

Conclusion

Although the high cost is a limitetion ngs. certainly due to the technical advances in this field and the ongoing efforts of genetic scientists, ngs will soon be utilized as a practical application and a common technology in various clinical trials as well as legal cases in genetic labs.

Keywords

Ngs, dna typing, mass disasters, low-input dna

Review and performance of stem cells and tissue engineering in the treatment of pathologies of the nervous

Saeed Abbasi,[1,*] Roya nazemi,[2] Seyed hesam seyed hosseini,[3] Fatemeh malekzadeh,[4]

2. student if master of science of tissue engineering, department of medical engineering central tehran branch,islamic azad univercity,tehran,iran
3. student if master of science of tissue engineering, department of medical engineering central tehran branch,islamic azad univercity,tehran,iran
4. student if master of science of tissue engineering, department of medical engineering central tehran branch,islamic azad univercity,tehran,iran

Abstract

Introduction

Nerve damage affects millions of people around the world, which lowers the quality of life of the infected and causes a lot of economic and social problems. in spite of the self-defense capacity of the peripheral nervous system of the nervous system, new therapeutic approaches and techniques are needed. the limitations and unconventional results of an auto graft transplant in the clinic require replacement therapy.

Methods

The treatment of neurological damage has become new dimensions with the advancement of tissue engineering and the utilization of stem cells and growth factors, which has attracted the attention of researchers and researchers. by examining the performance and results of in vivo and in vitro experiments such as migration testing, angiogenesis, alamar blue, immunization and microscopy, tem and statistical analysis of how to repair, regenerate, and restore peripheral nerves it can be pointed out and monitored to provide optimal results for the reconstruction, regeneration and repair of peripheral nerve damage.

Results

One of the main advantages of these cells is their ability to differentiate into schwann cells. stem cells modulate the immune systems function, helping to form the myelin layer and producing extracellular matrix molecules during environmental nerve repair.

Conclusion

This review is a review of the type and function of stem cells and the progress made by tissue engineering in the treatment of peripheral neuropathic damage. this study aims to treat environmental neurological damage at the earliest possible time, observing international standards, and taking into account the therapeutic issues, and ultimately increasing the quality of life of affected people.

Keywords

Tissue engineering, stem cells, peripheral nerves

Review of effective non-pharmacological interventions in controlling stress among patients with breast cancer

Elahe Samami,[1] Zohreh shahhosseini,[2,*] Forouzan elyasi,[3] Seyyed noraddin mosavi nasab,[4] Leila shojaee,[5] Ehsan zaboli,[6]

1. M.Sc. Student of Midwifery counseling. Student Research committee, Mazandaran University of Medical Science, Sari, Iran.
2. Sexual and Reproductive Health Research Center, Mazandaran University of Medical Science, Sari, Iran.
3. Department of Psychiatry, Psychiatry and Behavioral Research Center,Mazandaran University of Medical Science,Sari, Iran.
4. Health Sciences Research Center, Mazandaran University of Medical Science, Sari, Iran.
5. Gastrointestinal Cancer research center, Mazandaran University of Medical Science, Sari, Iran.
6. Gastrointestinal Cancer research center, Mazandaran University of Medical Science, Sari, Iran.

Abstract

Introduction

: diagnosing breast cancer is considered as a stressful factor in womenâ€™s life, which affects various aspects of their life. there are different non-pharmacological interventions to control these stresses so this review aims to investigate the effective non-pharmacological interventions in controlling stress among women with breast cancer.

Methods

This study is a review that the researcher was initially conducted her computer search in google scholar database and then more specifically in persian databases such as scientific information database (sid), magiran, and in english databases included pubmed, web of science, scopus, science direct and springer using persian and english keywords from 2000 to 2018 to find related articles. finally out of 310 articles, 85 studies were used to write this study.

Results

: the research findings indicated that following interventions can be used to control and reduce stress in women with breast cancer: cognitive behavioral therapy and cognitive therapy (12 studies), mindfulness (15 studies), supportive group therapy (11 studies), problem solving and self-management (8 studies), music therapy (4 studies), yoga (7 studies), relaxation (5 studies), social support (8 studies), family support (3 studies), spiritual group therapy (4 studies), religion therapy (3 studies) and hope therapy (3 studies).

Conclusion

According to the significance of mentioned non-pharmacological interventions, health service providers can collect suitable programs and use the interventions correctly in order to reduce stress and improve womenâ€™s health.

Keywords

Stress, breast cancer, psychological interventions, social intervention,spiritual interventions

Review on some polyphenolic compounds to identify beta amyloid structures among other invitro secondary structures

Sirvan Abbasbeigi,[1,*]

1. Medical Biology Research Center, University of Medical Sciences, Kermanshah, Iran

Abstract

Introduction

As it was mentioned in our previous report, aurone derivatives originated from polyphenols cluster, and due to its natural features such as neutral load and proper lipophilicity coefficient, there is a good candidate to work on it as a suitable alternative instead of tht compound which may well be known as amyloid plaques probe. we have already argued about protein misfolding disorders, and also it has been described different reasons and nonfunctional pathways which may lead protein to fold improperly in addition to mutation factors. as a result, we have been confronted with so many pathological conditions which they have been linked to protein and proteinâ€™s problems. however, in this case, we developed our study to some other aspects of the previous report like antioxidant activities and toxicities plus some newly released data of the last announcement.

Methods

To remind the previous contents, the experiment fundamentally based on purification of proteins and the affinity of synthetic compounds (aurone derivatives) to identify beta structure (extended cross-beta) as accurately as possible among other structures. the proteins which were chosen for this experiment were bovine serum albumin (3v03) as a protein within an alpha/beta combination secondary structure and beta-lactoglobulin (2q2m) as an all beta secondary structure. the process of protein purification (beta-lactoglobulin) was based on fractionation protocol and inducing different ph parameter and also several various temperature degrees. spectroscopic studies have been measured in the each compoundâ€™s wavelengths (1-5 compounds) for both uv and fluorescence spectroscopes. furthermore, in this study, we have added antioxidant activates assay in addition to the toxicity of each compoundsâ€™ data. in the following, we evaluated docking and the interactions data between amyloid protein and attached compounds regarding the standard probe like tht to promote our study compared with the previous one.

Results

Overall, it has been demonstrated that our synthetic derivates could compete with a benzofuranone compound called tht in somewhere. it means, uv spectroscopy which was done for each compound (1-5) in three different conditions (amyloid, amorphous and native) among five various concentration of each protein illustrated as same as tht result. subsequently, we have been observed and reported in our previous manuscript that compound 4 displayed very similar data compare with a standard probe like tht. moreover, in this new report, we assume that whether compound 4 or 3 which both of them originated

from trihydroxy benzofuran structure can play a vital role to detect amyloid aggregation rather than others which were evaluated and also it has been proven by molecular simulation as well.

Conclusion

In conclusion, the previous in-vitro studies have suggested that polyphenolic compounds from food products may be useful in targeting aÎ². among all of them, flavonoids have been interested due to their antioxidant, anti-inflammation properties, targeting metal-aÎ²40 aggregation invitro and diminish cytotoxicity induced by metal-aÎ²40. recently, it was reported that flavonoids including flavones and aurone serve as a useful molecular probe in the development of imaging agents for Î²-amyloid plaques in the brain. to explore more helpful candidate for amyloid imaging probes, we selected one of the flavonoids, aurone, as a new core structure.

Keywords

Protein disorders, amyloid aggregation, synthetic compounds, auron derivatives

Review: microrna‌s as effective molecular biomarkers for identification and determination the nature of biological samples in legal genetics

Azam Soleimani,[1,*]

1. Legal Medicine Research Center, Legal Medicine Organization, Tehran,Iran.

Abstract

Introduction

It has been proven that dna information obtained from biological samples (e.g., semen, vaginal fluid, blood, sweat, oral fluid, and saliva) play a very important role in solving judicial cases. methods of screenings consist of presumptive and confirmmative are based on chemical, enzymatic and antigen-antibody methods. most of these tests are limited in specificity or sensitivity. also, in some cases, dna samples may also be lost in these tests. so, in many cases the identification and determination of their nature is not always possible with serological tests, and the response of these experiments is incompatible with the results of dna typing. therefore, new complementary tools are needed to identify of biological samples. the purpose of this study was to introduce molecular markers as a valuable tool in identify the source of biological samples discovered in the crime scene.

Methods

A targeted search has been conducted in the pubmed, science direct and scopus electronic databases and more than relevant and up-to-date studies have been conducted in this field.

Results

Recent advances in molecular genetics technologies have shown that identification biological samples using molecular markers will provide valuable information for the reconstruction of crime scenes, especially in those cases where serological tests fail to identify samples. numerous studies have shown great interest in the use of microrna‌s as biomarkers suitable for the identification of various body fluids. microrna‌s are non-encoding rna molecules with a length of about 25-18 nucleotides that contain a lot of information compared to mrna, and there is a lot of attention on their small size. in addition, microrna‌s have been shown to be specific for different specimens and are able to identify biological samples even after long periods of time under uncontrollable conditions with promising patterns. an extracted mirna will remain at room temperature for one year intact without damage and can be stored at -20 Â° c for up to 10 years. thus, microrna‌s are ideal candidates for determination the origin of biological samples in the legal genetics. simultaneously extract microrna and dna from a biologic sample will provide a very interesting and cost effective opportunity to determine source of sample and as well as a profile of person. so, specific of the microrna‌s to identify and distinguish different samples of forensic is a promising method specifically in the determination the nature of the biological samples and the separation of the mixed specimens

Conclusion

Profiling mirna can be a promising alternative to the identification of biological fluids associated with legal cases. therefore, considering the low sample size and the limitations of the serological tests in sensitivity specificity, using these biomarkers will significantly increase the validation of samples in the future.

Keywords

Legal genetics, serological tests, biomarker, micrornas

Rit2, ras superfamily member and its role in neurologic and psychiatric disorders: a narrative review

Yousef Daneshmandpour,[1] Zahra bahmanpour,[2] Mahsa tahmasebivand,[3] Raza mousavi,[4] Bahare khademi,[5] Babak emamalizadeh,[6,*]

1. Students Research Committee, Tabriz University of Medical Sciences, Tabriz, Ira
2. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
3. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
4. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
5. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran
6. Department of Medical Genetics, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

Neurologic disorders are of major problems throughout the world and affect millions of people. multiple studies have tried to explain the genetic factors behind neurologic diseases. one of the recently introduced genes is rit2, a member of ras superfamily, which plays fundamental roles in neurologic cells. in current study, we have reviewed reported functions of rit2 in neurologic disorders.

Methods

We have searched pubmed, proquest, embase and google scholar databases thoroughly to find articles about rit2 function in neuron cells and its reported variations in various neurologic disorders. in addition, using string database, we have analyzed the protein network of the rit2 in neurologic disorders.

Results

Sixteen studies reported the rit2 gene variants in patients with neurologic disorders. in articles, rs12456492 has been associated with parkinson disease and essential tremor, rs16976358 with autism spectrum disorder, schizophrenia and bipolar disorder, rs4130047 with autism spectrum disorder and cnvs with schizophrenia. protein network of rit2 has six experimentally determined connections (pou4f1, ntrk1, ngf, braf, rit1, and tecr) which play important roles in neurologic disorders including noonan syndrome, non-syndromic mental retardation, parkinsonâ€™s disease and alzheimerâ€™s disease, dementia and depression.

Conclusion

Our review have summarized the rit2 role in neurologic disorders. various variations of this gene in neurologic disorders have been reported. more investigations are still required to reach the exact functional role of each variant in rit2 protein and neurologic disorders.

Keywords

Neurological disorder Â· neurodegenerative disorder Â· rit2 Â· ras

Robotic surgery in gynecologic oncology

Fateme Asadollahzadeh shamkhal,[1,*]

1. Department of Electrical Engineering, Faculty of Engineering, Ferdowsi University Of Mashhad, Iran

Abstract

Introduction

Robotic surgery in recent years has been able to quickly replace laparoscopy in some branches of gynecologic cancer surgery. the most significant achievement of robotic surgery in gynecologic cancer surgery has been minimally invasive surgery (mis). this solution is still under development and seems to have revolutionized surgery. in this article, we will examine this comprehensive approach and its advantages and disadvantages.

Methods

Several systematic reviews, review and research articles searched on pubmed, google scholar and google, and finally, 11 articles were selected and studied.

Results

Due to their lower invasion, these robots in recent years have been used in gynecologic cancer surgery, especially in radical hysterectomy, lymph node dissection, pelvic and para-aortic surgeries and simple hysterectomy. in comparison to laparoscopy the use of these robots in endometrial cancer is more common due to, shorter operative times, reduced blood loss, hospital stay, and the increased lymph node retrieval. in addition, in cervical cancer, robotic surgery is more! effective than open method solutions in terms of blood loss, postoperative infectious morbidity and the hospital stay. also, the results of studies have shown that robotic surgery produces fewer bleeding than conventional laparoscopy.

Conclusion

The robotic surgery solution has benefits and disadvantages. advantages include increased accuracy, reduced blood loss, hospital stay, and increased lymph node retrieval compared to traditional laparoscopy and laparotomy. other benefits include: less post-operative pain, faster recovery, tremor ï¬• ltration and fewer complications. it should be noted that training physicians is very significant in this approach. the mistake in each stage may have long time correction and has its own particular problems. this method still needs to be studied further so that the disadvantages can be precisely identified and then resolved. for example, more work on sensory feedback should be done. also, it should be consideredthat this method is very expensive compared to laparotomy and traditional laparoscopy some challenges in cases such as camera instability and limited range of motion faces.

Keywords

Surgical robotics, gynecologic oncology, cancer

Role of angiogenesis signaling and mechanism of treatment in glioblastoma

Mohammad amin Dehghani,[1,*] Saleh rasras,[2] Maryam shirani,[3] Fatemeh dehghani,[4] Seyyed hossein hassanpour,[5] Khashayar alikarami,[6]

1. Department of Toxicology, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Department of Neurosurgery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. Department of Toxicology, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
6. School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Abstract

Introduction

Purpose: this study aimed to investigate the role rol of angiogenesis signaling and mechanism of treatment in glioblastoma

Methods

Methods: we extracted all relevant studies of angiogenesis signaling and mechanism of treatment in glioblastoma by searching electronic databases pubmed, embase, web of science from inception to feb 28,2017.

Results

Results: highâ€• grade gliomas are aggressive vascular tumors, and as in the majority of cancer types, blood vessels in advanced lesions are extremely abnormal. angiogenesis plays a significant role in gbm pathobiology largely because glioblastoma multiforme (gbm) poses a significant metabolic demand for oxygen delivery and waste removal to maintain its high rates of cell proliferation and metabolism. gbm also expresses high levels of vegf. vegf-vegfr pathway had advanced to a most promising therapeutic target for the treatment of gbm. the recent findings have reported that fgfr-tacc fusions are clonal events in clinical gbm specimens that manifest the strong tumor initiating capacity. an increase in anti-angiogenic therapies (aats) and increase in neutrophil infiltration are associated with poor survival in patients with glioblastomas, glioma grade and acquisition of resistance to anti-vegf therapy. anti-vegf-a therapy has become part of standard post-surgical treatment for gbm, which has a temporary beneficial effects and does not effectively extend patient overall survival. epidermal growth factor receptor (egfr) gene rearrangements and expression of their aberrant protein products are present in glioblastoma multiforme.

Conclusion

C onclusion: the amplification of egfr gene is the most frequent genetic alteration associated with gbm. the mechanism of angiogenesis signaling and aats offer us the opportunity to increase our understanding of this extremely complex pathway and potential for the treatment of glioblastoma.

Keywords

Glioblastoma; angiogenesis; aats; vegf; fgfr; fgfr; sdf-1.

Role of cyclooxygenase-2 in clinicopathologic features of breast cancer

Erfan Mohammadi vajari,[1,*] Mohammad-ali mohammadi-vajari,[2] Esmaeil samizadeh,[3] Mohammad hossein lashkari,[4]

1. medical student, school of medicine, guilan university of medical sciences, guilan, iran.
2. MD, student's scientific research center, tehran university of medical sciences
3. Pathologist, Pathology department of Imam reza hospital, AJA university of medical sciences
4. Associate professor of Surgery, Medical Faculty, AJA University of Medical sciences

Abstract

Introduction

Breast cancer is the most common disease of women around the world. on the other hand, genetic difference among patients with breast cancer is a leading cause of treatment failure in patients with breast cancer. several studies have shown that overexpression of cox-2 is effective in various gynecological cancers such as breast, cervical, endometrial and ovarian epithelial cancers. with regard to the role of cox-2 in tumorogenesis in different types of cancer, especially breast cancer, and according to the availability of drugs that inhibit cox-2, in this study the gene expression of cox-2 in patients with breast cancer and the relationship between expression of this gene and some clinicopathologic parameters were studied.

Methods

65 malignant tissue samples were chosen for immunohistochemistry test. other information about clinicopathologic features were collected from pathology reports and patients medical records. ihc on the selected paraffin blocks was performed and the collected data were analyzed using spss software version 23 and chi-square test. p value of <0.05 was considered as significant.

Results

Cox-2 expression rate in malignant breast tissue was 55.4% of the cases (36 samples out of 65). cox-2 expression had significant correlation with involvement of the lymph node sent by the sample, vascular or peri-neural invasion, metastasis and chemotherapy background, familial history, positive pr, positive er, and negative her2/neu. no relationship was observed between the expression of cox-2 with patientsâ€™ age, tumor size, age group of the patients after categorization into two groups of under 50 years and over 50 years, lesion location (left or right breast) and tumor grade.

Conclusion

This study confirms the possible role of cox-2 in tumorgenesis of breast cancer. although, this issue needs to be confirmed by larger studies.

Keywords

Cyclooxygenase 2, breast neoplasms, immunohistochemistry

Role of longevity on tau and amyloid beta-induced cell toxicity and unfold protein response in drosophila melanogaster alzheimers disease model

Javad Amini,[1] Nima sanadgol,[2] Mohsen shahriari,[3] Mohammd hadadi,[4] Naser sanchooli,[5,*]

1. master student of university zabol
2. department of biology, faculty of sience, university of zabol, zabol. iran
3. department of environment, faculty of natural resources, university of zabol, zabol. iran
4. assistant professor department of bioligy, university of zabol, zabol. iran
5. assistant professor of zoology department of biology faculyt sience university of zabol

Abstract

Introduction

Aging is one of the most important factor in the development of alzheimers disease (ad). the important pathologic proteins involved in the development of ad are amyloid beta (aÎ²) and tau. although the accumulation of unfolded proteins in ad has been proven, and the role of endoplasmic network in the resolving these proteins has been identified, the effect of longevity on efficiency of unfold protein response (upr) are under debates. one key question of debate, however, is which of these pathologies appears first and hence is upstream in the pathocascade. in this study we compare the effects of aÎ² and tau-induced cell toxicity and unfold protein response in an age-dependent manner in drosophila melanogaster (dm) ad model.

Methods

The strains usa-tau r406w and usa-aÎ², the eye (gmr-gal4), ok107- gal4, and pan-neural (elav-gal4) driver strains, were obtained from the bloomington drosophila stock center (flystocks.bio.indiana.edu). homozygous virgin females ok107-gal4 were mated with either males bearing uas-aÎ² constructs (for aÎ² expression in brain neurons) or males bearing uas-tau constructs (for tau expression in brain neurons), and the progeny was maintained at 270c. for transgene expression in the eye, homozygous females gmr-gal4 uas-aÎ² were crossed with males carrying the desired constructs and the progeny was maintained at 27.50c. for histological study of retinas, paraffin-embedded heads of 10, 20 or 30-day-old flies after progeny were sectioned at 1 mm and analyzed. at mentioned time points flies were also unseized with co2, and total rna was isolated from 45 fly heads, and cdnas were prepared. expression of tau, aÎ², atf6, atf4 and xbp1 in brain of flies were evaluated via real-time pcr using specific primer sets.

Results

As predicted, aÎ² and tau over expressed in the brain neurons and constantly induced cell toxicity and ad phenotypes in flies according to behavior and histological assessments. surprisingly, with age increasing, the expression of important upr markers atf6, atf4 and xbp1 were significantly increased in tau r406w model in compare with aÎ² model in an age dependent manner

Conclusion

Both extracellular amyloid plaques and intra-neuronal neurofibrillary tangles are highly insoluble and densely packed filaments. the soluble building blocks of these structures are amyloid-Î² (aÎ²) peptides for plaques and tau for tangles. amyloid-Î² peptides are proteolytic fragments of the transmembrane amyloid precursor protein, whereas tau is a brain-specific, axon-enriched microtubule-associated protein. the ability of therapeutic interventions targeting just one of these molecules, to successfully neutralize the toxicity of the other, needs to be ascertained to improve current therapeutic strategies, for the treatment of ad. consistent with our results, during longevity aÎ² exerts more toxic effects via activation of ups pathway than tau and we propose that anti-aÎ² therapies could effectively reduce ad pathology in aged individuals

Keywords

Alzheimers disease, unfolded protein response, tau, beta amyloid, drosophila melanogaster

Role of parentâ€™s awareness and nutrition in children with intestinal parasites in iran

Fatemeh Motamedi,[1] Mohammad hassan imaninasab,[2] Hossein mahmoudvand,[3,*]

1. Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
2. Department of Public Health, Lorestan University of Medical Sciences, Khorramabad, Iran
3. Department of Medical Parasitology, Lorestan University of Medical Sciences, Khorramabad, Iran

Abstract

Introduction

Nowadays, social inequalities in health are considered as an increasing public health problemâ€™ whereas socio-economic situation shows a considerable influence on health [1]. a range of socio-economic factors are related to the characteristics of the infectious disease in individuals including residence, education, parental education level etc. nutritional also status is a key indicator of health assessment. according to the previous studies, children from developing countries especially at school age have the maximum rate of morbidity to intestinal parasites in comparison with other ages. this study aims to evaluate the role of parentâ€™s awareness and nutrition in children with intestinal parasites in iran.

Methods

The present cross-sectional study was carried out from august 2016 to april 2017 on 366 children (aged 2-15 years), who referring to health centers of lorestan province, iran due to abdominal pain, diarrhea, and/or fever). the microscopic analysis was accomplished on 366 stools by means of the direct smear, and formol-ether methods as well as trichrome and modified zeihl-neelsen staining methods. in this study applied questionnaire was designed to gain information about the childrenâ€™s demographics data and other variables related to parasitic infections, such as age, sex, residence, parents education, consumption of raw or unwashed vegetables and fruits, consumption of raw milk/eggs, consumption of sausage and hamburger.

Results

The results showed that 84 children (22.95%) were infected with at least one or more intestinal parasites, statistical analysis showed that some risk factors were significantly associated to the prevalence intestinal parasites included gender ($p<0.02$), living in rural regions ($p<0.001$), and consumed raw or unwashed vegetables and fruits ($p<0.001$), consumption of sausage and hamburger ($p<0.05$) and parents education ($p<0.001$).

Conclusion

The obtained findings revealed that there is a close relationship between parent literacy level and the prevalence of intestinal parasites. moreover, the present investigation showed that some nutrition habits

such as consumption raw or unwashed vegetables/fruits have a direct relationship with the prevalence of intestinal parasites. efforts should be made to strengthen and expand school and community-based programs such as parent education and nutrition advise that promote inexpensive, though effective, practices to prevent the spread of parasitic diseases in children.

Keywords

Intestinal parasites; nutrition, education; children

Role of srebps in the liver diseases

Azam Moslehi,[1,*] Zeinab hamidi-zad,[2]

1. Qom University of Medical Sciences
2. Qom University of Medical Sciences

Abstract

Introduction

Background and objectives: sterol regulator element binding proteins (srebps) are a family of transcription factors that involve in the biogenesis of cholesterol, fatty acids, and triglyceride. there are three members of srebps family: srebp-1a, srebp-1c and srebp-2. srebps regulate physiological functions of the many organs such as; thyroid, brain, heart, pancreas and hormone synthesis. beside of physiological effects, pathological circumstances; diabetes, endoplasmic reticulum stress, atherosclerosis and chronic kidney disease are associated with srebps expression changes.

Methods

Materials and methods: we studied 134 articles from pubmed and wed of science date bases.

Results

Results: srebps involve in pathogenesis of the nonalcoholic fatty liver disease. it has been shown that srebp-1c binds to the patatin-like phospholipase3 (pnpla3) gene and activates its expression; pnpla3 then stimulates lipid accumulation in mice hepatocytes. overconsumption of fructose also stimulates srebp1c expression and leads to hepatic lipid accumulation. endoplasmic reticulum (er) stress induction increase srebp1c expression and other lipid metabolism related genes and provide hepatic steatosis and cirrhosis. in a study, we showed opioid receptor blockade attenuates er stress, decreases srebp expression and improves liver steatosis. liver steatosis is frequently found in the patients who are infected with hepatitis c virus2 (hcv). some studies have been shown that hcv non-structural protein 2 (ns2) and hcv nonstructural 4b (ns4b) protein increase srebps expression. moreover, srebps involve in pathogenesis of hepatocellular carcinoma (hcc). overexpression of srebp-1 is associated with large tumor size, high histological grade and advanced tumor-node-metastasis (tnm) stage in hcc patients.

Conclusion

Conclusion: srebps have a key role in pathogenesis of the nash, hepatitis and cancers. moreover, they provide lipid metabolism regulated cellular disorders in the hepatocyte that lead to steatosis and liver injury.

Keywords

Srebp, liver, fatty acids, er stress

Royal jelly administration recover spermatogenesis and sexual hormones levels in a busulfan-injured rat model

Tayebeh Sadeghi,[1,*] Seyedebrahim hoseini,[2]

1. department of biology, shiraz branch ,islamic azad univercity, shiraz , iran
2. department of biology, shiraz branch ,islamic azad univercity, shiraz , iran

Abstract

Introduction

busulfan induces azoospermia and testicular atrophy, while royal jelly may improve spermatogenesis. our objective was to determine the effects of royal jelly on the recovery of spermatogenesis, histology testis and sexual hormones and in of a busulfan-injured rat model. thirty adult rats were assigned into six groups

Methods

Animals received a tow intraperitoneal saline or 10 mg/kg busulfan injection (at 0 and 21 day), and 35 d after, the animals received orally 100 mg/kg royal jelly for 14, 28 and 56 days. one day after, blood plasma was obtained for hormone analysis, sperm was recovered from epididymis, and testes were processed for histology.

Results

Control groups did not show significant changes in most parameters, but busulfan decreased sperm counts, motility and normal morphology, induced seminiferous tubular atrophy, intertubular space and decreased blood testosterone, fsh and lh. royal jelly treatments partially recovered spermatogenesis, decreasing tubular atrophy. royal jelly was the most efficient treatment, also increasing the concentration of sexual hormones close to no-busulfan levels.

Conclusion

The royal jelly treatments reverted spermatogenesis, hormonal levels and histology similar to controls, however not attaining the same sperm quality than controls busulfan.

Keywords

Busulfan, sex hormones, rat, spermatogenesis, royal jelly

Salmonella gastroenteritis from symptoms to treatment

Zahra Mobin,[1,*] Daniyal afrazeh,[2]

1. Young Researchers and Elite Club,Zahedan Branch, Islamic Azad University, Zahedan, Iran
2. Young Researchers and Elite Club,Zahedan Branch, Islamic Azad University, Zahedan, Iran

Abstract

Introduction

Background: salmonella is a group of bacteria that can cause food poisoning. food poisoning occurs when food or water contaminated with microbes, poisons or chemicals is eaten. generally, food poisoning leads to gastrointestinal infections (gastrointestinal tract), which is called gastroenteritis. the food which is not cooked well and food products such as meat, eggs, and milk which are not properly stored in the refrigerator may be contaminated by this bacterium

Methods

The collection of information is from sites and scientific articles

Results

Salmonella is a common cause of food poisoning. in most cases, there are no serious symptoms. however, in certain groups of people, these symptoms may be more serious, such as children, the elderly, those whose immune system does not work well (for example, cancer patients, those with long-term treatment, steroids, aids patients, etc). since the disease is contagious, it is possible to become epidemic in places such as nursing homes. symptoms of this illness include diarrhea, nausea, vomiting, fever, and abdominal contractions. sometimes diarrhea can be bloody. symptoms appear 12 to 72 hours after infection. in most people, symptoms are mild and resolve within 4 to 7 days without any particular treatments

Conclusion

Most people with salmonella do not require treatment. symptoms usually will be improved after a few days because their immune system takes time to get rid of the infection. nowadays, a vaccine is used to prevent the spread of salmonella, especially from eggs.

Keywords

Salmonella, food poisoning, symptoms, treatment

Sanguinarine sensitizes panc-1 pancreatic cancer cells to cytotoxic effects of doxorubicin and paclitaxel

Morteza Molaparast,[1,*] Roya sarkhosh,[2] Vahid shafiei-irannejad,[3]

1. Cellular and Molecular Research Center, Cellular and Molecular Medicine Institute, Urmia University of Medical Sciences
2. Cellular and Molecular Research Center, Cellular and Molecular Medicine Institute, Urmia University of Medical Sciences
3. Cellular and Molecular Research Center, Cellular and Molecular Medicine Institute, Urmia University of Medical Sciences

Abstract

Introduction

Cancer as a disease, is the leading cause of death all over the world and annually costs high costs for cancer treatment. chemotherapy is an important tool for treatment of many cancers, however, toxic adverse effects against healthy tissues is still a big obstacle against successful cancer chemotherapy. here, we investigated the combination effect of natural compound sanguinarine with doxorubicin and paclitaxel in panc-1 pancreatic cancer cells.

Methods

The cytotoxic effects of sanguinarine, doxorubicin and paclitaxel in combination with each other and each compound alone, was determined using mtt assay. furthemore, doxorubicin- and paclitaxel-induced apoptosis in combination with sanguinarine was evaluated by annexin v/fitc assay.

Results

Treatment with sanguinarine, doxorubicin and paclitaxel had an inhibitory effect on viability of panc-1 cells. exposure to sanguinarine enhanced the cytotoxicity of chemotherapeutic agents in panc-1 cells which was confirmed by reduced ic50 of doxorubicin and paclitaxel. moreover, sanguinarine significantly enhanced the doxorubicin- and paclitaxel-induced apoptosis in panc-1 cells.

Conclusion

These results indicate that saguinarine has a beneficial effect in pancreatic cancer treatment by decreasing the effective concentrations of doxorubicin and paclitaxel. therefore, sanguinarine can be considered as a potent adjuvant in pancreatic cancer chemotherapy.

Keywords

Sanguinarine, doxorubicin, paclitaxel, pancreatic cancer, chemotherapy

Schwann cells growth characterization on electrospun nanofibrous scaffolds for neural tissue engineering

Yeganeh Hazeri,[1] Shiva irani,[2,*] Mojgan zandi,[3] Mohammad pezeshki moddares,[4]

1. Biology Department, Science and Research Branch, Islamic Azad University, Tehran, Iran.
2. Biology Department, Science and Research Branch, Islamic Azad University, Tehran, Iran.
3. 3. Department of Biomaterials, Iran polymer and Petrochemical Institute, Tehran, Iran
4. Burn Research Center, Iran University of Medical Science, Tehran, Iran

Abstract

Introduction

The regeneration and repair of peripheral nervous system (pns) are important global clinical problems. many approaches for nerve therapy have been used. different surgical methods like, end to end surgery is more common for nervous injuries, but it is can be useful when the gap is small and also another problems like losing function and couple surgeries are exist. according to entries mentioned tissue engineering may act as a gold technique for neural repair. synthetic, natural and sometimes mix of both of them can be used for tissue engineering applications. in this paper polyvinyl alcohol and alginate sulfated has been used via electrospinning with different percentages (90/10-80/20 wt %).

Methods

Schwann cells were purchased from stem cell technology research center. the cells routinely cultured in t-25 flask with 10% fetal bovine serum and dmem. at passage 3 seeded into 25 well plates for mtt assay during 7 days. then 0.15 mg/ml was added to each well in different days, incubated for 4 hours in 37 áµ’c with 5% co2 in dmem medium. the formazan crystals dissolved in 200 Âµl of dimethyl sulfoxide (dmso). then absorbance was read at 490nm via a spectrophotometric plate reader. sem technique was used for study surface and morphology of nanofibrous scaffolds.

Results

Figure (1) is sem images for morphology of scaffolds that shows nanofibers are random mats and are suitable for neural tissue engineering. figure (2) is mtt assay that demonstrate that scaffolds have no cytotoxicity and cells had survivality and also showed that the cell viability significantly improved ($p<0.001$) during 7 days.

Conclusion

Nanofibers scaffolds of pva/alginate sulfated can support cell attachment and proliferation of schwann cells during this study. this paper confirmed the effective roll of this electrospun scaffolds for nerve tissue engineering.

Keywords

Tissue engineering, electrospinning, polyvinyl alcohol, alginate sulfated

Scutianine_f: a promising lead compound against brucella virb8

Solmaz Moosavi,[1,*] Milad lagzian,[2] Malihe mohammadi,[3]

1. Dept. of Biology, Faculty of Science, University of Sistan and Baluchestan, Zahedan - Iran
2. Dept. of Biology, Faculty of Science, University of Sistan and Baluchestan, Zahedan - Iran
3. Dept. of Biology, Faculty of Science, University of Sistan and Baluchestan, Zahedan - Iran

Abstract

Introduction

Brucella virb t4ss is a key virulence factor that plays important roles in mediating intracellular survival and manipulating host immune response to infection. based on cell biological, genetic, and x-ray crystallographic data, virb8 was proposed to undergo multiple protein-protein interactions to mediate assembly of the translocation machinery. consequently, virb8 inhibition strongly attenuates pathogenicity and can be considered a target for novel antimicrobial drugs which is the objective of this study.

Methods

The primary chinese medicine database with more than of 60.000 plant-originated pharmaceutical compounds, was retrieved from tcm website at http://tcm.cmu.edu.tw and was used for high-throughput virtual screening against virb8. ligand preparation wase done by biovia discovery studio 2018 (dassault systÃ¨mes, france) and the database was checked against lipinski and veber rules to remove any less druggable molecules. subsequently, the aqueous solubility of the library was calculated. solubility is one of the most important parameters in drug design due to a strong correlation between it and the bioavailability of the drug. in this regard, any compound with values less than -6 (less soluble) and more than zero (too soluble) was discarded from further processing. subsequently, the rest of the compounds were processed with ligand preparation & ligprep modules of discovery studio 2018 and schrodinger suite 2017-1 respectively. in this step, the ionization state was corrected at ph 7.2, tautomers and isomers were generated for each ligand and bad valences were fixed. the outputs of both software were merged together and duplicate compounds were removed using discovery studio to create the final library. this library that contains 29419 compounds was used for virtual screening step. afterward, receptor preparation was conducted on clc drug discovery 4.0 to prepare the structure of 4akz. active site mapping was used based on the previous reports to identify key catalytic residues for creating a reasonable constraint. docking was accomplished in a sequentially manner with an increasing level of iteration from 1000 (output: 2942), to 10.000 (output: 30) and finally to 100.000 (output: 3) by screen ligands module of clc drug discovery 4.0. to select the final candidate, the output of last step was re-evaluated using more realistic free energy of binding calculation.

Results

Finally, scutianine_f that was originated from scutia buxifolia plant, was selected as the lead compound. this compound had the highest docking score (-81 kcal/mol) interestingly, this molecule with a

c38h45n5o5 chemical formula and mw of 651 had an already described antibacterial activity against gram-positive bacteria such as staphylococcus aureus. this molecule can strongly interact with key residues, q144 and k182, of virb8 via hydrogen bonding and ionic interactions.

Conclusion

A round of steered molecular dynamics simulation for 100-ns were used to evaluate the final candidate compound.

Keywords

Brucella, virtual screening, virb8, scutianine_f

Search for shigella salmonella legionella bacteria species symbiosis with amoeba acanthamoeba in collected samples of soil and drinking water in isfahan

Zohre Dabaghi,[1,*]

1. Nooredanesh organization

Abstract

Introduction

Amoeba is live inventory protozoa are eukaryotes. this type of protozoa lives in freshwater, saltwater, sea water, moist soil, and rotting vegetables. classification of this group is large and diverse and complex problem

Methods

Water samples were filtered by, 5-micron filtration and the soil samples were centrifuged and all samples were stored at 24 Â° c for one month. the extraction of dna from the samples was carried out manually (by chloroform). the optical microscopy was magnified 40 positive plates were observed and dissected to acanthamo-baba, and subsequently performed to determine the symbiosis of the pcr phase (nested pcr). finally,

Results

Of the 72 samples collected, 3 water samples (8.33%) and 6 soil samples (16.66%) were positive for acanthamoeba and 1 soil sample (2.77%) were infected with legionella bacteria

Conclusion

In the present study, the amount of contamination with acanthamoeba was negligible (water (8.33) 3 and soil (16.66) (6 cases). the bacteria were not detected in the water and soils (except for legionella, which was observed in 1 case (2.77%) of soil samples). therefore, it appears that the drinking water studied in this study has a favorable microbial quality. the soil is also a good condition for contamination.

Keywords

Soil, water, salmonella, legionella,shigella

Selection of appropriate solvent for prodigiosin extraction

Seyedeh maryam Mousavi,[1,*] Bita archangi,[2] Hossein zolgharnein,[3] Isaac zamani,[4]

1. khoramshahr university of marine science and technology
2. khoramshahr university of marine science and technology
3. khoramshahr university of marine science and technology
4. khoramshahr university of marine science and technology

Abstract

Introduction

Prodigiosin is a microbial pigment that produced by various species, including serratia marcescens and has antibacterial properties. chemical pigments that are used in food industries cause negative effects in human health and we can prevent these effects by replacing them with natural pigments. prodigiosin in addition to being safe, has antibiotic properties against many pathogenic strains that make it suitable for use in the food industries.

Methods

Serratia marcescens were isolated from the sediments of aquaculture ponds. in order to extract prodigiosin, seven solvents including water, ethanol, methanol, chloroform, acetone, acetic acid and n-hexane were used and the amount of pigment in each sample was calculated. after purifying the pigment using column chromatography, its antibacterial effect was also studied.

Results

Water, n-hexane and acetic acid were not able to extract prodigiosin because of their polarity less than other solvents. methanol with 185, ethanol with 161.92, chloroform with 123.46 and acetone with 100.38 units per cell had good efficiencies in prodigiosin extraction. antibacterial effect of prodigiosin showed that this pigment could inhibit the growth of e. coli, bacillus subtilis, staphylococcus aureus and pseudomonas aeruginosa.

Conclusion

Prodigiosin can be extracted with methanol and used as a natural and antibacterial pigment instead of chemical pigments in the food industries.

Keywords

Prodigiosin, solvent, antibacterial effect, natural pigment

Selective cyclooxygenase-2 inhibitors and breast cancer

Fereshteh Moheb afzali,[1,*] Amir hendiani ,[2]

1. Department of Molecular and Cellular Biology , Faculty of Advanced Science and Technology , Tehran Medical Sciences , Islamic Azad University , Tehran , Iran .

2. Anesthesiologist , critical Care , Pain management Specialist , Iran University of Medical Sciences(IUMS) , Tehran , Iran .

Abstract

Introduction

Increasing the expression of biosynthesis of cyclooxygenase-2 (cox-2) and the production of prostaglandin e2 by adipocytes can stimulate estrogen receptors and induce cyp-1b1 in epithelial cells through the transcription of the cyp-19 gene and the biosynthesis of estrogens catalyzed by aromatase ; then estrogen hydroxylation and the production of estrogen quinones promote cell proliferation and lead to carcinogenesis of the breast. in the process of inflammation, prostaglandins produce peripheral sensory nerves and increase the sensitivity to pain of hyperalgesia. this phenomenon, along with inflammatory cytokines such as il-1, il-8 and tnf-Î±, is most likely to play an important role in stimulating cox-2 in the treatment of pain in the spinal cord. therefore, the objective of this study is to block the cox-2, which has the potential and potential for the prevention and treatment of breast cancer. the selective inhibitor of celecoxib, as a specific agent, can reduce tumor growth by at least 70% by blocking the production of angiogenic prostaglandin when treated at or before the tumor reaches a volume of 0.3 ml. multiple drug chemotherapy studies with celecoxib have shown that celecoxib reduces the threshold for allergy to chemotherapy. dependent doses of celecoxib control the effect of radiation therapy to reduce tumor volume and control tumor growth by reducing levels of peg2 from cox-2, which is caused by tumor stroma and, in some cases, tumor cells.

Methods

Based on the epidemiologic evidence that nonselective nsaids reduce human breast cancer risk, a case control study was started for selective cyclooxygenase-2 inhibitors to evaluate its effects on the relative risk of breast cancer.the study was conducted for women diagnosed with breast cancer patients were ascertained from the james cancer hospital, columbus, ohio, during the window of time (1998-2004) in which two selective cox-2 inhibitors, celecoxib and rofecoxib, were available by prescription in the united states. in the study, 323 cases with pathologically confirmed invasive breast cancer were compared to 649 controls without cancer who were frequency-matched at a 2:1 rate to the cases by age and county of residence. data on the past and current use of prescription and over the counter medications and breast cancer risk factors were ascertained using a standardized risk factor questionnaire. effects of cox-2 inhibiting agents were quantified by calculating odds ratios (or) and 95% confidence intervals.

Results

Results showed significant risk reductions for selective cox-2 inhibitors as a group (or = 0.29, 95% ci = 0.14â€“0.59), coxib use reduced the risk of breast cancer development by 71% (or = 0.29, $p < 0.01$). significant reductions in breast cancer risk were also noted for ibuprofen (63%) and regular 325 mg aspirin (49%) but not for low dose(81 mg) aspirin (23%). there was no effect of acetaminophen, an analgesic without cox-2 inhibiting properties(or = 1.02). the inverse pattern of risk for acetaminophen, low dose aspirin, regular aspirin, ibuprofen and coxibs was significant by a linear trend test ($p < 0.05$) suggesting that chemopreventive effects become progressively stronger with greater selective cox-2 inhibition.

Conclusion

This study showed a significant reduction in the risk of human breast cancer due to the use of selective cox_2 inhibitors. chemopreventive effects against breast cancer were associated with recommended daily doses of celecoxib(median dose = 200 mg) or rofecoxib (median dose = 25 mg) for an average duration of 3.6 years. notably,selective cox-2 inhibitors (celecoxib and rofecoxib) were only recently approved for use in 1999, and rofecoxib (vioxx) was withdrawn from the marketplace in 2004. nevertheless, even in the short window of exposure to these compounds, the selective cox-2 inhibitors produced a significant (71%) reduction in the risk of breast cancer, underscoring their strong potential for breast cancer chemoprevention.celecoxib has an effective role in the control of pain associated with inflammatory and cancerous causes due to selective cox_2 enzyme inhibition. in addition, significant therapeutic effects with fewer doses of administration make patients more comfortable with the drug. accordingly, if used on a regular basis, they can reduce the risk of human breast cancer.

Keywords

Breast cancer , cyclooxygenase -2, selective inhibitors , celecoxib

Self efficacy in diabetic patients

Haniye Jafardokht bonjar,[1,*] Parvane sarani aliabadi,[2] Nazanin yousefian miandoab,[3] Mahdi khodadadi darin,[4] Mahla sargazi,[5] Saied farzan,[6]

1. Nurse Student, Young Researcher Club member, Islamic Azad University, Zahedan, Iran
2. Lecturer, Department of Medical- Surgical Nursing, Facully of Nursing and Midwifery ,Islamic Azad University, Zahedan Branch, Zahedan, Iran
3. Instructor of Medical Surgical Nursing School of Nursing and Midwifery Community Nursing Research Center Zahedan University of Medical Sciences, zahedan , Iran
4. Nurse Student, Young Researcher Club member, Islamic Azad University, Zahedan, Iran
5. Nurse , khatam AL Anbiya hospital, Zahedan, Iran
6. Nurse Student, Islamic Azad University, Zahedan, Iran

Abstract

Introduction

Self-efficacy made possible ability to understand patient from conditions and factors influencing health and he/she can decide to improve health and to enforce it. this study was aimed to determine the self-efficacy and related factors in diabetic patients.

Methods

In this cross-sectional study, that was done randomly in diabetic patients referred to diabetes center, information were collected using demographic and questionnaire containing 15 questions about efficacy of glycemic control and correction, proper selection of food, foot examination, exercise and weight control. the validity and reliability assessed and data collected and enter to stata software and were analyzes using t.test, Ï‡2 and logistic regression.

Results

The mean age of the 600 participating patients was 52.1Â±14 years. 57.3% was women and 42.7% male. the most common complications in sexes were visual complications. the mean of self-efficacy score was 54.9Â±14.3. 47.6% of participants had low self-efficacy. low self-efficacy in those who had lower education was 2.7 against individuals who had higher education (or=2.7; ci: 1.25-4.15), also, low selfefficacy in people who have had complications, 1.9 vs. those who did not have complications (or=1.9; ci: 1.25-2.55). self-efficacy was inverse relationship with age and direct relationship with knowledge.

Conclusion

according to results, itâ€™s be necessary identifying the factors associated with the self-efficacy to interventions and appropriate policy on this disease and the need for more training programs to enhance self-efficacy.

Keywords

self-efficacy, related factors, diabetes

Seroprevalence of leptospira serovars among rice farmers in mianeh

Sanaz Alioghli,[1] Amir ganjkhanlu,[2,*] Mahdi bayrami,[3] Somayeh shekari,[4] Milad feizollahi,[5] Danial bajgiran,[6]

1. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
2. faculty of veterinary medicine, Azad university of Tabriz, Tabriz, Iran
3. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
4. Department of animal science, faculty of natural science, university of Tabriz, Tabriz, Iran
5. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.
6. Department of Biology, University of Mohaghegh Ardabili, Ardabil, Iran.

Abstract

Introduction

Leptospirosis is a zoonotic disease of global importance.1 in recent years, endemic and epidemic severe pulmonary haemorrhage has increasingly become recognised as an important manifestation of leptospiral infection.2â€“5. it is a direct zoonotic disease caused by spirochetes belonging to different pathogenic species of the genus leptospira. large number of animals acts as carriers or vectors. human infection results from accidental contact with carrier animals or environment contaminated with leptospires. the primary source of leptospires is the excretor animal, from whose renal tubules leptospires are excreted into the environment with the animal urine. majority of leptospiral infections are either sub clinical or result in very mild illness and recover without any complications. however, a small proportion develops various complications due to involvement of multiple organ systems. in such patients, the clinical presentation depends upon the predominant organs involved and the case fatality ratio could be about 40% or more. the aim of this study is to undertake a seroprevalence survey to estimate the distribution of infection by leptospira spp. serovars in farmers regionally in mianeh.

Methods

On summer 2017, 100 farmers were selected randomly from four regions from mianeh and blood samples were taken from them. along with that, age was also recorded. samples were sent to the laboratory alongside the dry ice to separate their serum. serum was stored frozen until analysed using the microscopic agglutination test (mat).

Results

In the study, 100 farmers were sampled, 12/100 (12%) were seropositive. among the 12 positive samples, 7, 3 and 2 samples were positive to serovars; grippotyphosa, canicola and pomona respectively. none of the seropositives were infected with other leptospira serovars. also, the highest incidence was in men over 50 years and the lowest incidence was in people under the10 years.

Conclusion

In conclusion, rice farmers compared to the other residents in the rural areas are more significantly infected with leptospirosis due to traditional agricultural methods, in the mianeh region and infection is highly affected by gender (male) and age. the most important source for exposure to this infection is water sources; rivers or brooks are highly suspected to be infected with leptospira species. another source of infection is farm houses where rodents and rats are frequently observed. therefore, health and safety measures must be developed to control and prevention of this disease. also, by using mechanized agricultural methods, the prevalence of this disease in the region is largely prevented.

Keywords

Seroprevalence, leptospirosis, rice farmers, miane

Serum level of interleukin 12 in patients with multiple sclerosis

Hamidreza Jahanbani-ardakani,[1,*] Fereshteh alsahebfosoul,[2] Masoud etemadifar,[3]

1. Isfahan University of Medical Sciences
2. Isfahan university of medical sciences
3. Department of Neurology, School of medicine, Isfahan University of Medical Sciences

Abstract

Introduction

Multiple sclerosis (ms) is the most common chronic inflammatory, demyelinating and neurodegenerative disease of the central nervous system in the young population with autoimmune pathophysiology. after trauma, ms is considered as the most common cause of disability in the world [1,2, 3, 4]. ms prevalence ranged from 5.2 to 335 per 100,000 individuals in different populations and its prevalence in iran varies from 5.3 to 74.28 per 100,000 among provinces [5, 6]. ms pathogenesis has been attributed to the interaction between genetic and environmental factors [7, 8]. pro-inflammatory mediators have a crucial role in ms pathogenesis. interleukin 12 (il12), a pro-inflammatory cytokine, produced mainly by antigen presenting cells and induce th1 cell differentiation from cd4Ã¾ naive t cells and also interferon c production [8]. previous studies indicated the pivotal role of il12 in different autoimmune diseases such as rheumatoid arthritis, uveitis and experimental autoimmune encephalitis (eae) [9, 10]. although several roles of il12 in ms pathogenesis have been described, studies investigating serum level of il12 in ms patients are controversial [11â€“14]. in the present study, we evaluated serum level of il12 in iranian ms patients.

Methods

Thirty-seven relapsing-remitting ms patients (including 33 female and 4 male) â€“ who were referred to ms clinic of alzahra university hospital during the period of 2016â€“2017 â€“ were recruited. all of the patients were diagnosed according to mcdonaldâ€™s criteria by an expert neurologist (m.e.). thirty-three age, sex and ethnicitymatched healthy individuals (including 24 female and 9male) were included in the study as the control group. blood sampling was performed between 10am and 11am to roll out the possible circadian rhythm of il12. before blood sampling, all of the patients provide a written consent form and protocol of the study was approved by ethics committee of isfahan university of medical sciences (id:293135). the il12 measurement was carried out by using enzyme-linked immunosorbent assay (elisa) technique using the available commercial kit (quantikine; r&d systems, minneapolis, mn, usa). to compare levels of il12 between groups, an independent t-test was used. data analysis were done by using spss software version 18 (spss inc., chicago, il, usa).

Results

Mean age of ms patients and healthy individuals were 34 Â± 7.79 and 34.21 Â± 8.96 years, respectively. clinical and demographical features of patients and control group were presented in table 1. there was no

significant difference in age and gender distribution between groups (p Â¼ 0.916 and p Â¼ 0.077, respectively). mean serum level of il12 in ms patients and control group were 23.13 Â± 15.99 and 16.41 Â± 9.91 pg/ml, respectively (p-value=0.037). further analysis showed higher serum level of il12 in eight ms patients who were suffering from migraine disease concurrently comparing with ms patients without any simultaneous disease (means 26.9 and 20.57, respectively, p Â¼ 0.351). moreover, there were no significant correlation between il-12 levels and sex, age, edss and duration of disease.

Conclusion

To best of our knowledge, this is the first study demonstrating significantly higher serum level of il12 in iranian ms patients compared with healthy individuals.

Keywords

Interleukin 12, multiple sclerosis, elisa

Sexual function in women with polycystic ovary syndrome (pcos)

Raziyeh Navidmehr,[1,*] Shahideh jahanian sadatmahalleh ,[2] Anoshirvan kazemnejad,[3]

1. Tarbiat Modares University
2. Tarbiat Modares University
3. Tarbiat Modares University

Abstract

Introduction

Polycystic ovary syndrome (pcos) is the most common endocrine disorder in women of reproductive age with the prevalence estimation to be between 2% and 20% in different populations. pcos is characterized by enlarged ovaries, menstrual irregularities and clinical and biochemical hyperandrogensim. pcos is associated with obesity, insulin resistance, lipid disorders, an ovulatory infertility as well as endometrial cancer. this syndrome is not only associated with physical signs but it can also affect the sexual, psychological and social health of women of reproductive age. pcos appears to be related to sexual dysfunction, especially if associated with obvious clinical and hormonal signs of hyperandrogenism. in this article, an overview of the association between pcos and sexual function.

Methods

: a literature search was conducted through pub med to identify pcos and sexual dysfunctional related studies.

Results

: according to studies conducted in recent decades that in these studies, statistical methods have been used, suggests 16 to 64 percent of prevalence of sexual dysfunction in women with pcos. the causes of sexual dysfunction in women with a similar history are similar, such as obesity or overweight - alopecia or hirsutism â€“ infertility-acne and anxiety and depression associated with them have been reported, among which obesity and infertility have a more negative effected.on the other hand, evaluations of biochemical factors have led to similar results in various studies suggests no significant association between having a low score for any fsfi (female sexual function index) domain and having a low serum total or free testosterone or androstenedione and shbg (sex hormone-binding globulin) level was demonstrated. no evidence of associations between low scores for any of the sexual domains evaluated and low serum total and free testosterone levels. usually, sexual dysfunction occurs in women with pcos in the stimulation phase, and sometimes in the lubrication. actually, there was no significant difference in the stage of orgasm compared to non-affected individuals. in some studies, there is no significant difference in total score of fsfi and any of the areas of sexual function in the affected and normal groups.

Conclusion

It is appeared that there is a correlation between pcos and sexual dysfunction, multiple physical signs and psychological disorders associated with them make the pcos person more vulnerable to sexual dysfunction

Keywords

Polycystic ovary syndrome, sexual dysfunction, infertility

Sfn0011: a sflt01-based novel tri-specific molecule with antiangiogenic activity

Hamid Latifi-navid,[1] Zahra-soheila soheili,[2,*] Mehdi sadeghi,[3] Shahram samiei,[4] Ehsan ranaei pirmardan,[5] Seyed shahriar arab,[6]

1. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran
2. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran
3. National Institute of Genetic Engineering and Biotechnology, Tehran, Iran; School of Biological Sciences, Institute for Research in Fundamental Sciences, Tehran, Iran.
4. Blood Transfusion Research Centre High Institute for Research and Education in Transfusion, Medicine, Tehran, Iran
5. Department of Molecular Genetics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran
6. Department of Biophysics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

Abstract

Introduction

Age-related macular degeneration (amd) is the leading cause of blindness among elderly patients in developed countries. since vegf plays a key role in the pathogenesis of choroidal neovascularization)cnv(, targeting vegf has been an attractive strategy in the treatment of cnv, initiating extensive research in recent years. however, experimental and clinical experience show that the efficacy of anti-vegf monotherapy is limited due to overlapping and compensatory alternative angiogenic pathways which provide escape mechanisms. indeed, anti-vegf monotherapy only blocks one the most known pathway of pathological angiogenesis and other angiogenic factors may lead to disease progression. therefore, the complimentary combination of factors that inhibit alternative mechanisms of blood vessel formation may improve clinical benefit for patients. sflt01 is a novel fusion protein that consists of vegf/plgf (placental growth factor) binding domain of human vegfr1/flt-1 (hvegfr1) fused to the fc fragment of human igg(1) through a polyglycine linker. this molecule has the capacity of binding to human vegf (hvegf), human plgf (hplgf), mouse vegf (mvegf) and mouse plgf (mplgf).

Methods

We investigated sflt01 molecule structural components with bioinformatics tools and achieved to its amino acid and nucleotide sequences. we assembled these sequences and then included the nucleotide sequence of single-chain variable fragment (scfv) to sflt01Ê¹s. indeed we designed a sflt01-based novel tri-specific molecule (sfn0011) that targets vegf-a, plgf and a third party of angiogenic factors that exerts important roles in formation of new blood vessels. then we analyzed the secondary and tertiary structures of the tri-specific molecule with swiss-model and i-tasser. by choosing the best models, protein-protein docking with cluspro was performed.

Results

Docking results showed the capacity sfn0011 to bind with vegf-a, plgf and the third party angiogenic factor in predefined areas.

Conclusion

We propose that targeting several angiogenic pathways by sfn0011 may be a promise for next generation antiangiogenic therapeutic for age related macular degeneration.

Keywords

Sfn0011 sflt01 age-related macular degeneration vegf

Short term evaluation of endoscopic injection of autologous total blood nucleated cells and platelets in treatment of vesicoureteral reflux in adults

Salman Soltani,[1,*]

1. 1989

Abstract

Introduction

Vesico-ureteral reflux (vur) is one of the most common diseases encountered by urologists. ureteral re-implant has been the only method of surgery for vur correction. in recent years endoscopic injection of several agents (bulking agents) has been proposed as a treatment. the aim of this study was to evaluate the therapeutic efficacy of endoscopic subureteric injection of total blood nucleated cells and platelet

Methods

A clinical trial was done in 17 patients with vur aging 18-35 years old in mashhad imam reza hospital, iran, 2012-2015. the participants were randomly selected and placed under endoscopic injection following voiding cystourethrography (vcug). three months later the patients were evaluated using clinical findings, urine culture and vcug. if the vur persisted, the second injection was performed three months after the first one

Results

There were 17 patients including 13 females and 4 males, mean age 22.8 Â± 4.9 years. the procedure achieved success in 89% of renal units after the first injection and 94% after the second one. we observed no major complications

Conclusion

Our pilot interventional clinical trial showed that endoscopic injection of total blood nucleated cells and platelets is an effective method for treatment of vur in adult patients

Keywords

Vesico-ureteral reflux, blood platelets, cell- and tissue-based therapy, injections, treatment outco

Significant correlation of glycoprotein iiia gene polymorphism with unexplained recurrent pregnancy loss in north of iran

Shokoufeh Fazelnia,[1] Dr mohammadbagher hashemi-soteh,[2,*]

1. Department of Biology, Damghan Branch, Islamic Azad University, Damghan, Iran.
2. Immunogenetic Research center, Molecular and cell Biology Research Centre, Mazandaran University of Medical Sciences, Sa

Abstract

Introduction

Spontaneous abortion is considered as the most complex problem during pregnancy. thrombophilia is resumed as a cause of recurrent pregnancy loss (rpl). glycoprotein iiia (gpiiia) gene is involved in thrombosis and abortion. in this study, we analyzed the association gpiiia c.98c >t in women with unexplained rpl from the north of iran.

Methods

Sample population consisted of 100 women with unexplained rpl and 100 controls.the gpiiia c.98c>t polymorphism was genotyped using tetra-arms pcr method. the association between genotypes frequency and rpl were analyzed using Ï‡p2p and exact fisher tests. associated risk with genotypes combinations was also investigated by binary logistic regression.

Results

No significant difference was observed between genotypic and allelic frequencies of gpiiia c.98c>t polymorphism and rpl in case and control groups.

Conclusion

The gpiiia c.98 c>t polymorphism was not significantly correlated with rpl.

Keywords

Platelet glycoprotein iiia, recurrent abortion.

Silencing of sox2 over expression in hepatocellular carcinoma cell line by sirna

Zohreh Bahadori,[1] Zahra hosseini-khah,[2,*] Behrooz nikbin,[3] Alireza rafiei,[4] Abolghasem ajami,[5] Mohsen tehrani,[6]

1. Dept. & Center for Biotechnology Research, Semnan university of Medical sciences, Semnan, Iran.
2. 1. Department of Molecular Medicine, School of Advanced Technologies in Medicine, Tehran University of Medical Science, Tehran, Iran
3. 4. Department of Immunology, Tehran University of Medical Sciences, Tehran, Iran
4. 2. Department of Immunology, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran
5. 2. Department of Immunology, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran
6. 2. Department of Immunology, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

Abstract

Introduction

Hepatocellular carcinoma (hcc) is the fifth common malignancy and the third leading cause of cancer deaths worldwide. the molecular mechanisms regulating stemness and tumor progression in hcc is still poorly defined. sex determining region y-box 2 (sox2) is a stem cell transcription factor and a major regulator of self-renewal and pluripotency of cancer stem cells. it is overexpressed in many types of cancers and its over expression is related to poor prognosis, tumor progression, and low survival rate. the objective of this study was to investigate the silencing effects of sox2 expression using sirna on cell proliferation in hepg2 cells.

Methods

Silencing of sox2 in hepg2 cells was performed to evaluate the effect of sox2 inhibition in vitro. after silencing, sox2 expression was assessed in mrna and protein level with qrt-pcr and western blotting respectively. evaluation of cell proliferation after sox2 silencing was done by mtt method.

Results

The findings of this study showed that silencing of sox2 by si-sox2 significantly reduced the expression of sox2 expression at the mrna level ($p = 0.002$). although sox2 expression decreased at protein level, but it was not statistically significant ($p = 0.1$). inhibition of the sox2 gene reduced the proliferation of hepg2 cells ($p = 0.01$).

Conclusion

Our results provide a new insight into the importance of sox2 in hcc and suggest sox2 as a potential therapeutic target in prognosis and treatment of hcc patients.

Keywords

Inhibition of sox2, si-rna, hepatocellular carcinoma, cell proliferation

Silymarin suppresses the proliferation of colon cancer cells by down regulating casc11 and sbdsp1

Nazila Hasanirezaabad,[1] Masoumeh heshmati,[2,*] Sadegh babashah,[3]

1. Pharmaceutical Sciences Research Center, Tehran medical Sciences, Islamic Azad university,Tehran ,Iran
2. Department of Molecular and Cellular Sciences, Faculty of Advanced Science & Technology ,Tehran med
3. Department of Molecular Genetics, Faculty of Biological Sciences, Tarbiat Modares University, Tehr

Abstract

Introduction

silymarin ,is a natural compound derived from milk thistle, exhibit a variety of pharmacological effects including antiviral, anti bacterial, anti-proliferative, apoptotic and anticancer activities against various types of cancer cell lines . long non-codind rnas (lncrnas) revealed a class of non-proteincoding transcripts that are categorized as oncogenic and tomur suppressive roles. evidence has demonstrated that lncrnas participate in the regulation of cancer cell survival and death. the aime of this study was to assess the role of casc11 and sbdsp1in cancer-induced

Methods

Anti proliferative and apoptotic activity of silymarin were evaluated by mtt assay and flowcytometry at various concentration of silymarin and the expression level of lncrna; casc11 and sbdsp1 was assessed by realtimepcr.

Results

Loss of cell viability was time and dose dependent and ic50 was observed at concentration 53/30 , 41/94 ,46/41 Î¼g / ml for 24,48,72h respectively and the increased of apoptosis was observed for 1.19, 1.43 an 1.21 fold compare to untreated cells at concentaration 24, 50 and 100 Î¼g / ml respectively at 48h. real-time pcr results showed that the expression level of casc11 and sbdsp1 decreased at 50 Î¼g / ml concentration at 48h in the hct116 cell line in the presence of silymarin , which increased in tumor cell lines as oncogene.

Conclusion

these finding indicated that silymarin have crucial role in suppressor hct116 colon cancer cell line by decreasing expression level of lncrna casc11 and sbdsp1.

Keywords

colon cancer, silymarin, casc11, sbdsp1

Simultaneous and molecular detection of yersinia and francisella using multiplex-pcr

Nafiseh Pourmahdi,[1] Mehdi zeinoddini,[2,*] Mohamad javad dehghan esmatabadi,[3] Fatemeh sheikhi,[4]

1. Malek Ashtar University of Technology, Tehran, Iran.
2. Malek Ashtar University of Technology, Tehran, Iran.
3. Malek Ashtar University of Technology, Tehran, Iran.
4. Malek Ashtar University of Technology, Tehran, Iran.

Abstract

Introduction

Y. pestis causes plague and f. tularensis lead to tularemia, which are known as newborn and retire diseases. immunological and culture-based detection methods of these bacteria are time-consuming, costly, complicated and biosafety level 3 (bsl3) laboratories are required for working on these bacteria, therefore according to absence of standard strain of these bacteria and difficult genome isolation methods, developing molecular detection methods base on a gene structure as positive control sample is valuable.

Methods

In this research, we designed and construct a plasmid, containing a conserved gene of each bacterium. selected target region for francisella is fopa and for yesinia is caf1(f1 capsule antigen). after that, the construct inserted in puc57 and transformed into e.coli dh5Î±. after an overnight culture, plasmids extracted and used for multipelex pcr. the pcr products were analyzed in 2% agarose gel.

Results

We expect to see a 107bp band for francisella and a 176 bp band for yersinia. the results showed that amplification from each region was successful and expected bands were observed in electrophoresis.

Conclusion

Some bacteria have complicate immunological and culture-based detection tests, or sometimes we encounter with lack of standard microbial strain for some bacteria, so equipped labs are required for working with these bacteria. molecular detection methods can overcome these limitations. due to these difficulties, we can clone conserved genome regions of these bacteria into other bacteria and use them as positive control samples for molecular detection tests.

Keywords

Francisella, yesinia, multipelex pcr, detection, positive control sample

Smart, targeted, active and on demand cancer treatment by wirelessly controlled implantable drug delivery chip

Matin sadat Saneei mousavi,[1,*] Faranak manteghi,[2] Mohammadreza kolahdouz,[3] Farnad imani,[4]

1. Iran University of Science and Technology
2. Iran University of Science and Technology
3. Tehran University
4. Iran University of Medical Science

Abstract

Introduction

Since the local, on demand, cancer therapy is a challenging clinical issue today, this paper presents the design, fabrication and characterization of a remotely controlled single reservoir drug delivery chip based on ionic polymer metal composite (ipmc) as an actuator. here, drug release was externally programmed and controlled wirelessly on demand by a communication circuit. the transmitter and receiver circuits were designed to control the release/sealed status remotely from even 7 cm distance while the transmitter and receiver were coupled magnetically. ipmc here was used as the moving cap of the reservoir, that when opens, lets the drug out on demand with a low received power of 20 mw. the novel simple design could release 100% content of the drug which is remarkable in comparison with the designs which need complicated optimizations of diffuser, nuzzle and ipmc diaphragm pump leading to an incomplete release. to make sure that we have no leakage in the sealed mode, ipmc was attached to a polydimethylsiloxane (pdms) support film. biocompatibility of all the components of the chip were tested by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (mtt) assay. (180 words)

Methods

In the present study, a single reservoir drug delivery chip was fabricated by using ipmc actuator as the cap of the reservoir. the whole process contained four steps: a) fabrication of the ipmc actuator by chemical electroless plating; b) fabrication of the single reservoir chip on a silicon wafer by high technique photolithography; c) bonding the ipmc as the cap to the reservoir and d) finally designing the transmitter and receiver circuits and coupling them by electromagnetic waves and linking the receiver to the single reservoir chip so that the drug release can be conducted on demand. the whole system was tested to be bio compatible by encapsulation it in pdms polymer. (112 words)

Results

The reservoir was smooth edged supported by sem images with depth of 200 micron. the ipmc actuator was well fabricated supported by sem (scanning electron microscopy) and afm (atomic force microscopy) images. actuation and subsequently the drug release was controlled by a manipulated communication system based on transmitter and receiver circuits. they were linked with each other by electromagnetic waves with 2 mhz frequency and from 5 cm distance. in vitro drug release was conducted by ph analysis

of release of an acidic drug from the reservoir by applying voltage to ipmc actuator. in vitro biocompatibility of the chip was studied by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (mtt) assay (sigma-aldrich, usa) using breast cancer mcf7 cell line (atcc, usa) as a standard breast cell in cytotoxicity assays. the mtt assay was performed based on standard protocols. the results of biocompatibility studies on breast cancer cell line through mtt assay reveals 97% and 94% cell viability for silicon chip substrate and pdms encapsulator respectively. (161 words)

Conclusion

The single reservoir, wirelessly controlled drug delivery chip was designed using ipmc actuator as the gate of the reservoir. the drug was released on demand by generating electromagnetic waves that were converted to electrical voltage and transferred to ipmc actuator in receiver section on the chip. the system was tested to be bio compatible to get implanted in the body. (60 words)

Keywords

Drug delivery; ionic polymer metal composite; actuator; drug reservoir; remote control (11 words)

Sorafenib resistance in differentiated thyroid cancer: recent therapeutic strategies

Reza Kiani rad,[1,*] Mohammad amin dehghani,[2] Zeynab zohrab zadeh,[3] Fatemeh dehghani ,[4]

1. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Differentiated thyroid cancer (dtc) has been appearing as worldwide endocrine cancer. the advanced dtc can be currently treated by tyrosine kinase inhibitors (tkis), including sorafenib as the first line therapy.

Methods

The search for relevant articles was performed on pubmed database and findings of meetings by the keywords of dtc; tyrosine kinase inhibitors; sorafenib; drug resistance and therapeutic strategies.

Results

in vitro and in vivo findings reported antiproliferative and antiangiogenic activities for sorafenib against dtc. promising results exist from multiple phase ii studies of sorafenib in dtc therapy, suggesting actions to develop phase iii placebo-controlled research. long-term efficacy and tolerability of sorafenib have been conducting in patients with papillary, follicular and medullary aggressive thyroid cancer. the resistance usually developed after 1 or 2 years among most patients indicates a partial or stabilized response to this disease when taking sorafenib, highlighting the need for a comprehensive research for subsequent therapies.

Conclusion

It can be claimed that sorafenib has opened a new window for patients in treating their advanced dtc as resistance disease to conventional therapies, like radioiodine, and with high rate of complication, which means high rate of dose reduction or discontinuation. as well, the patients must be chosen precisely and the possible complication must be controlled when taking sorafenib in patients with metastatic thyroid cancer.

Keywords

Dtc; tyrosine kinase inhibitors; sorafenib; drug resistance; therapeutic strategies.

Spectroscopic study of the interaction of ethylenethiourea with dna

Zohreh Shariati,[1,*] Soheila kashanian,[2] Soudabeh askari,[3] zahra hemati,[4]

1. Department of Biology- Razi University- Kermanshah- IRAN
2. Faculty of Chemistry, Razi University, Kermanshah, IRAN
3. Biochemistry department- Biology Faculty-Tarbiat Modares University, Tehran, IRAN
4. School Teacher

Abstract

Introduction

Recently, the use of pesticides in agriculture has been increased dramatically. it is argued that the exposure to pesticides may contribute to some diseases. ethylenethiourea (etu) is a metabolite of mancozeb, belongs to the subclass of dithiocarbamate fungicides that is neurotoxic to daergic and gabaergic neuronal cell populations in vitro after acute exposure. etu is excreted in urine. the genetic toxicity of etu has been proven, but the mechanism of the interaction of etu with dna has not been studied yet. the current research evaluated the interaction of etu and with dna by spectroscopic technique.

Methods

The interaction of native calf thymus dna with etu, in 10 mm hepes aqueous solutions at neutral ph=7.2, has been investigated by spectrophotometric technique.

Results

The band at 260 nm of dna arises due to the Ï€â€“Ï€* transitions of dna bases. it is found that etu molecules interact with dna as are evidenced by hypochromism in uv absorption dna band.

Conclusion

Absorption spectra of dna in the absence and presence of etu indicated that etu makes neither covalent nor intercalate bonds with dna bases. since the etu does not contain any aromatic ring to facilitate the intercalating, the classical intercalative interaction is precluded. the uv/vis results may be due to the groove binding of dna with etu via hydrogen bonding of etu with the n7 and/or o6 atoms of the adjacent guanine bases. from the very beginning, it was postulated that groove binding compounds containing donor or acceptor hydrogen groups could selectively react with dna bases via hydrogen bonding. it is well known that the etu has two symmetric n-h groups and acts as donor hydrogen bonding one, whereas the guanine bases participate with their n7 and o6 atoms as hydrogen acceptor groups located at the dna structure. therefore, etu can bind to dna via hydrogen binding and change the dna conformation causing dna vulnerable to some structural damages that may lead to mutations. thus, there should be more caution in applying pesticides in agriculture and industry.

Keywords

Ct-dna; ethylenethiourea, pesticides, spectrophotometric, toxicity

Staging gastric cancer using pet/ct

Sara Zahmatkesh,[1,*] Mohammad hossein jamshidi,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Gastric cancer is the fifth most common cancer worldwide. there is a widely accepted consensus of the usefulness of fdg pet/ct in staging and restaging of gastric cancer. although some types of gastric cancer are not highly fdg avid and fdg pet/ct is not recommended by some authors and major guidelines such as esmo, there is a widely accepted consensus of the usefulness of fdg pet/ct in staging of gastric cancer. some authors even considered a promising role for fdg pet/ct in staging of primary gastric cancer.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

In a retrospective study comparing the roles of contrast-enhanced ct (ce-ct) and fdg pet/ct in detecting primary gastric cancer, respective sensitivity, specificity, negative predictive value (npv), positive predictive value (ppv), and accuracy values of 92%, 57%, 57%, 92%, and 87% and 82%, 86%, 46%, 97%, and 82% were calculated. fdg pet/ct was also significantly more specific for detecting both lymph nodes(95% vs. 62%) and distant metastases (89% vs. 63%).however, the detection of low-fdg-avid primary tumors and corresponding lymph node metastatic disease is a flaw of this technique. for instance, only 30%â€“40% of metastatic lymph nodes from non-fdg-avid primary tumors accumulate fdg, which is another factor for false-negative images.therefore, the use of fdg pet/ct in some special types of gastric cancer (i.e., signet cell carcinoma and mucinous carcinoma) should be designated only for special cases with unclear findings on other imaging modalities. in the assessment of solid organ metastases, fdg pet/ct showed an accuracy, sensitivity, and specificity of 97%, 95%, and 100%, respectively.

Conclusion

Mri and ce-ct may provide better sensitivity in the detection of small hepatic metastases and tiny peritoneal carcinomatosis, respectively. fdg pet/ct is also a promising surveillance method after surgery for detecting gastric cancer recurrence with an approximate sensitivity of 85% and specificity of 88%. in

a meta-analysis of eight studies and 500 patients, the pooled sensitivity and specificity were 86% and 88% for this modality in the detection of recurrent gastric cancer. finally, fdg pet/ct is recommended for staging and restaging of gastric cancer and for evaluation after neoadjuvant therapy.

Keywords

Gastric cancer, pet/ct, staging.

Staging of esophageal cancer by endoscopic ultrasonography: emphasis on n staging

Zeynab Yaberi mohammad,[1,*] Amir hasanvand,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Endoscopic ultrasonography (eus) plays an important role in the management of patients with esophageal cancer. the treatment and prognosis of patients with esophageal cancer are highly stage-dependent, and accurate initial staging is essential to selection of the appropriate therapy for patients. the primary role of eus is in the initial triage of patients to receive neoadjuvant therapy or to undergo surgical resection directly, or, in very early-stage disease, to undergo endoscopic mucosal resection (emr).

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

Eus has repeatedly been shown to be superior to other imaging modalities for locoregional staging, especially for peritumoral lymph node evaluation, and to have the additional capability to procure tissue via fine-needle aspiration (fna) if needed. esophageal cancer is treated based on the tumorâ€“nodeâ€“metastases (tnm) classification issued by the american joint committee on cancer (ajcc). the most recent revision of the ajcc tnm classification was issued in 2010 and features several important changes, reï¬,ecting advancements in our understanding of the biology of esophageal cancer. these include a refined definition of esophageal versus gastric cancer, a shift in emphasis to number of involved lymph nodes over the location of involved lymph nodes, and a separate staging for squamous cell carcinoma and adenocarcinoma, which better reï¬,ects stage-dependent differences in survival between the two histologic subtypes. the n-stage of esophageal cancer is determined by the number of lymph nodes involved, and carries significant prognostic implications. because of the rich supply of lymphatic vessels within the esophageal wall, including superfacial regions such as the lamina propria and submucosa, lymph node involvement in esophageal cancer is common, and occurs early. up to 30% of patients with submucosal involvement of their tumor will have positive lymph node metastasis at time of presentation. it has been shown that the prognosis in patients with nodal involvement is significantly worse than in those without nodal disease. certain features seen on eus can be helpful in distinguishing

benign from malignant lymph nodes. malignant lymph nodes tend to be bigger than 1 cm (in short axis), round, sharply demarcated, and hypoechoic. additionally, the more of these features present, the higher the likelihood of the lymph node being malignant.

Conclusion

Modified eus criteria have been proposed that may further improve the diagnostic predictive value of lymph node involvement on eus examination. these include the finding of more than lymph nodes, celiac lymph node presence, and t-stage 3 or 4, in addition to the four standard criteria. eus has been shown to be superior to ct scan for the n-staging of esophageal cancer. the sensitivity of eus in detecting positive lymph nodes in esophageal cancer ranges from 56 to 97%.

Keywords

Endoscopic ultrasonography, esophageal cancer, n staging.

Stem cell-therapy of recessive dystrophic epidermolysis bullosa (rdeb)

Faezeh Nasrollahi nia,[1,*] Sanaz alioghli,[2] Somayyeh abbaszadeh,[3] Atena tazedel,[4] Elham ghorbani,[5] Milad feizollahi,[6]

1. department of biology, factuly of science, university mohaghegh ardabili
2. department of biology, factuly of science, university mohaghegh ardabili
3. department of biology, factuly of science, university mohaghegh ardabili
4. department of biology, factuly of science, university mohaghegh ardabili
5. department of biology, factuly of science, university mohaghegh ardabili
6. department of biology, factuly of science, university mohaghegh ardabili

Abstract

Introduction

Stem cells have high growth potential and are first defined by two major attributes: self-renewal and the ability to differentiate into one or more categories. mesenchymal stem cells, which have a potential for differentiation of chondrocytes, osteoblasts, adipocytes, fibroblasts, bone marrow stroma, and other tissues of mesenchymal origin, are capable of producing specific types of cells for these tissues in numerous tissues in the extrinsic living creature. mesenchymal stem cells have been considered by many researchers because of their unique characteristics for cell therapy programs. epidermolysis bullosa represents a family of severe, life threatening skin disorders resulting from mutations in genes encoding protein components of the cutaneous basement membrane zone. epidermolysis bullosa have been classified into the following types: epidermolysis bullosa simplex, junctional epidermolysis bullosa and dystrophic epidermolysis bullosa. although some forms, such as the junctional type, are lethal in the neonatal period, others, such as the dystrophic forms, lead to years of painful skin blistering and mutilating scarring. the most severe form of dystrophic epidermolysis bullosa is caused by recessive mutations in the type vii collagen gene (col7a1). the incidence of this disease is 1 in 50,000. percentage of probability is equal to all men and women of different races of mankind. skin cancer is more likely to develop than other people. symptoms of this disease are common, snoring, coughing, or other breathing problem, hair loss, blistering near the eyes and nose, blistering your mouth and throat and causing difficulty in eating and swallowing, bleaching the skin after minor damage or temperature change, a blisters at birth, dental problems such as rot, the presence of mildew (small white wings), loss or deformation of the nail.the aim of this study is investigate application of stem cell-therapy on recessive dystrophic epidermolysis bullosa (rdeb).

Methods

To this purpose, we conducted extensive library research and compiled the latest reports about application of stem cell-therapy on recessive dystrophic epidermolysis bullosa (rdeb).

Results

currently, there is no deï¬• nitive treatment for recessive dystrophic epidermolysis bullosa (rdeb), although recent progress in understanding the molecular basis of rdeb has provided a foundation for the development of cell- and gene-based therapies. however, gene therapy remains a challenge both because of the inability to identify and target stem cells that can assist in reconstituting all of the components of the skin, and the low efï¬• ciency of introducing the gene of interest into those cell. induced pluripotent stem cells (ipscs) are well-suited for gene and cell therapy because of their origin, self-renewal capability, and pluripotency, as well as their potential for gene correction. to develop ipsc-based therapy for skin diseases, the ability to generate keratinocytes from ipscs is a crucial prerequisite. the reprogramming of a patientâ€™s somatic cells into ipscs is a promising new approach to establish human models for studying disease mechanisms, testing drugs, and developing cell therapies. in recent articles reported the spontaneous differentiation of ipscs into keratinocytes, as well as the directed differentiation of mouse ipscs into keratinocytes, evidence for directed differentiation of human ipscs into keratinocytes has not yet been reported. the main ï¬• ndings of the studies are that wild-type marrow-derived cells can migrate to the skin lesions seen in rdeb, produce col7 protein and anchoring ï¬• brils, prevent blister formation, and extend survival in a murine model of rdeb. hematopoietic cell transplantation is a treatment of choice due to the ability of engrafting cells to provide a life-long source of the deï¬• cient enzyme that can be taken up by recipientâ€™s cells. on closer inspection, however, col7 is not a â€œtrueâ€• structural protein as it does not contribute to the cellular structure.

Conclusion

Although hematopoietic cell transplantation is not without its own complications, treatment with wild-type bone marrow cells is potentially more advantageous than other possible forms of rdeb therapy in several respects.it is shown that infusion of wild-type bm cells results in expression of col7, formation of anchoring ï¬• brils, and healing of the blister.

Keywords

Stem cell, ipscs, rdeb,

Strong correlation of caga epiya-abc motif with risk of gastric cancer in patients infected with helicobacter pylori in iran

Anahita Dah pahlevan,[1,*] Saeid latifi-navid,[2] Saber zahri,[3] Seyedeh zahra bakhti,[4]

1. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
2. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
3. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
4. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran

Abstract

Introduction

The caga protein is associated with helicobacter pylori-induced diseases such as non-atrophic gastritis (nag), gastric ulcer and gastric cancer (gc). at the c-terminal region of the caga protein, there is a wide variety of repetitive sequences called the epiya motifs. the type and number of these epiya motifs are associated with pathogenicity of the bacterium. the aim of this study was to determine the epiya located in the c-terminal region of the caga in iranian strains and their association with gc.

Methods

A total of 150 strains were recruited in this study. the type and number of epiya motifs were detected by pcr on caga-positive strains (n=90).

Results

The caga gene was amplified in 90 of the strains and the analysis of the 3êžŒ- terminal region of caga gene showed the epiya-abc motif (western caga type) in gc strains was higher than those in nag strains (31.6% vs. 5.6%). the logistic regression analysis shows that epiya-abc motif increases the risk of developing gc 7 times higher than the risk of nag (orâ€¯=â€¯7.731, ci: 1.911-31.276).

Conclusion

We suggest that the epiya-abc motif may be useful as a biomarker predicting the risk of gc in people infected with h. pylori strains in iranian population.

Keywords

Helicobacter pylori, epiya- motif type, gastric cancer, iran.

Strong evidences of the ovarian carcinoma risk in women after ivf treatment

Shaghayegh Zokaei,[1] Dariush d. farhud,[2,*] Marjan zarif yeganeh,[3]

1. School of Advanced Medical Sciences, Islamic Azad University, Tehran Medical Branch, Tehran, Iran
2. School of Public Health, Tehran University of Medical sciences, Tehran, Iran
3. Cellular and Molecular Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Med

Abstract

Introduction

Every year, around 239,000 new cases of women in the world are diagnosed with ovarian cancer, with only below 45% survival rates, and according to the death toll of (152,000 deaths),it has become the 8th deadly(fatal) cause of cancer death among women. it is also diagnosed that serous ovarian tumors can be originated from the fallopian tube instead of the ovary itself. among all gynecological malignancies, ovarian cancer is recognized as the worst cancer in prognosis (the worst prognosis), which, as a medical term includes several types of tumors with different phenotypes, molecular biology, tumor progression, etiology, and even different prognosis. there are many factors which can increase the risk of ovarian cancer such as a family history of the patient or heredity, mutation status, age, number of pregnancies, breastfeeding, physical activity, alcohol consumption and, in general, life style. overall, it should be noted that there is a well-established association with a high proportion of hereditary between ovarian cancer risk and mutations, furthermore, these mutations are also prevalent among patients with ovarian cancer who do not have a family history of ovarian cancer. according to the appearance of the epithelium ovarian tumors are classified into these subtypes: serous, mucinous, clear cell, endometrioid, squamous, transitional, mixed and undifferentiated. these subtypes are also divided into two groups of high-grade and low-grade tumors, based on morphology and genetic alternation. low-grade ones, including serous carcinoma, mucinous, endometrioid, and clear cell carcinomas, likely to arise stepwise in an adenoma (borderline tumor) carcinoma sequence from typical to micropapillary borderline tumors to low-grade invasive serous carcinoma, with a lower rate of progression, and be caused by mutation in different genes including kras, braf, pten, and beta-catenin, and kras or braf mutations lead to the effective activation of the mapk signaling in low-grade serous carcinoma cells. contrary to the previous type, the high-grade type, consist of high-grade serous carcinoma, malignant mixed mesodermal tumors (carcinosarcomas) and undifferentiated carcinomas, grows rapidly and aggressively, with a high levels of genetic stability characterized by tp53 mutations and brca1 and / or brca2 dysfunction.

Methods

Our paper is a review article and we studied more than 70 articles to evaluate the future risk of ovarian carcinoma in women treated with ivf.

Results

It is evidence that women who had a long period of treatments with high doses of fertility drugs can develop ovarian cysts which can lead to ovarian cancer. therefore, it is recommended that women be checked for "personalized medicine" before conducting ivf.

Conclusion

In summary, ivf, which has been highly regarded as a method of treatment for infertility, can carry risks like any other method. studies in this field give us different results, so that in some studies with a small sample size, no significant results have been achieved. however, other studies with a large sample size in this field clearly show the risk of developing ovarian cysts and cancer of the ovary. the drugs used in this method, like clomiphene citrate and gonadotropins, greatly hyper stimulate the ovary, leading to twin or multiple pregnancy, increased ovarian cyst and risk of ovarian cancer. it should be noted that the failure of each cycle compel the couples to try subsequent cycles, in which the dose and duration of drug intake are increased, and so the risk of this cancer also increases. altogether, different aspects of ivf courses should be considered. initially, the couple should completely apprehend the risks associated with this treatment. each couple should enter these therapies with regard to their â€œpersonalized medicineâ€• in order to avoid long-term infertility treatment in the event of an inherited risk of ovarian cancer. every patient, especially susceptible patients, should be monitored closely by the doctor and appropriate tests.

Keywords

Ovarian cancer, ivf,clomiphene citrate, anovulatory, infertility

Strong impact of helicobacter pylori oipa gene on the development of peptic ulcerations (pus) in iran

Omolbanin Feili,[1,*] Saber zahri,[2] Saeid latifi-navid,[3] Seyedeh zahra bakhti,[4]

1. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
2. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
3. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran
4. Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, 56199-11367, Iran

Abstract

Introduction

Helicobacter pylori (h. pylori) is recognized as a causative agent of peptic ulcerations, gastric adenocarcinoma, and low-grade mucosa lymphoid tissue (malt) lymphoma. the blood group antigen-binding adhesion (baba) and outer inflammatory protein (oipa) involved in h. pylori adherence to gastric epithelial cells have been suggested to have a role in the pathogenesis of gastrointestinal disease. we here aimed to clarify the roles of the h. pylori baba2 and oipa genotypes in development of severe gastrointestinal disease.

Methods

Genomic dna was extracted from h. pylori -positive cultures gastric biopsy specimens and genotyped by pcr. a simple logistic regression was used to analyze association between variables. $p<0.05$ was considered statistically significant.

Results

Frequency of the baba2+, baba2-, oipa+, and oipa - genotypes in patients with pus was 25.0%, 75.0%, 97.7%, and 2.3%, respectively, and in non-atrophic gastritis group (nag) was 34.7%, 65.3%, 63.9%, and 36.1%, respectively. there was no significant relationship between presence of baba2 with pus and nag. results of the logistic regression analysis showed that the oipa+ genotype was strongly correlated with the risk of pus, the or was 24.304 [95% confidence interval (ci), 3.251-181.677, $p = 0.002$].

Conclusion

The oipa+ genotype of h. pylori could be a strong biomarker for risk prediction of pus in iran.

Keywords

Helicobacter pylori, peptic ulcerations, baba2, oipa, iran.

Structural characterization and evolutionary analysis of fimbrial chaperones from human and animal enterotoxigenic escherichia coli

Vajiheh Eskandari,[1,*]

Abstract

Introduction

Enterotoxigenic escherichia coli bacteria are one of the major causes of diarrhea in developing countries, that causing deaths of hundreds of thousands of people annually. some strains of enterotoxicogenic bacteria cause disease in livestock, especially in newborns, as a result, mortality of livestock and cause a lot of economic losses to the livestock breeder. one of the most important pathogenic factors in enterotoxicogenic e. coli bacteria is colonization factors (binding factors).the colonization factors are often encoded by the plasmid. most etec bacterial binding factors are assembled through the chaperone-usher pathway and are exposed at the bacterial cell surface. examples of these factors in humans include: cfa / i, cs1 -7, cs10-12, cs14, cs17, cs18 and cs20 and in animals are f4 (or k88), f5 (k99), f6 (987p), f17 and f18 (4, 7-9) due to the etec strains express one or more types of colonization factors at the cell surface, developing effective etec vaccines has encountered by some problems.

Methods

The fimbriaesâ€™ data of enterotoxygenic e. coli were retrieved from different sources. then, the amino acid sequences of fimbriaesâ€™ chaperones were extracted from the uniprot database. the theoretical isoelectric point (pi) and the total number of positive and negative amino acids were calculated using the protparam analysis tool on expasy database. phylogenetic trees were constructed based on the multiple alignments using treetop server. 3d models of these chaperones were modeled using the modeller 9 & 20 software. the the models were evaluated using procheck and prosa ii servers. the discovery studio software was used to visualize the 3d structures of models. the root-mean-square deviation (rmsd) was calculated using the swiss-pdb-viewer software. the cons-ppisp server was applied for prediction of protein-protein interfaces.

Results

Characterization of the physicochemical properties of proteins: determining the physicochemical properties of proteins can be very useful for better understanding of proteins functions. according to table 1, it is seen that all proteins have a lower molecular weight and are not significantly different. it is also observed that the proteins have an isoelectric point higher than 8 which indicates their basic properties. investigation in the table 1 showed the overall positive charge of all proteins predominates over their negative charge. homology modeling: following homology modeling process, the assessment of the quality of the predicted models are necessary. therefore, the quality of the predicted models were evaluated by the ramachandran plot in procheck program. the result showed that the number of residues in disallowed reagion was very low. also, the quality of the predicted structures was evaluated by the prosa software. the evidence of prosa server also suggest that all protein models are acceptable and of good

quality. the 3d structures (3d-structure) were visualized using the discovery studio software. the images, showed the alpha helix, beta plates and coils (fig. 1). these chaperones have very similar structure, displaying two domains which make a 45 ï‚° angle relative to one another lending to the protein the shape of a boomerang with a cavity. the results of the analysis with the ppisp cons-server showed that the above-mentioned cavity are in contact with the major subunit of fimbriae. phylogenetic analysis and structural comparisons of chaperones: the phylogenetic study based on the sequence similarity suggests a close relationship between the animal and human chaperonsâ€™ etec based on our previous experiences with the cs3-1, the comparison were done against cs3-1.the structure of each single chaperon was constructed with cs3-1 structure. the results of this comparison, shown as rmsd in table 1, which indicate the structural similarity of chaperones protein in different strains of enterotoxicogenic bacteria.

Conclusion

This study showed that the different fimbriaesâ€™ chaperone have similar structures. therefore, it seems it is possible to inhibit several fimbriae assembly systems simultaneously inhibited with limited number of drugs and prevent their presentation at the bacterial cell surface.

Keywords

Bacterial diarrhea, fimbriae and molecular modeling

Study about new effective bioactives for treatment and prevent non small cell lung carcinoma

Ali Aameri siahooei,[1,*]

1. Faculty of Pharmacy and Pharmaceutical Sciences, Hormozgan University of Medical Sciences

Abstract

Introduction

Based on research , nsclc (non-small-cell lung carcinoma) is on of the most common cancer in the world and many people every year died from it in early stages is asymptomatic and when is diagnosed that cancer in the malignant stage and show sign such as cough with bloody sputum , in this stage usually cancer has been metastasis and it has been very much growth , in fact in this stage treatment is not possible , this study presented new method with new bioactives to prevent nsclc and cure it.

Methods

Based on research, by dna sequencing method we study genome of nsclc cell and genome of normal lung cell and compered them and we found in nsclc cell the gene of one rna polymerase2 enzyme has been expressed that itâ€™s not expressed in normal lung cell and it has transcribe the genes of many enzymes that they paly essential roles in shifting normal lung cell to nsclc cell, based on this results we try to inactivate this rna polymerase2 enzyme.by study nsclc cell metabolism we found this rna polymerase2 enzyme need asparagine amino acid to be activated and nsclc cell canâ€™t produce this amino acid and they reabsorb this amino acid from their environment. with study human biochemical pathway and asparagine amino acid reabsorbing pathways from it we understand that four bio actives : phenethyl isothiocyanate and capsaicin and apigenin and menthyl acetate could dock with a lots of allosteric enzymes inside the reabsorbing pathway of asparagine amino acid by nsclc cells and inactivated them.thus more than 90 % reabsorbing pathways of asparagine amino acid will be closed and docking and inactivating has been checked by autodock-vina and qsar and prex and chimera and marvin space softwares.

Results

Combination and consumption of apigenin and capsaicin and phenethyl iosthiocyanate and menthyl acetate simultaneously could extremely reduce danger of nsclc by decreasing this rna polymearse2 production in nsclc cells.

Conclusion

Since capsaicin exist in red pigment of red pepper and apigenin exist in meaty part of green cucumber and phenethyl isothiocyatate exist in purple pigment of purple cabbage and menthyl acetate exist in mint leaves. we can extract or synthesize these bioactives and formulated them same as pulmonary powder to

delivery these bioactives to normal lung cell to prevent shifting it to nsclc cell thus it may be possible to prevent nsclc and cure it by consumption these bioactive simultaneously.

Keywords

Non small cell lung carcinoma , apigenin , capsaicin , menthyl acetate , phenethyl iosthiocyanate

Study and comparison of il10 â€“ tgf Î² gene expression in adipose and bone marrow-derived mesenchymal stem cells in normoxia and

Fatima Fallah madvary,[1,*] Sotoodeh fattah,[2] Ebrahimi marzieh,[3]

1. Tehran University of Science Sciences

Abstract

Introduction

Bone marrow mesenchymal stem cells are in an environment with low oxygen pressure (hypoxia conditions)in vivo, which results in secretion of inflammatory and anti-inflammatory factors with a concentration that is several times greater than that of normomoxia. in this study, the effects of hypoxia on the expression of two factors, il-10 and tgf-Î² genes, which are one of the most important immunosuppressive proteins, have been studied in bone marrow and fat-derived mesenchymal stem cells the reason for choosing these two genes was their role in maintaining tolerance and preventing autoimmune diseases

Methods

:culture of bone marrow and adipose mesenchymal stem cells and studing cd90 and cd103 markers by flow cytometry, second, inducing hypoxia conditions using cobalt chloride and desfroxamine, third confirmation of hypoxia condition using hif-1a protein by western blotting, fourth, evaluation of il-10 and tgf-b gene expresiion by real time pcr (rt-pcr).

Results

: the results of microscopic examination showed that mesenchymal stem cells of bone marrow and fat were properly isolated and the results of flow cytometry confirmed microscopic results. the results of western blot confirmed the presence of hypoxic conditions in bone marrow and fatty mesenchymal cells. on the other hand, rt-pcr results confirmed the increased expression of il-10, tgf-Î² and vegfr anti-inflammatory factors in hypoxia compared to normoxia.

Conclusion

Given that mesenchymal cells in hypoxic conditions express more anti-inflammatory factors than those of normocoxia, they can be used in hypoxia conditions for various therapeutic programs, such as tissue transplantation and the improvement of wounds and autoimmune diseases.

Keywords

Bone marrow and fatty mesenchymal cells, hypoxia, normoxia, il-10, tgf-Î² and vegfr

Study and molecular charactrization of expression of whib7 among drug resistant mycobacterium tuberculosis

Fahimeh Morteza,[1] Saeed zaker bostan abad,[2,*] Sarvenaz falsafi,[3]

1. Department of Biology, faculty of science , science and research branch , islamic azad university ,tehran , iran.
2. Department of biology and biotechnology,faculty of biological science , Islamic azad university Pranad branch,Tehran ,Iran
3. Department of microbiology,faculty of advanced science and technology,tehran medical science,Islamic azad university,Tehran ,Iran.

Abstract

Introduction

One third of the worldâ€™s population are infected by mycobacterium tuberculosis â€œ the main cuase of tuberculosisâ€• .this bacteria has a family of genes which are called whibs .these genesâ€™s function is to induce the infection,also they play a crucial role in establishment of bacteria through the cells.in this study exclusively ,the expression of whib7 has been discussed which has proved that this gene leads to antibiotic resistance and produces mdr positive species.

Methods

To do this study 25 mdr positive and 25 sensetive species of mycobacterium tuberculosis has been collected then cultured on lowenstein jensen medium(l.j) which contains rifampin , izoniaizd , ethambutol.afterwards,by the means of rotor gene real time pcr the expression of whib7 has been compared among resistant and sensitive species ,and then both resistant and sensitive species have been compared with the standard species called h37rv.

Results

Results of antibiogram showed that all mdr positive species are resistant ,at least, to two out of three drugs that were used in l.j medium .although the results of real time pcr method indicated that whib7 expressed more in resistant species rather than sensitive ones in lower cycle of threshold ,the results of statistical analysis (based on standardization) which were done by softwares like rest and mwga6 have indicated that whib7 has shown no difference in expression among resistant and sensitive species in coparison with each others ,while both (resistant and sensitive species) have been down regulated in comparison to h37rv.

Conclusion

According to genesis of new resistant species of mycobacterium tuberculosis ,we can feel the need of new identification methods to prevent the emergence of new resistant strains.the main purpose of this study

was to research the effect of whib7 expression in drug resistance ,the existence of point mutations and polymorphism in sequences of this gene in mdr positive species . key words: real time pcr, mycobacterium tuberculosis ,whib7 gene.

Keywords

Mycobacterium tuberculosis,real time pcr,whib7 gene,antibiotic resistance

Study of bcl-2 expression level in gastric adenocarcinoma cells which treated with rosa canina l extract

Masoome Dastvar,[1,*] Dr.zahra deilami khiabani,[2] Dr.nader kazemi,[3]

1. Msc student ,Department of Genetic , Basic Science Faculty, Islamic Azad University, Zanjan Branch, Zanjan,Iran.
2. Assistant professor , Department of Genetic , Basic Science Faculty, Islamic Azad University, Zanjan Branch, Zanjan,Iran.
3. Assistant professor , Department of Microbiology , Basic Science Faculty, Islamic Azad University, Zanjan Branch, Zanjan,Iran.

Abstract

Introduction

Gastric cancer is recognized as the fourth most common cancer in the world, bcl-2 gene induces apoptotic pathway and is important gene in cancer studies. considering the least side effect of herbal extracts, in this study we have evaluated bcl-2 gene expression in ags cells treated with rosa canina l extract.

Methods

The ags cells were incubated 37Â°c containing 5% co2 with 85% humidity in dmem with 10% fbs. the cells were treated with concentrations of 800, 1200, 2000 Î¼g /ml of rosa canina extract for 72 hours. extraction of rna, synthesis of cdna has been done using kit. the study of bcl-2 gene expression was performed by real time pcr and also gapdh gene was used as the internal control.

Results

The results of real time pcr data show significant decrease in expression rate of bcl-2 gene in all concentrations of rosa canina l. in 72 hours treatment reduction of 1.48, 5.03 and 22.47 fold have seen in concentrations of 800, 1200, 2000 Î¼g /ml of rosa canina l , respectively.

Conclusion

Bcl-2 may become therapeutic targets for cancer treatment and the herbal extract, rosa canina l, reduced the expression rate of bcl-2 significantly in dose dependent manner. this extract seems to have tremendous anticancer effects.

Keywords

Bcl-2, rosa canina l, ags cells

Study of the relationship between anthropometric indices and the status of sperm in infertile men referred to ivf center, hamedan

Zahra Seif,[1,*] Zahra seif,[2] houshang babolhavaeji,[3] Sima maree,[4] Rafieh sadati,[5] Simin salehi,[6]

2. Hamedan university of Medical Science
4. Hamedan university of Medical Science
6. Hamedan university of Medical Science

Abstract

Introduction

Infertility is one of the most common problems in today societies that the stress arising from it, can lead to increase anxiety and, finally, decrease erectile dysfunction. furthermore, having experienced the grief over not being able to have children cause families to suffer from various physical and mental problems so that the nervous tensions associated with infertility is devastating.

Methods

: 350 infertile men participated in this cross-sectional study. ensuring the absence of any other disease, demographic and anthropometric data (weight, height), body fat percentage, and sperm parameters were collected. spss.16.5 software was used for statistical analysis. in order to compare quantitative traits, such as sperm, at different levels of bmi and body fat percentage, the pearson correlation test, anova and t- test were also used.

Results

The mean age of subjects and the mean body mass index were 23/6 years and 25.2 kg per square meter, respectively. in terms of body mass index, 12% of subjects had reduced weight, 3/36% normal weight, 6/40% overweight and 1/11% of them were obese. the highest rates of participants (51/7%) were above normal weight. the average fat content was 17/63 %. the highest sperm count was observed in people with normal fat mass percentage and in those with fat mass lower than normal, the sperm count was low. there was no statistically significant correlation between bmi and fat mass percentage with sperm indices.

Conclusion

There was no statistically significant correlation between bmi and sperm indises, but given to the relation between fat mass percentage and sperm count in males in our study, it is necessary to encourage them to do physical activity and use proper nutrition.

Keywords

Body mass index; sperm; infertility

Study of 40-bp insertion/deletion polymorphism of murine double minute2 (mdm2) and the risk of colorectal cancer in iranian population

Mohammad Mohammadi,[1,*] Ladan kiani,[2] Mohammad reza hajari,[3]

1. Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran
2. Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran
3. Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran

Abstract

Introduction

Mouse double minute 2 homolog (mdm2) is an important negative regulator of the p53. p53 plays a central role in the cell cycle regulation mechanisms and cell proliferation control, and its inactivation is considered a key event in carcinogenesis. overexpression of mdm2 gene has been reported in several human tumors. increasing the expression level of mdm2 protein due to genetic changes in its promoter region leads to a decrease in the activity of p53 protein. in this study, we aimed to evaluate the effect of 40-bp insertion/deletion (ins/del) polymorphism on the promoter of mdm2 and susceptibility to colorectal cancer in a sample of iranian population.

Methods

This study was carried out on 120 patients with colorectal cancer and 120 healthy individuals. genomic dna was extracted from the whole blood by the salting-out method. the 40-bp ins/del polymorphism was determined by using pcr.

Results

The results of genotypic study (or = 1.266, 95% ci = 0.7244-2.214, p = 0.477 for i / d and or = 1.662, 95% ci = 0.7183- 3.847, p = 0.2928 for d / d) and allelic study (or = 1.341, 95% ci = 0.8966-2.006, p = 0.1838) showed no significant difference between the affected individuals and control group.

Conclusion

The results of this study showed that there is no association between 40-bp ins/del polymorphism in the promoter of mdm2 and the incidence of colorectal cancer in iranian population.

Keywords

Mdm2, polymorphism, colorectal cancer

Study of amniotic fluid samples from pregnant women with high risk of fetus abnormalities by routine cytogenetics method (karyotyping) and molecular method (fish) by using x and y probs

Parisa Vahidi,[1,*] Seyed ali rahmani,[2] Nahid hadige rezvan,[3]

1. Tabriz Islamic Azad University
2. Dr.Rahmani Genetic Lab
3. Dr.Rahmani Genetic Lab

Abstract

Introduction

The health of the fetus during the 9 months of pregnancy is very important for every pregnant couple. identifying carriers of the genetic diseases and their diagnosis before birth controls the disease×³s prevalence and does not impose huge costs on the patient×³s family and community. this study confirms rapid prenatal diagnosis importance in the chromosomal abnormalities identification.

Methods

100 amniotic fluid samples were studied by karyotyping and 22 samples were studied by fluorescence in situ hybridization (fish) and karyotyping. karyotyping was performed on metaphase chromosomes to identify all the chromosomal abnormalities and fish detected chromosomal abnormalities by using x and y probs, as the rapid method. the results from both methods were compared.

Results

We identified two cases with down syndrome (1.6%), one case with edwards syndrome (0.81%), one case with chromosome 15ps+ (0.81%), six cases with chromosome 15p+ (4.91%), two cases with chromosome 9qh+ (1.6%), one case with pericentric inversion of chromosome y (0.81%), one case with xyy mosaicism (0.81%), one case with partial trisomy 22 (0.81%), one case with chromosome 1qh+ (0.81%) and one case with unknown segment on p arms of chromosome 15 (0.81%).

Conclusion

Fish is a useful method with high sensitivity to provide rapid results for couples who don×³t have enough time to end their pregnancy legally. in cases of x-linked diseases, it is a reliable method to learn the sex of the fetus. fish is not able to detect structural anomalies, therefore karyotyping is required for absolute right outcomes of chromosome abnormalities.

Keywords

Chromosomal abnormalities, fish, karyotyping

Study of association between age and mtor gene expression in brain tissue of drosophila melanogaster alzheimers disease model

Mohammad hossein Milajerdi,[1] Maryam baeeri ,[2] Nima sanadgol ,[3,*]

1. university of Zabol
2. Tehran University of Medical Science
3. university of Zabol

Abstract

Introduction

Aging is one of the most important factor in the development of alzheimers disease (ad). the important pathologic protein involved in the development of ad is tau. although the role of autophagy in ad has been relatively proven, the effect of longevity on tau neurotoxicity are under debates. one key question of debate, however, is which of these pathologies (aging or tauopathy) appears first and hence is upstream in the pathocascade. in this study we analyzed the effects of longevity on expression of mammalian target of rapamycin (mtor) and their relation with tau toxicity in drosophila melanogaster ad model.

Methods

The strains usa-tau r406w, the eye (gmr-gal4), ok107- gal4, and pan-neural (elav-gal4) driver strains, were obtained from the bloomington drosophila stock center (flystocks.bio.indiana.edu). homozygous virgin females ok107-gal4 were mated with males bearing uas-tau constructs (for tau expression in brain neurons), and the progeny was maintained at 270c. for transgene expression in the eye, homozygous females gmr-gal4 uas-tau were crossed with males carrying the desired constructs and the progeny was maintained at 27.50c. for histological study of retinas, paraffin-embedded heads of 10, 20 or 30-day-old flies after progeny were sectioned at 1 mm and analyzed. at mentioned time points flies were also unseized with co2, and total rna was isolated from 45 fly heads, and cdnas were prepared. expression of tau and mtor in brain of flies were evaluated via real-time pcr using specific primer sets.

Results

As predicted, tau over expressed in the brain neurons and constantly induced cell toxicity and ad phenotypes in flies according to behavior and histological assessments. our results have been shown that, expression of important anti-autophagy marker mtor was significantly decreased with tauopathy in flys brain. on the other hand, there was no change observed in mtor expression with aging process in this model of ad.

Conclusion

A growing list of evidence suggests that mtor signaling influences longevity and aging. inhibition of the mtor complex 1 (mtorc1) with rapamycin is currently the only known pharmacological treatment that

increases lifespan in all model organisms studied. tauopathy-induced up-regulation of mtor in this model may be related to activation of autophagy and endogenous resistance mechanisms against tau neurotoxicity. finally, it proposed that the expression of autophagy related proteins (lc3, atg and beclin 1) and 5 amp activated protein kinase (ampk) activity also should be analyzed for confirmation of our data.

Keywords

Alzheimer, autophagy, mtor

Study of chromosomal abnormalities and prevalence of consanguineous marriages in couples with recurrent spontaneous abortions (rsa) in ardabil province

Ziba Jahani,[1,*]

1. Tehran Payame Noor University, Rey Branch

Abstract

Introduction

The spontaneous abortion of the fetus is due to the loss of it until the twentieth week of pregnancy that is one of the most common medical problems during pregnancy. approximately 15 to 20 percent of all clinically recognizable pregnancies lead to abortion. failure in pregnancy involves economic costs and physical and mental for the family and the society. recurrent spontaneous abortion is a multifactorial phenomenon and this study analyzes chromosomal abnormalities and the prevalence of consanguineous marriages in parents with recurrent spontaneous abortions in ardabil province.

Methods

350 patients with at least two spontaneous abortions of the fetus were analyzed using gtg-banding cytogenetic technique.

Results

Parents chromosomal abnormalities were found in 18 cases (10.28% of couples). most of abnormalities were structural (72.2%). chromosomal aberrations were found in 10 (55.6%) females and 8 (44.4%) males. translocations were the most common chromosomal abnormalities (55.6 %) detected in this study. also, a significant correlation was found between recurrent spontaneous abortion due to consanguineous marriage and chromosomal abnormalities ($p<0.05$).

Conclusion

According to the significant correlation between recurrent spontaneous abortion and chromosomal abnormalities in this study and previous ones, and also the high rate of consanguineous marriages in ardabil province population, analysis of chromosomal abnormalities after genetic counseling is necessary for both parents with recurrent spontaneous abortions.

Keywords

Recurrent spontaneous abortion, chromosomal abnormalities, consanguineous marriage, ardabil

Study of exposure to cigarette smoke on the cyp1a1 gene expression in women with endometriosis in admitted to tabriz al-zahra hospital

Parivash Estekhdami mahinnezhad,[1,*]

1. Department of Biology East Azarbaijan Science and Research Branch, Islamic Azad University

Abstract

Introduction

: endometriosis is one of the most common causes of infertility in women. the cyp1a1 gene is one of the genes associated with this disease. air pollution is one of the factors that related with the expression of this gene. cyp1a1 is an enzyme produced by exposure to a stimulant, including smoke, when nicotine is ingested by blood in some tissues.

Methods

During the coordination with the staff member of the operating room of tabriz al-zahra educational hospital, before the surgery and after obtaining written consent from the patients, questions about the questionnaire were asked from the patients and recorded in the relevant forms. in this study, 30 samples of endometriosis tissue of the women exposed to cigarette smoke with their blood samples as the patient group, as well as 20 samples of women with normal endometrial tissue with their blood samples as the control group were collected. the tissue rna was extracted and cdna synthesized. the amount of gene expression was measured by real-time pcr. then, the rate of infection of women with nicotine (cotinine) was measured and compared by elisa method. finally, analysis of the results was done by spss software.

Results

The expression level of cyp1a1 in the patient samples showed a significant increase compared to the control group, and the p-value was less than 0.003. there is also a significant relationship between the expression of cyp1a1 and the exposure to smoking (p-value = 0.0001). while there is no significant relationship between the amount of cotinine serum in the studied women and their exposure to smoking and not exposure to smoking (p-value = 0.618).

Conclusion

Increasing the expression of cyp1a1 gene in the tissues of the studied women was consistent with most studies in this field. in this study, women with endometriosis exposed to smoking seem to have high expression in the cyp1a1 gene, as opposed to women who are not exposed to smoking. considering the fact that there is no significant relationship between serum levels and cotinine protein levels in the two groups, and since, besides nicotine, there are many factors that have been identified in cigarette smoke that can apply their pathogenic effects to humans, it is included that other materials other than nicotine in

cigarettes affect this process of increasing gene expression. cigarette smoke as an environmental risk factor can lead to increased expression of the cyp1a1 gene and an effect on endometriosis.

Keywords

Endometriosis - cyp1a1 gene - nicotine - cotinine

Study of mir-494 expression and its association with tumor histopathological characteristics to find a possible breast cancer biomarker

Seyedeh elham Sharifi ardani,[1,*] Mahdieh salimi ,[2] Pegah ghoraeian,[3]

1. Islamic Azad University of Tehran Medical Branch
2. Department of Medical Genetics, Institute of Medical Biotechnology, National Institute of Genetic Engineering and Biotechnology (NIGEB)
3. Islamic Azad University of Tehran Medical Branch

Abstract

Introduction

Breast cancer is a major health problem that affects one in eight women worldwide and is the second most common malignancy diagnosed in women, there are numerous risk factors for breast cancer, including age, obesity, family history, and exposure to hormones and therapeutic radiation. effective management of breast cancer depends on early diagnosis and proper monitoring of patientsâ€™ response to therapy. however, these goals are difficult to achieve because of the lack of sensitive and specific biomarkers for early detection and disease monitoring. the micrornas (mirnas or mirs), a type of small non-coding rna , have emerged as molecular regulators that can have key roles as tumor suppressors or oncogenes in pathogenesis and progression of different malignancies, including breast cancer.

Methods

Breast cancer tumor specimens and their matched non-cancerous tissues were obtained from 30 patients diagnosed with breast cancer. in the present study total rna of breast cancer tissues was extracted with trizol solution referring to manufactureâ€™s protocols. equal amount of total rna was then transcribed into the first-strand cdna using bonmir kit. the expression of mir-494 in 30 tumoral and 30 normal breast tissues were analyzed using sybr green real-time pcr technique. the statistical significance of data was evaluated by spss version 16 software.

Results

The data revealed that the expression of mir-494 was up-regulated in breast cancer tumors compared with normal breast tissues thus identified as onco- mirna in human breast cancer. also the positive association was observed between mir-494 expression and metastasis. additionally, retinoblastoma 1 (rb1) was identified to be a downstream target of mir-494 by in silico analysis.

Conclusion

This study may provide useful information for further investigations of functional roles of mirnas in breast cancer development, progression, diagnosis, and prognosis

Keywords

microrna, biomarkers, breast cancer

Study of occult hepatitis b virus among iranian hemophilia patients with chronic hepatitis c after direct-acting antiviral therapy

Niloofar Naderi,[1,*] Azam bolhassani,[2]

1. 1Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran 2Iranian Comprehensive Hemophilia Care Center
2. 1Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran 2Iranian Comprehensive Hemophilia Care Center

Abstract

Introduction

In most co-infected patients, hcv suppressed hbv replication, thus, the lack of hbv suppression following hcv successful treatment could lead to hbv reactivation. occult hepatitis b infection (obi) is defined as the continuous existence of the hbv genome in liver tissues and/or serum in the absence of serum hbsag. hbv may reactivate when treating chronic hepatitis c (chc) with direct-acting antivirals (daa). this study determined the prevalence of obi in iranian hemophilia patients receiving daa agents for hcv infection.

Methods

The peripheral blood samples from 100 hemophilia patients who received daas were enrolled. the sera obtained from these patients were tested for the presence of hbsag. then, the presence of the hbv dna was detected in pbmc and also plasma samples using nested pcr. the results of demographic information of patients were reported as the mean Â± standard deviation using spss or excel software.

Results

Among 100 hemophilia patients, 81 (81%) were male and 19 (19%) were female. all patients included were negative for hbsag. compared to no hbv activation in 100 hbsag-negative patients, hbv dna was found in 1% of plasma and in 3% of pbmc samples.

Conclusion

Generally, the prevalence of occult hbv infection was low, but however, hbsag negativity was not sufficient to exclude the presence of hbv dna, completely. thus, patients with obi treated with daa against hcv should be monitored for hbv reactivation after daa treatment, even though hbv may be inactive at the time of treatment initiation.

Keywords

Hemophilia, hbv, hcv, hbv reactivation, nested pcr

Study of relation on breast cancer and a / t 251 polymorphism of il-8 gene in iranian female populations by tetra arms pcr

Elham Siasi,[1,*] Marzieh gholami ,[2] Fatemeh ashrafi ,[3]

1. Ph.D, Department of Genetics, Faculity of science, North Tehran Branch, Islamic Azad University, Tehran, Iran.
2. M.Sc, Department of Genetics, Faculity of science, North Tehran Branch, Islamic Azad University, Tehran, Iran.
3. Ph.D, Department of Genetics, Faculity of science, North Tehran Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Breast cancer is one of the most important causes of minatory in women and interleukin 8 gene polymorphism (251 a / t) has a direct impact on the risk of breast cancer. therefore, in this study, was investigated the relationship between breast cancer and 251a / t polymorphism of il-8 gene in iranian females population by tetra arms-pcr.

Methods

In this case-control study, 50 women with breast cancer and 50 healthy women as control group were selected. after extraction of dna, determination of il-8 gene 251 a / t polymorphism genotypes was performed by tetra arms-pcr method.

Results

In control group, distributionof il-8 gene 251 a / t polymorphism frequency for aa, at, and tt genotypes was 0%, 88% and 12%, respectively and for cancer group was 12%, 54% and 34%, respectively. statistical analysis in this study showed no significant difference between aa, at and tt genotypes in the control and cancer groups ($p > 0.05$).

Conclusion

The present study is the first study for relationship between risk of breast cancer and the association of il-8 gene 251 a / t polymorphism in iranian women. the results were indicated that this polymorphism was not associated with breast cancer in this study female patients.

Keywords

Il-8 gene 251 a / t polymorphism, breast cancer, tetra arms-pcr technique.

Study of response to treatment of mek inhibitor in gastric cancer patients with mutation in the kras gene

Mehrasa Asghari,[1,*] Pedram asghari,[2]

1. Department of Biology, Faculty of Basic Sciences, SCIENCE AND RESERCH Branch, Islamic Azad University, Tehran, Iran
2. Department of Biology, Faculty of Basic Sciences, SCIENCE AND RESERCH Branch, Islamic Azad University, Qaemshahr, Iran

Abstract

Introduction

Gastric cancer is the second leading cause of death from cancer worldwide. the death rates increasing in asian countries such as iran. the chemotherapy is one of the ways to treat gastric cancer. activating ras and also kras mutation contributes to the induction of gastric cancer. recent studies suggest that patients with mutated or amplified kras gene are better response to chemotherapy for mek inhibitors. the aim of this study is to evaluate the response of mek inhibitor in gastric cancer patients with mutations in the kras gene.

Methods

In this study, related articles were searched for the response to treatment with mek inhibitors in gastric cancer patients with mutations in kras gene using appropriate keywords in electronic databases including springer, web of science, medline, and science direct.

Results

Various articles have highlighted the relationship between enhancement in the kras mutation, activation of the kras signaling pathway and cell proliferation in gastric cancer. in a study, the overexpression of the kras gene in the signet-ring cell carcinoma (srcc) has been observed. studies have shown that gastric cancer can be controlled by mek inhibitors (selumetinib). mek inhibitors that also function in the mapk pathway suppresses mapk signaling in models harboring active kras gene. the use of mek inhibitors and docetaxel in chemotherapy had beneficial and enduring effects on gastric cancer patients with mutated ras genes, especially in a group of patients who have mutated or amplified kras. studies have identified shp2 as a mediator for body adaptation to treatment with mek inhibitor in human tumors. allosteric inhibition of shp2 enhances the antitumor effect of mek inhibitor treatment and inhibiting them will increase the inhibitory effect of mek on kras-induced cancers. in a study, when administered together, the mek inhibitors and shp2, they could effectively inhibit kras-amplified gastric tumor growth in both cell culture experiments and animal models. only two studies examined the frequency of kras gene in gastric cancer patients in iran, one of which is the research we have done. in this study, the frequency of codon-12 and 13 mutations has been investigated in the kras gene in patients with gastric cancer in the north of iran. in this review, it can be concluded that in patients with gastric cancer that is used chemotherapy for their

treatment, first, it is necessary to examine the changes in the kras gene and then use mek inhibitors in their treatment to obtain better and more effective results.

Conclusion

Clinically, it is important to use a precise and effective method that reflects ras activity to classify patients who can benefit from treatment with a mek inhibitors (selumetinib) in gastric cancer. our study showed that the use of mek inhibitors for treating gastric cancer patients with kras gene mutations could be helpful. therefore, with more research and targeted therapies, the chances of success in treating patients with gastric cancer can be increased.

Keywords

Gastric cancer, mek inhibitors, kras gene mutations

Study of the inhibitory effects of rainbow trout (oncorhynchus mykiss) fed with spirulina platensis on human skin cancer a431 cell line

Poroshad Montazeri shahtoori,[1,*] Mozhgan emtyazjoo,[2]

1. Faculty of marine science and technology, Islamic Azad University, North Tehran Branch, Tehran, Iran
2. Islamic Azad University, North Tehran Branch, Tehran, Iran

Abstract

Introduction

Considering the important role of nutrition in cancer, it is important to find appropriate nutrients to reduce the risk of developing, treating or controlling the progression of the disease. fish is considered by all nutritionists as one of the nutrients that are suitable for preventing the occurrence of various types of cancers. cyanobacter spirulina has been a great deal of food, since long ago. spirulina has a soft wall that contains a mixture of sugars and protein and its difference with other algae is easily digested in its cell wall and has anti-viral, anti-cancer and immune-enhancing properties, while not having an adverse effect on human cells. laboratory studies have shown that multiple use of spirulina or its extract has greatly prevented the progression of cancer. in this study, the comparison of the anti cancer effect of spirulina-treated trout muscle extract on a431 skin cancer cells by mtt and flow cytometry was investigated invitro.

Methods

The cell cytotoxicity effect of fish muscle extract fed with spirulina in different concentrations on a431 cell line of human skin cancer, was investigated in three dietary groups. in order to obtain the inhibitory concentration of the extracts from the control group (without micro-algae feeding), three replications were repeated in three different incubation times in plates of 96 houses using mtt assay. cell viability was also evaluated by trypan blue staining. a flow cytometric supplementary test was also used.

Results

A reduction in the lc50 obtained from the extracts was observed at different time intervals. the best effect was achieved with the lowest concentration of lc50 in inhibiting the proliferation of cancer cells in 48 hours.

Conclusion

The results of this study showed that rainbow trout fed with spirulina has inhibiting effects of effective cell proliferation on skin cancer cells, as well as the time and concentration factor of the extract used can inhibit the proliferation of cancerous skin cells.

Keywords

Spirulina; skin cancer; a431 cell line; rainbow trout (oncorhynchus mykiss).

Study of the production of paclitaxel and its antibacterial properties

Shamsozoha Abolmaali,[1] Shamsozoha abolmaali,[2,*] Shakiba darvish alipour astaneh,[3] Mehdi golestaninasab,[4] Alireza asghari ,[5]

1. Semnan University
2. Semnan University, Semnan, Iran
3. Semnan University, Semnan, Iran
4. Semnan University, Semnan, Iran
5. Semnan University

Abstract

Introduction

Today's, secondary infections are problematic in cancer patients. therefore, evaluation of the anticancer drugs for their anti-bacterial features is reliable. paclitaxel is one of the most effective secondary metabolite against cancer which is extracted from yew trees in very trace amount. currently, researchers focused their attention on endophytes from yew as alternative resources for paclitaxel.

Methods

Previously, endophytic fungus from iranian yew were isolated in our laboratory and analyzed for taxol and or its derivatives production. trichoderma, ddfcc141, has been one of the candidates which further investigated for optimization of taxol compound production in mid medium. taxol extraction was analyzed by tlc and uv spectrophotometry in the companion with standard paclitaxel. in a time course test, the period of production was evaluated in 5, 10, 15, 20, 25 days. to confirm taxol (or its derivatives) production by ddfcc141, dbat gene was amplified by specific primer.

Results

The expected 1700bp dna fragment was observed. according to standard curve of taxol, 605 ppm taxol was detected in mid and in 15 days of incubation. rf of standard taxol 0.91, baccatin 0.58 and purified taxol from ddfcc141 0.85 was obtained. the optimum time for extraction was within 15th days. the antibacterial evaluation showed a halo of about 20 mm against e.coli and proteus (sp).

Conclusion

More chemical and molecular investigations are needed to prove the potential of quercus endophytes for synthesizing taxan like compound.

Keywords

Dbat gene, endophytic fungus, trichoderma, taxol, paclitaxel

Study of the relationship between smoking and ocp pills with breast cancer risk in women with breast cancer referring to shohada hospital from 2013 to 2017

Hesam adin Atashi,[1,*] Mohammad hadizadeh,[2]

1. School of Medicine, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran
2. Department of Surgery, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Breast cancer is the most common cancer in women in all age groups and accounts for 28% of all cancers. it is the second leading cause of death after lung cancer, and its death rate has increased over the past two decades. one of the causes of this disease is the use of oral contraceptives (ocp). the impact of tobacco and smoke on breast cancer is still unclear, but there are some assumptions about the risk of developing this disease before menopause. therefore, the aim of this study was to investigate the relationship between smoking and ocp pills with the risk of breast cancer in women with breast cancer.

Methods

This descriptive study was conducted on 1,200 women with breast cancer who referred to shohadaye tajrish hospital in tehran during the years 2013 to 2017. demographic data, recurrence, metastasis, type of tumor and age of breast cancer patients were collected through their clinical records. the incomplete information was provided by a trained employee by a questionnaire (alpha cronbach s equal of 0.84) and by telephone interview with the patient (in case of being alive) or with one of the first-degree relatives of the patient. data on the expression levels of er, pr, her-2 p53 and ki67 genes were also evaluated. then, the data were analyzed using spss 16 and chi-square and anova tests. the significance level was considered to be pâ‰¤0.05.

Results

The mean age of the patients was 52.86 Â± 14.56. 03.03% of patients smoked and 16% were non-smoker but in direct contact with cigarette smoke. the results of this study showed that smoking reduced the age of breast cancer ($p < 0.01$). however, there was no statistically significant relationship between cigarette smoking and the type of tumor at the time of diagnosis ($p > 0.05$). smoking significantly increased the grade of the disease at the time of diagnosis ($p = 0.03$). 589 non-smoker patients had invasive ductal carcinoma and only 2 smokers with lobular carcinoma. smoking significantly increased the incidence of er, her-2 and p53 genes ($p < 0.05$). according to the results of this study, the use of ocps increased the age of cancer ($p = 0.01$), with the average age of those who consumed ocp for a long time 2 years longer than those who did not take ocp pills. there was no significant relationship between ocp consumption and type of tumor ($p > 0.05$).

Conclusion

There was no statistically significant relationship between cigarette smoking and the type of tumor at the time of diagnosis. but smoking significantly increased the incidence of er, her-2 and p53 genes. although the tumor type was 85% of patients who did not consume ocp at all, there was no significant relationship between ocp and type of tumor in the case of invasive ductal carcinoma.

Keywords

Smoking, breast cancer, ocp, shohada hospital

Study on some probiotic properties of bacillus subtilis isolated from camel milk in semnan

Mahnoosh Parsaeimehr,[1,*] Maedeh hashemi,[2] Fatemeh manteghi,[3]

1. Food Hygiene Department, Faculty of Veterinary Medicine, Semnan University, Semnan, Iran
2. Food Hygiene Department, Faculty of Veterinary Medicine, Semnan University, Semnan, Iran
3. Food Hygiene Department, Faculty of Veterinary Medicine, Semnan University, Semnan, Iran

Abstract

Introduction

Probiotics are live microorganisms which upon ingestion in sufficient concentrations can exert health benefits to the host. actually, the useful effects of probiotics are applied by equilibrating the beneficial gut microflora. therefor before a probiotic can benefit human health, it must fulfill several criteria such as the ability to tolerate acid and bile salts, thatâ€™s how to survive passage through the upper gastro-intestinal tract and arrive alive at its site of action. new probiotic strains should be resistant to these sever condition of human gastrointestinal tract.

Methods

The aim of this study was to find out the ability of bile and acid tolerance of bacillus subtilis isolated from camel milk in semnan. the acid tolerance test was evaluated by culturing in mrs broth under ph values (3.5, 4.5 and 5.5) and for bile resistance test in mrs broth containing bile concentration (0.3, 0.5 and 1%) was prepared. then, the bacterial growth was determined by measuring absorption with a spectrophotometer at 600nm during 24 hours incubation at 37c.

Results

Based on the growth outcomes, bacillus subtilis showed suitable resistance to ph and different concentrations of bile salts.

Conclusion

Results of this study suggest that b. subtilis isolated from camel milk has potential as a probiotic strain.

Keywords

Bacillus subtilis, camel milk, probiotic

Study on the effect of human microbiome on cancer

Fatemeh Yousef saber,[1] Afrouzossadat hosseini-abari,[2,*]

1. University of Isfahan
2. University of Isfahan

Abstract

Introduction

Cancer is leading cause of morbidity and mortality all around the world. itâ€™s a multifaceted condition that a cell begins dividing in an irregular manner due to various factors including a micro-environment rich in inflammatory cells, growth factor, dna damage and activated stroma which induce cell proliferation and inhibit apoptosis among other factors. specific microbes are linked to almost every cancer such as colon, pancreatic, gastric, lung, liver and also prostate, whether by displaying unique characteristics in their ability to regulate changes in their host niche that can increased risk of cancers or by displaying the exactly opposite function to eliminate pathogens and limit the progression of cancers.

Methods

The literature is systematically reviewed, based on clinical documents, related books, scientific articles and also reliable sites including northwestern university knight lab .

Results

Studies indicates that human microbiome which includes the collective genome of bacteria, archaea, fungi, protists and viruses, living in and on the human body, have tumor-suppressive properties. diet, age, antibiotics consumption, genetics and physiology are the reasons of wide microbial diversity. microbiota can also be rearranged for improving cancer treatment specially in personalized medicine.

Conclusion

The significant function of microbiota is protection against colonization by pathogens. unlike pathogenic microbes which cause or develop different cancers, human microbiome has a potential role in a tumor suppression or as a treatment.

Keywords

Cancer, human microbiome

Study the effect of lactobacillus casei and cumin extract on cutaneous wound healing in wistar diabetic rats by gavage method on days 1,3,7,14,21

Atena Bazjoo,[1,*]

1. Department of Microbiology, Science Faculty, Islamic Azad University of Arak, Iran

Abstract

Introduction

A major metabolic disorder with increasing prevalence, diabetes can cause many medical problems. absence of a proper treatment has led to use of bioactive agents such as probiotics for treatment and prevention of this disease. this study examines the effect of lactobacillus casei as an indigenous iranian probiotic, together with cumin extract on cutaneous wound healing.in diabetic male wistar rats.

Methods

Lactobacillus casei which had high exopolysaccharide (eps) production, was selected. then, wistar male rats were divided into 2 groups: 1 group of 10 control group and one experimental group of 15 experimental groups including gavage control, experimental gavage and then rats were etherized and a square scar in the size of 1.5 Ã— 1.5 cm on mice back was made after 24 hours of wound healing, the experimental group of pbs gavage another group were given lactobacillus casei and cumin extract.but the control group did not receive any treatment. the scar area was measured every 3 days. the skin of the killed rats on days 1,3,7,14,21 were taken and under histological and statistical studies. the results of the study were analyzed using the mean Â± sd standard deviation and analyzed by anova

Results

The percentage of healing in the experimental group of gavage was daily (27.72%), (54.73%), (85.14%), (0.98%, 21), respectively. the percentage of healing in the gavage control group was 21.85 (95.21), (43.5: 5), (66.64), (92.62), respectively. the neutrophil count in the experimental group of gavage was (7.33: 3), (8.66.7), (10.33: 14), (3.75: 3) daily, respectively. neutrophile levels in the gavage control group were daily (11: 3), (7.5: 7), (4.5: 14), (25.2: 21), respectively. the amount of macrophage in the experimental group of gavage was (8: 95/8/3), (7/95/7), (4/66: 14), (1,5: 21), respectively. the amount of macrophage in the gavage control group was daily (9.9%), (83.4: 7), (66.4: 14), (21.31%), respectively. the amount of lymphocytes in the experimental group of gavages was (10.56: 3), (10.33: 7), (33.5: 14), (5.5: 21) days, respectively. the amount of lymphocytes in the gavage control group was daily (5.33: 5.3), (9.5: 7), (5.66%), (4.5: 21), respectively.

Conclusion

In this study, we observed that the probiotic bacteria consumed decreased inflammation and contributed to the process of wound healing in the gavage group.

Keywords

Cutaneous wound, exopolysaccharide, healing, lactobacillus casei, probiotic.

Study the effects of escherichia coli inoculation on human sperm parameters

Maryam Ahmadian mahmodabadi,[1] Nassim ghorbanmehr,[2,*] Mansoureh movahedin,[3] Ameneh elikaei,[4] Farzaneh heydari,[5]

1. Biotechnology Department, Faculty of Biological Sciences, Alzahra University
2. Biotechnology Department, Faculty of Biological Sciences, Alzahra University
3. Anatomical sciences Department, Medical Sciences Faculty, Tarbiat Modares University
4. Microbiology Department, Faculty of Biological Sciences, Alzahra University
5. Human I.V.F. Clinic, Nikan Hospital

Abstract

Introduction

Genital tract infection (gti) is one of the most important causes of male infertility. recent studies show that infections are the reason of almost 15% of male infertility cases. the most frequently isolated bacterium in the ejaculation of infertile men is escherichia coli (e.coli). in addition to indirect effects of bacterial infection on sperm quality and function which are mediated by leukocyte activation, it is proposed that these microbial agents can also affect sperm cells directly. finding out how bacterial species interact with the sperm cells plays an important role in the treatment of infertile men with bacteriospermia. the aim of this study was to examine an in vitro direct effect of e.coli on ejaculated human spermatozoa and comparing sperm parameters (motility, morphology, and viability) with and without adding bacteria to the sperm samples.

Methods

The study was carried out on swim-up-separated spermatozoa from 32 normozoospermic samples of men referred to the infertility treatment center, nikan hospital, tehran. after removal of seminal plasma, the sperm suspension of each sample was divided in to two parts; the first part (experimental group) was co-incubated in htf-hsa solution with 5Ã—106cfu/ml e. coli atcc25922 for 90 minutes at 37Â°c, the second part (control group) was incubated at the same condition but without e.coli. sperm parameters were assessed according to world health organization criteria. paired t-test was used to find the significant differences between the experimental group and control group.

Results

There were significant differences in sperm motility, morphology and viability between experimental and control groups ($p<0.05$). occasionally, sperm agglutination mediated by e. coli was also observed in experimental group.

Conclusion

Our data suggests that inoculation of escherichia coli to semen samples can affects sperm quality and function, it seems that the bacterial infection can negatively affects semen samples quality.

Keywords

Sperm; bacterial infections; e.coli; male infertility

Study the interaction of ethylenethiourea (a metabolite of a pesticide) with c-dna via viscometric technique

Zahra Hemati,[1] Soudabeh askari,[2] Soheila kashanian,[3,*] Zohreh shariati,[4]

1. Amoozesh and Parvaresh, Khanmirza area, Chaharmahal and Bakhtiari
2. Biochemistry department, Biology faculty, Tarbiat Modares University, Tehran, IRAN
3. Faculty of Chemistry, Razi University, Kermanshah, IRAN
4. Biology department, Razi University, Kermanshah, IRAN

Abstract

Introduction

Study the interaction of ethylenethiourea (a metabolite of a pesticide) with c-dna via viscometric technique ethylenethiourea (etu) is an environmental degradation product, a metabolite of ethylenebisdithiocarbamate fungicides such as mancozeb, maneb and zineb. mancozeb and maneb have a wide range of approved uses on agricultural and horticultural crops in many countries. the negative effects of etu has been reported, some of these effects include altered thyroid function, effects on enzyme induction or inhibition, gene expression. while etu induces a variety of genotoxic endpoints, to our best knowledge, a few in-vitro studies exist about the interaction potential of etu with dna. this study investigated the etu effects of dna viscosity. the current study investigated the conformational change in dna induced by etu that may cause dna damages leading to genetic diseases.

Methods

The interaction of native calf thymus dna with ethylenethiourea (etu), in 10 mm hepes aqueous solutions at neutral ph=7.2, has been investigated by viscosimetric technique.

Results

The amount of 5.0 Ã— 10-5 m dna solutions in the presence of increasing amounts of etu was used to evaluate the dna viscosity. etu induced relative increase in specific viscosity of dna.

Conclusion

In this case, there is in fact a small increase in the relative viscosity of dna by increasing the concentration of the etu complex. it has been reported [50-53] that a compound binding to dna without intercalation induces only small changes in the viscosity of dna, while drastic increments of the viscosity were observed in cases of ascertained dna intercalation by chemicals. moreover, the results obtained show that the observed small linear increase of the relative viscosity of the solution, with the increase of the etu concentration, is essentially attributable to the groove interaction through hydrogen bonding. therefore, etu can cause obvious conformational changes in the dna structure that indicates the potential toxicity of etu.

Keywords

C-dna, pesticide, ethylenethiourea, viscometry

Subclinical hypothyroidism increases serum ldl-c levels via pcsk9.

Monire sadat Fazaeli,[1,*] Alireza khoshdel ,[2] Mohammad reza shafiepour,[3] Mohadese rohban,[4]

2. Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran
3. Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran
4. Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran

Abstract

Introduction

It has been proven that serum low-density lipoprotein cholesterol (ldl-c) levels increase in overt hypothyroidism (oh). but this issue with subclinical hypothyroidism (sh) is still controversial. some studies suggest that sh cannot increase the lipid profile, including ldl-c, but some results suggest that it can be effective in increasing the levels of ldl-c by regulation of proprotein convertase subtilisin/kexin type 9 (pcsk9). pcsk9 is a serine protease and a secreted protein which increases cholesterol levels in plasma via inducing degradation of low-density lipoprotein receptor (ldlr). in this study, we examine the levels of ldl-c and pcsk9 and their correlation in sh patients and controls.

Methods

Data and laboratory characteristics including serum tsh, ft4, ldl-c, hdl-c and pcsk9 levels were evaluated from 20 newly diagnosed patients with sh and 20 healthy subjects in a cross-sectional study. then statistical analysis and the correlation between the obtained data were examined.

Results

Serum levels of ldl-c and pcsk9 were significantly higher in the patient group compared to controls, and they have a significant negative correlation with ft4. hdl-c levels in sh patients were not different from the controls.

Conclusion

Our study indicates that ldl-c level increases in sh patients and its level has a significant positive correlation with pcsk9 level.

Keywords

Subclinical hypothyroidism - low-density lipoprotein cholesterol - proprotein convertase subtilisin

Survey of relationship between snacks and anthropometric indices in girl students of lorestan university of medical sciences in 2017

Zainab Shateri,[1] Mojgan khosravi,[2,*]

1. Ahvaz Jondishapour University of Medical Sciences, Ahvaz, Iran
2. Lorestan University of Medical Sciences, Khorramabad, Iran

Abstract

Introduction

Inappropriate food patterns are one of the proven and variable causes of obesity and choosing of healthy snacks plays an important role in health of people. the present study was conducted to evaluate the relationship between snacks and anthropometric indices.

Methods

In this cross-sectional study, 130 female students entered the study from lorestan university of medical sciences. a questionnaire containing common snacks was used for collecting information. also, the anthropometric information of the subjects was collected using the seca, strip meter and related formulas. pearson correlation coefficient was used to determine the relationship between snacks and anthropometric measurements. data was analyzed by spss software version 17.

Results

The mean of age and weight of the participants were 20.61 and 57.94, respectively. low fat milk showed a negative and significant correlation with body mass index ($r = -0.20$, $p = 0.02$). in contrast, ice cream and fast food indicated a positive and significant correlation with body mass index ($r = 0.35$, $p < 0.001$ and $r = 0.43$, $p < 0.001$), weight ($r = 0.26$, $p = 0.002$ and $r = 0.34$, $p <0.001$), waist circumference ($r = 0.26$, $p = 0.003$ and $r = 0.22$, $p = 0.01$) and waist to hip ratio ($r = 0.18$, $p=0.03$ and $r = 0.19$, $p=0.02$), respectively. also snacks of chips and puffs, sweets and desserts illustrated positive and significant correlation with body mass index ($r = 0.23$, $p = 0.003$ and $r = 0.33$, $p < 0.001$), weight ($r = 0.18$, $p = 0.03$ and $r = 0.32$, $p < 0.001$), waist circumference ($r = 0.17$, $p = 0.04$ and $r = 0.26$, $p = 0.002$), accordingly.

Conclusion

The present study indicated that there is a direct relationship between fast foods, ice cream, chips, sweets, desserts and anthropometric indices. in this study, with the separation of common snacks, it was shown that type of snack plays an important role in the weight of individuals and we cannot merely consider frequency of intake of snacks associated with obesity or weight loss. the results showed that healthy snacks and unhealthy snacks could have beneficial and harmful effects on anthropometric indices, respectively. according to research findings, it is suggested that people choice healthy snacks to manage

their weight and experience a healthy life. so, by selecting healthy snacks, they can prevent from diseases that due to overweight and obesity.

Keywords

Snacks, anthropometry, indices, girl students, lorestan

Surveying on in vitro antibacterial activity of chenopodium album striatum

Negin Khomarlou,[1] Parviz aberoomand-azar,[2] Ardalan pasdaran lashgari,[3] Ali hakakian,[4,*] Reza ranjbar,[5] S. a. ayatollahi,[6]

1. Department of Chemistry, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Chemistry, Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Research Center for Prevention of Oral and Dental Disease, Baqiyatallah University of Medical Sciences, Tehran, Iran
4. Faculty Member of Production and Research Complex, Pasteur Institute of Iran
5. Molecular Biology Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran
6. Phytochemistry Research Center and Pharmacognosy Department, Shahid Beheshti University of Medicinal Sciences, Tehran, Iran.

Abstract

Introduction

In recent years, there is a significant interest in medicinal plants and their metabolites because most of them have several advantages such as efficacy, cultural acceptability, and better compatibility with human body, as well as lesser side effects. on the other hand, antibiotic resistance has become a serious and widespread problem in developing countries because of inappropriate usage, abusive and over prescription of antibiotics causing mortality each year. global emergence of resistant bacteria is the result of the ineffectiveness of current antibiotics and drugs causing treatment failure. hence, there is a growing interest in alternative therapy and therapeutic use of natural products especially medicinal plants. essential oil of plants can inhibit the growth of broad spectrum of pathogenic microorganisms drawing the attention for their biological and bioactive compounds with antimicrobial activity. many chenopodium species as well as chenopodium album were reported to have numerous medicinal properties such as antipruritic, antibacterial, antifungal, and anticancer effect. the aim of this study was to screen the in vitro antimicrobial activity of the ch. album subsp. striatum as potential sources of natural antimicrobial agents. ch. album striatum has been used locally for its traditional and medicinal properties, however, its efficacies against mdr bacteria have not been studied so in this study we are intended for retrieving the attention of scientific community on the antibacterial activity of essential oil and provide to develop new drug from natural products because we believe their constituents can be considered in future for more clinical investigations and as adjuvants to current medications. the present study was designed to determine the role of the essential oil of ch. album subsp. striatum for potential antibacterial activity according to standard protocols by agar-based methods (well and disk diffusion) and mic, mbc tests against some selected mdr gram-positive and gram-negative bacteria.

Methods

Ch. album subsp. striatum was obtained from tissue culture. the shade-dried plant material (500 g) were subjected to hydrodistillation for 4 h using clevenger-type apparatus. the used gram-positive and gram-negative species were staphylococcus aureus, escherichia coli, shigella flexneri, sh. sonnei, sh.

dysenteriae, salmonella typhimurium, s. enteritidis, and s. infantis. bacteria species were taken from isolated specimens which exhibited resistance to some antibiotics in hospitalized patients. the hydrodistilled essential oil was first dissolved up to 5% v/v of total essential oil in dmso (dimethyl sulfoxide) to the final concentration of 10 mg/ml for mic (minimum inhibitory concentration) and mbc (minimum bactericidal concentration) assay and 35, 40, 45, 50, 55, 60 mg/ml for agar well and disc diffusion methods. the protocol of the study was based on clsi guidelines.

Results

The result of current research revealed considerable antibacterial activity against mdr microorganism. the inhibition zones were in the range of 7.0Â±0.6 mm to 15.0Â±1.0 mm in well diffusion method and 7.0Â±0.0 mm to 16.0Â±0.6 mm in disc diffusion method. the mic value ranged from 0.31 mg/ml to 2.5 mg/ml and mbc value of the essential oil ranged from 0.62 mg/ml to 5 mg/ml. the essential oil showed greater inhibitory effect on the growth of s. typhimurium and sh. dysenteriae, while it had no antimicrobial effect against s. enteritidis by microdilution methods. it is imperative that less expensive antibacterial agents should be developed to cure patients, regardless of financial status so medicinal plants can be the best option. some medicinal plants have been known for their antibacterial properties, but their efficacies against mdr bacteria have not been well-documented in the medicinal literature. ch. album subsp. striatum showed significant antagonist activities against mdr gram-positive and gram-negative bacteria. varying agar well and disc diffusion, mic and mbc values could be attributed to the reinforced defense mechanism acquired by mdr bacteria.

Conclusion

The data presented in this study describe the broad-spectrum antimicrobial activity of ch. album subsp. striatum essential oil as a novel and cost-effective antibacterial agent against mdr bacteria. in addition, it also provide a basis for reviving investigation on the biopharmaceutical diversity of essential oils. additional and complementary studies are required concerning phytochemical screening, physiological analysis, isolation, purification and quantification of bioactive components of the plant for its in vivo assessment.

Keywords

Chenopodium album subsp. striatum, antibacterial activity, multidrug-resistant bacteria,

Swimming training by affecting the pancreatic level of sirt1 protein, improves metabolic conditions, and insulin sensitivity in type 2 diabetic male rats

Saber Ghaderpour,[1] Rafighe ghiasi,[2,*]

1. 1 Department of Physiology, Tabriz University of Medical Sciences, Tabriz- Iran 2 Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz-Iran
2. 1 Department of Physiology, Tabriz University of Medical Sciences, Tabriz- Iran 2 Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz-Iran

Abstract

Introduction

Type 2 diabetes is a metabolic disorder, which characterized by insulin resistance and a disturbance in the metabolism of lipids, carbohydrates, and hyperglycemia. recent studies have been recommended that defect and reduction of sirt1 (a nad-dependent class iii histone deacetylase) activity may be related with metabolic diseases such as atherosclerosis and t2dm. this study aimed to evaluate the effect of swimming training on the pancreatic level of sirt1 protein, metabolic conditions, and insulin sensitivity in type 2 diabetic male rats.

Methods

28 male rats were allocated into four groups: control (con), exercise (exe), diabetes (dia) and diabetic exercise (dia- exe) (n=7). diabetes induced by a high-fat diet (hfd) for 4 weeks and a low dose of stz(35 mg/kg, ip). 7days after confirming of diabetes, the rats swam in the exercise groups for 12 weeks. at the end of the intervention and after the sedation with ketamine and xylazine, the blood samples and pancreatic tissue was prepared for biochemical measurements and pancreatic levels of sirt1 protein.

Results

This study indicated a significant decrease ($p<0.01$, $p<0.05$) in the pancreatic level of sirt1 protein and hdl, quiki (quantitative insulin sensitivity check index) and a significant disturbance ($p<0.05$) in the metabolic parameters (lipid profile and fbs). swimming training significantly ($p<0.01$, $p<0.05$) increased the pancreatic level of sirt1 protein and improved the metabolic parameters and insulin sensitivity.

Conclusion

These results suggested that swimming training by increasing the pancreatic level of sirt1 protein improved insulin sensitivity and metabolic disorder. these study findings suggested that the content of the expression of sirt1 in pancreatic tissue may be a promising novel therapeutic target for diabetic complications.

Keywords

Diabetes; swimming training; sirt1; insulin sensitivity

Synergistic effect of kras sirna and nf-Ä¸b inhibitor in suppression of lung cancer

Shadi Pashapour,[1] Safar farajnia,[2,*]

1. Department of genetic, Tabriz branch, Islamic Azad University, Tabriz, Iran
2. Biotechnology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Introduction

Lung cancer is the main origin of mortality among cancers with less than 5 years survival rate for both men and women worldwide. kras and nf-Ä¸b signaling pathways have a critical role in the proliferation and progression of various cancers, including lung cancer. new theraputic approaches for lung cancer treatment is to target oncogenes like kras, map kinase, and nf-Îºb to disrupt signaling pathways related to proliferation and growth of cancer cells. kras mutation is a negative factor in various cancers including nsclc and complicate the therapeutic approaches with adjuvant chemotherapy. this research dedicated to analysis the effects of nf-Îºb inhabitor (ikk-2) and kras sirna in lung adenocarcinoma cancer cells proliferation and apoptosis.

Methods

the a549 lung cancer cells were treated with kras sirna and nf-Îºb inhibitor alone or in combination. the cytotoxic effects of kras sirna and nf-Ä¸b inhibitor were determined using mtt assay. relative kras and nf-Ä¸b mrna levels were measured by qrt-pcr. induction of apoptosis was measured by facs analysis.

Results

The expression of mrna related to kras gene was reduced to 26.7%, respectively . also, mtt and facs assay results showed that treatment with kras sirna and nf-Ä¸b inhibitor results in reduction of the cell viability increase of apoptosis.

Conclusion

The results of this study indicated that kras and nf-Ä¸b signaling pathways might play an important role in the development and growth of lung cancer and might be a potential therapeutic target for treatment of lung cancer.

Keywords

Nf-Ä¸b inhibitor, kras sirna, lung cancer.

Synthesis and characterization of hybrid agnps-fgf-1 system for biomedical applications

Mahsa Nemati,[1,*] Tahereh tohidi moghadam,[2] Bahram daraei,[3] Bijan ranjbar,[4]

3. Faculty of Pharmacy, Shaheed Beheshti University of Medical Sciences, Tehran, PO Box 14155-6153, Iran

Abstract

Introduction

: designing hybrid systems of nanoparticles and biomolecules with important role in biology and medicine has attracted significant attention in the field of nanobiotechnology. considering the importance of biophysical and biochemical studies in designing nanocarrier systems, study of the interaction between particular biomolecules and nanoparticles of interest is very important. acidic fibroblast growth factor (fgf1) is a biomolecule that plays an important role in cell growth, cell proliferation, cell differentiation, stress response and wound healing process. as the nanocarrier counterpart, agnps have shown remarkable properties such as wound healing and heat-resistance as well as anti-bacterial, -fungi, -inflammatory activity. therefore, biophysical studies on interactions between these nanoparticles and fgf1 can be considered as a critical step before designing hybrid systems with accelerating property in wound healing.

Methods

In this study, agnps were synthesized by chemical reduction method and characterized by uv-visible spectroscopy and dynamic light scattering. complexes of agnps- fgf1 (with various concentrations of the nanoparticles) were analyzed by circular dichroism spectropolarimetry and fluorescence spectroscopy at physiological ph, 37 Â°c.

Results

As the results showed, the secondary structure of fgf1 altered and its rigidity decreased upon interaction with various concentrations of agnps

Conclusion

. results of this investigation encourage conducting a series of fundamental studies on the structure and function of the bio and nano components of the candidate hybrid structure, prior to the development of any novel nano drug delivery systems.

Keywords

Nanocarrier, acidic fibroblast growth factor, silver nanoparticles, circular dichroism

Synthesis of aptamer decorated dextran coated dendritic mesoporous silica hybrid nanoparticles for colon adenocarcinoma

Mahsa Zahiri,[1] Maryam babaei,[2] Mohammad ramezani,[3] Khalil abnous,[4] Seyed mohammad taghdisi,[5] Mona alibolandi,[6,*]

1. 1Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran
2. 1Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran
3. 1Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran
4. 1Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran
5. 2Targeted Drug Delivery Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran
6. 1Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Introduction

In spite of the fact that therapeutic approaches including surgery, conventional chemotherapy and radiotherapy have applied for many cancer patients, cancer is still one of the most disastrous diseases which threatens human health. it is evaluated that colorectal cancer is the third deadly malignancy in human. to overcome colon cancer usage of the aforementioned therapeutic approaches has been restricted due to side effects, for example, poor selectivity, cancer resistance, and systemic toxicity. drug delivery systems are efficient systems for local drug delivery at the tumor site without leakage before attaining to the specific organ. silica-based nanoparticles among different nanocarriers which are used in cancer field stand out as the beneficial inorganic carriers for transferring and loading drugs owing to their tolerable surfaces, pore volume, high chemical stability, highly ordered channels. nowadays dendritic mesoporous silica nanoparticles (dmsns) due to their intrinsic physicochemical properties such as their special center-radial mesopore structures, widespread pore size, large mesopore channels and have open 3d dendritic superstructures are developing as an effective nanocarrier for biomedical purposes. in the current study, we report the synthesis and characterization of aptamer-targeted dmsn decorated with dextran for controlled release of doxorubicin (dox). physicochemical properties and the ability of this system for encapsulation and controlled release of doxorubicin was evaluated.

Methods

Dmsns synthesis through sol-gel method. then dextran was electrostatically decorated on the surface of dmsn nanoparticle. after that dox was loaded through the soaking procedure. then targeted and non-

targeted systems were evaluated in vitro in terms of their cellular internalization, toxicity, and controlled release efficiency. moreover, dextran decorated dmsn characterized using dls, sem and, tga.

Results

Cellular uptake and mtt assay demonstrated that the developed aptamer-dextran-dmsn-dox had higher cytotoxicity than non-targeted dextran-dmsn-dox in cell cultures. the prepared aptamer-dextran-dmsn-dox system was capable to control the dox release in ph 7.4 while the release of drug was accelerated at ph 5.5.

Conclusion

This work provides a proof-of-concept for the use of this novel nanoparticle-based dmsnps for effective killing of colon cancer cells

Keywords

Dendritic mesoporous silica nanoparticle, dextran, doxorubicin, targeted drug delivery

Synthesis of carboxylated gold nanoparticles for conjugation to anticancer peptide

Pegah Zanjanchi,[1] Morteza shourian,[2] Hassan mohabatkar,[3] Mohsen asghari,[4,*]

1. University of Isfahan
2. University of Guilan
3. University of Isfahan
4. University of Guilan

Abstract

Introduction

Nowadays, nanotechnology has great potential as a novel technique for precise diagnosis, early detection, and treatment of diseases. common nanomaterials are used as beneficial tools for targeting different types of therapeutic agents, including carbon nanotubes, quantum dots, liposomes, micelles, polymeric, graphene, gold nanoparticles (au nps), ferroferric oxide nanoparticles and so on. recently, among the various types of nanomaterials, the biomedical consumption of metallic nanoparticles, especially gold nanoparticles, has attracted a lot of attention because of their unique properties. these days, gold nanoparticles due to their nontoxicity, biocompatibility, ease of synthesis and surface functionalization have been chosen for different kinds of biomedical applications such as molecular imaging, drug carriers, biosensing, killers of cancer cells by hyperthermia treatment and etc. the conjugation of gold nps-drug in comparison to the free drug was shown to increase drug availability in circulation. on the other hand, most of the studies dedicated to cancer treatment have shown that angiogenesis plays an important role in the growth and metastasis of solid tumors. so treatments by anti-angiogenic agents is a widespread means of cancer treatment. one of the most important angiogenesis inducers is vascular endothelial growth factor (vegf). we have previously designed a peptide which competes with vegf and inhibits angiogenesis and thereby prevent tumor growth. in the present study, to increase the longevity of this peptide, we developed a drug delivery system by conjugating the modified gold nps.

Methods

Au nps were synthesized according to the torkevich method with little modifications by addition of trisodium citrate solution to aqueous solution of haucl4 for reduction of chloroauric acid. following that, their surface was modified by using 11-mercaptoundecanoic acid / 11-mercapto undecanol solution (mua/mu; 8:1 in 2:1 h2o/etoh) to improve the binding ability of the au nps with the designed peptide. then, for activation of carboxyl groups of mua/mu for binding to the amine group of peptide, mes buffer containing edc/nhs were used. finally, the desired peptide was dissolved in buffered dmso and then this solution was added to coated nanoparticles for synthesis of au@mua/ma@peptide nps. progressive characterization techniques including uv-vis spectroscopy, transmission electron microscope (tem), dynamic light scattering (dls), zeta potential and ftir were applied to assess the nano-dimension, dispersity, surface charge and stability of au nps and au@mua/ma@peptide nps, respectively.

Results

Uv-vis spectroscopy as the most basic and appropriate method was used to evaluate the size of gnps and gnps-peptide in suspension. the diameter of the au nps and au-peptide nps were figured out by dls approximately under 20 nm (16 nm) and 40 nm, respectively, with a low trisodium. tem was used as a confirmation method for proofing the nano size of this compounds. also, the surface charge in the zeta potential for the free gold nps was negative (around -44) but the surface charge after conjugating au nps with was positive. these results confirmed the successful surface modification through binding desired peptide.

Conclusion

These conjugates could be designed in such a way as to deliver drugs in lower dose with fewer side effects by targeting specific cells especially cancer cells. synthesized au-peptide nanoparticles can be applied for the increased longevity of antiangiogenic peptides for therapeutic purposes.

Keywords

Gold nanoparticles, bioconjugation, nanoparticle characterization, agiogenesis, peptide

Synthesis of the nano silica composite : application in cancer therapy

Mehrgan Ghazaeian,[1,*] Mohammadreza sazegar,[2] Ali mahmoudi,[3]

1. Islamic azad university of Tehran north branch
2. Islamic azad university of Tehran north branch
3. Islamic azad university of Tehran north branch

Abstract

Introduction

In this work, we synthesized the novel composites based on mesoporous silica nanoparticles (msn) to use in photodynamic therapy (pdt). this composite included msn/ photosensitizer (ps), protoporphyrin ix (pp ix) and titanium oxide.

Methods

In the nanocomposite, ps/pp ix was covalently conjugated to a mesoporous silica network, and titanium oxide (with ability to stimulate ros optical production which cause damage to the cancerous cell) was coated onto the surface of composite by both coordination and electrostatic interaction. silica nanoparticles have been used to bind with the light- sensitizers from porphyrin family. silica-based nanomateriales have been developed as a substitute for the polymeric nanoparticles.

Results

These nanoparticles are resistant toward the microbial invasion, and their size, shape and the porosity can be easily controlled during the preparation process. in addition, the nanoparticles release their encapsulated compounds even in the unconventional ph and temperature conditions, therefore they can be used in pdt.

Conclusion

The mesoporous silica based composite possesses the good physicochemical properties can be applied as the suitable supports to carry the ps/ti-grafted pp ix as a good agent to damage the cell cancers via pdt method.

Keywords

Pdt, msn, photosensitizer (ps), protoporphyrin ix, cancer therapy

Synthesis, characterization and antimicrobial activity of monodisperse selenium nanoparticles on streptococcus mutans

Marzieh Khayam nekuii,[1] Tahereh tohidi moghadam,[2,*] Bita bakhshi,[3]

1. Department of Nanobiotechnology, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran
2. Department of Nanobiotechnology, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran
3. Department of Bacteriology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Abstract

Introduction

Over the past few decades, excessive and inappropriate use of antibiotics has led to the emergence of drug-resistant bacteria. the use of nanotechnology in biology has provided many opportunities in many areas, including tissue engineering, drug delivery, diagnosis, imaging and the fight against bacterial infections. with the need for new antimicrobial agents, nanoparticles have been proposed for the treatment of infections because they use different mechanisms to kill bacteria than conventional antibiotics. selenium nanoparticles (senps) Â¬have recently drawn big attention due to its excellent antimicrobial activity and less toxic compared with many metal-based nanomaterials. the objective of this investigation was to analyze the antimicrobial activity of senps against common biofilm-forming dental plaque gram-positive bacterium streptococcus mutans wich is the main etiological agent of dental caries worldwide.

Methods

senps were synthesized by a facile reduction method. ascorbic acid was used as a reduction agent and a common emulsifier polysorbate 20 as a surfactant was added to control the size of nanoparticles. the quality and size of the nanoparticles was characterized by scanning electron microscopy (sem), dynamic light scattering (dls), and ultravioletâ€“visible (uvâ€“vis) absorption spectroscopy. concentration of selenium nanoparticles was assessed by icp analysis. antimicrobial potential of polysorbate 20 stabilized senps was tested in vitro using streptococcus mutans by disk diffusion method.

Results

Analysis of the purified nanoparticles indicated that stable senps have been synthesized with average diameter of 33 nm, with a narrow size distribution (pdi = 0.05) and 1300 ppm concentration. the colloidal senps showed antimicrobial activity with inhibition zone of 3.5mm against s. mutans

Conclusion

Results of this investigation encourage the possibility of synthesis of stable colloids of senps with narrow size distribution which can be fulfilled through chemical reduction method, showing good antimicrobial

activity against s. mutans . this paves the way to utilize senps as potential candidates for developing a new generation of antibacterial agent for future biomedical applications.

Keywords

Selenium nanoparticles, polysorbate 20, antimicrobial activity

Synthesis, characterization and study of biological activities a novel cadmium(ii) complex of bipyridine derivatives

Tahere Kondori,[1,*] Niloufarakbarzadeh torbati,[2]

1. University of Sistan and Baluchestan
2. University of Sistan and Baluchestan

Abstract

Introduction

The cadmium(ii) complex of the formula [cd(5,5Â´-dmbipy)2(ac(2].2h2o (1), where 5,5Â´-dmbipy is 5,5Â´-dimethyl-2,2Â´-bipyridine and ac is acetate, was synthesized and characterized by ft-ir, uvâ€“vis ,1hnmr spectroscopy, elemental analysis and single-crystal x-ray diffraction analysis. the antibacterial effects of complex (1) have also been examined in vitro against standard bacterial strains. the mic, mbc and inhibition zones of the complex 1 and its ligand (5,5Â´-dmbipy) and its metal salt (cd(ch3coo(2Î‡2h2o) against the growth of microorganisms (one gram- positive standard strain of staphylococcus aureus, and one gram-negative standard strain of escherichia coli) are obtained.

Methods

A solution of cd(ch3coo(2Î‡2h2o (0.04 g, 0.17 mmol) in h2o was added to solution of 5,5Â´dimethyl-2,2Â´bipyridine ligand (0.09 g, 0.51 mmol) that dissolved in methanol-h2o (1:1) (10 ml). the resulting solution was stirred for 3h at 50Â°c and left to slowly evaporate at room temperature. after 4 days, crystals of metal complex 1 were isolated. (mic) and (mbc) by the broth macrodilution assay in sterile test tubes, and the inhibition zones (iz) by the disk diffusion method. stock solution of the complex was prepared in distilled water and dmso. all the inoculated plates were incubated at 37Â°c for 24 h. this inhibition zone (iz) assay was performed three times and results averaged.

Results

The mic, mbc and inhibition zones of the complex 1 and its ligand and its metal salt against the growth of microorganisms are obtained. cefazolin was used as negative control for gram negative antibacterial activity. the results show that complex 1 possesses antibacterial activity, and that this activity is higher than that of the free ligand. this conforms to the overtones concept and tweedyâ€™s chelation theory.

Conclusion

The results of antibacterial show that complex 1 possess antibacterial activity, and that this activity is higher than that of the free ligand. comparison of the antimicrobial activities of the synthesized cadmium compound with similar complexes in the literature shows that our new compound are more strong.

Keywords

Cd(ii) complex, 5,5Â´-dmbipy, spectroscopy, antibacterial effects

Synthesis, characterization and study of biological activities la(iii) complex of bipyridine derivatives

Tahere Kondori,[1,*] Niloufarakbarzadeh torbati,[2]

Abstract

Introduction

The la(iii) complex, was synthesized and characterized by spectroscopy of methods and single-crystal. the antibacterial effects of complex have also been examined in vitro against standard bacterial strains.mic, mbc and inhibition zones of the complex and its ligand and its metal salt against the growth of microorganisms gram- positive (e-coli) and gram-negative(s. aureus) are obtained.

Methods

A solution of la(no3)3Î‡6h2o (1mmol) in h2o was added to solution of 5,5Â´dimethyl-2,2Â´bipyridine ligand (2 mmol) that dissolved in methanol-h2o (1:1) (10 ml). the resulting solution was stirred for and left to slowly evaporate at room temperature.(mic) and (mbc) by the broth macrodilution assay in sterile test tubes, and the inhibition zones (iz) by the disk diffusion method. stock solution of the complex was prepared in distilled water and dmso. all the inoculated plates were incubated at 37Â°c for 24 h. this inhibition zone (iz) assay was performed three times and results averaged.

Results

The mic, mbc and inhibition zones of the complex la(iii) and its ligand and its metal salt against the growth of microorganisms are obtained. cefazolin was used as negative control for gram negative antibacterial activity. the results show that complex la(iii) possesses antibacterial activity, and that this activity is higher than that of the free ligand. this conforms to the overtones concept and tweedyâ€™s chelation theory.

Conclusion

The results of antibacterial show that complex la(iii) possess antibacterial activity, and that this activity is higher than that of the free ligand. comparison of the antimicrobial activities of the synthesized la(iii) compound with similar complexes in the literature shows that our new compound are more strong

Keywords

La(iii) complex, spectroscopy, antibacterial effects

Synthesize nano systems containing curcumin as a chemotherapy drug with the aim of affecting ovarian cancer a2780s cell line

Najmeh alsadat Abtahi,[1] Bibi fatemeh haghirosadat,[2] Seyed mohammad moosavizadeh,[3] Javad zavar reza,[4,*]

1. department of biochemistry, school of medicine, shahid sadoughi university of medical sciences(international campus)
2. department of advanced medical sciences and technologies, school of paramedicine, shahid sadoughi university of medical sciences
3. department of laboratory sciences, school of paramedicine, shahid sadoughi university of medical sciences
4. department of biochemistry, faculty of medicine, shahid sadoughi university of medical sciences

Abstract

Introduction

Cancer, also known as a malignant tumor or malignant neoplasm, is a group of 150 diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. ovarian cancer is the most lethal gynecological cancer and the fifth common cause of cancer mortality in women around the world. curcumin (c21h20o6) is a natural yellow compound which typically found in curcuma longa that is regarded as a natural polyphenolic antioxidant presented in many kinds of herbs. curcumin has been exhibited multiple therapeutic relevance including anti-cancer, anti-inflammatory, antioxidant, antimicrobial, anti-rheumatic, and hepatoprotective activities. in addition, poor absorption and rapid metabolism of curcumin severely limit its bioavailability. niosomes are the particles that can solve the problems like that. the purpose of this research is to synthesize nano system that containing curcumin with the aim of affecting ovarian cancer a2780s cell line.

Methods

Nanoniosomes containing tween 80, tween 60, cholesterol, dsp and curcumin synthesized by thinâ€“film hydration method. entrapment efficiency (ee) is measured with spectrophotometer and also drug controlled-release from nanoparticles is evaluated by dialysis method. the average of size and zeta potential of nanoparticles are assessed with dls.

Results

Curcumin encapsulation in nanoniosomes was more than 90% and the drug release rate from nanocarriers showed an acceptable profile that was 29% in 48h in normal cell situation (37c and ph 7.4). the mean diameter of noisomes was smaller than 100nm and the zeta potential of them was positive.

Conclusion

In this study, a significant amount of curcumin encapsulated in niosomes. drug release rate from nanocarriers showed a controlled and time dependent profile. cationic potential shows that nanocarriers can entire cells easily.

Keywords

Ovarian cancer, curcumin, drug delivery, nanoniosome

Synthesize nano systems containing doxorubicin as a chemotherapy drug with the aim of affecting lung cancer a549 cell line

Seyed mohammad Moosavizadeh ,[1] Komeil aghaei kouhi,[2] Najmeh alsadat abtahi,[3] Bibi fatemeh haghirosadat,[4,*]

1. Department of Laboratory Sciences, School of paramedicine, Shahid Sadoughi university of Medical Sciences
2. Department of Laboratory Sciences, School of paramedicine, Shahid Sadoughi university of Medical Sciences
3. department of biochemistry, school of medicine, shahid sadoughi university of medical sciences(international campus)
4. Department of Advanced Medical Sciences and Technologies, School of Paramedicine, Shahid Sadoughi University of Medical Sciences

Abstract

Introduction

Nowadays cancer is the most important cause of mortality in human societies. lung cancer is the leading cause of death in men and the second one in women who suffered from cancer. doxorubicin is an anti-cancer drug that can be used in chemotherapy but it has some side effects such as cardiac-arrhythmia. it has been proven that nanoscience can increase the effectiveness of treatment while reducing the side effects of drugs. nanoliposome is one of these nanoparticles that can be used in drug delivery. the purpose of this research is to synthesize nano system containing chemotherapy drug with the aim of affecting lung cancer a549 cell line.

Methods

Nanoliposomes containing spc, cholesterol, brij76, dsp-mpeg(2000) and doxorubicin synthesized by thin-film hydration method. entrapment efficiency(ee) is measured with spectrophotometer and also drug controlled-release from nanoparticles is evaluated by dialysis method. the average of size and zeta potential of nanoparticles are assessed with dls.

Results

Doxorubicin encapsulation in liposomes was more than 85% and the drug release rate from nanocarriers showed a controlled and time dependent profile that was 38% in 48h in normal cell situation (37oc and ph:7.4) and 74% in 48h in cancer cell situation (42oc and ph:5.4). the mean diameter of nanoliposomes was smaller than 150nm and the zeta potential of them was negative.

Conclusion

In this study, a significant amount of doxorubicin was encapsulated in liposomes. drug release from nanocarriers showed a slow and continues kinetics. liposomes improve the solubility and bioavailability of the drug for delivering to lung cancer cells. anionic potential indicates that the system is suitable for the cancer cells.

Keywords

LungÂ¬cancer, doxorubicin, drugÂ¬delivery, nanoliposome

Tamoxifen is a putative substrate that affect the ubiquitin-proteasome pathway to the therapy of breast cancer

Milad Rouhimoghadam,[1,*] Shahrokh safarian,[2] Jason s. carroll,[3]

1. Department of Cell and Molecular Biology, School of Biology, College of Science, University of Tehran, Iran
2. Department of Cell and Molecular Biology, School of Biology, College of Science, University of Tehran, Iran
3. Cancer Research UK, University of Cambridge, UK

Abstract

Introduction

Tamoxifen, a synthetic triphenyl-ethylene compound, is a member of a class of anticancer drugs known as selective estrogen receptor modulators. function of the ubiquitin-proteasome pathway is essential for many fundamental cellular processes, including the regulation of receptor signaling pathways, antigen processing, angiogenesis, apoptosis and for processing and degradation of misfolded and short-lived regulatory proteins such as transcription factors. this pathway has been validated as a target for antineoplastic therapy using both in vitro and preclinical models of human malignancies, and is influenced as part of the mechanism of action of certain chemotherapeutic agents.

Methods

Mcf-7 cells were treated with 250Âµm tamoxifen for 48 hours. total rna was extracted from the cells using tripure isolation reagent (roche diagnostics gmbh, germany) according to the kitâ€™s protocol. following rna isolation, creation of an rna-seq library is the next step in transcriptome sequencing. in total, four cdna paired-end libraries were generated for transcriptome sequencing on illumina hiseq 2000 platform.

Results

The obtained raw data were subjected to the gene ontology (go) classification for pathway analysis of the screened degs. go functional enrichment analysis showed that 48 identified overexpressed genes belonged to the positive regulation of protein ubiquitination pathway (go:0031398). in addition to positive-regulation-of-protein-ubiquitination pathway (go:0031398), the ubiquitin-dependent-protein-catabolic process (go:0006511) and protein poly-ubiquitination pathway (go:0000209) play an active role in accelerating of ubiquitination pathways.

Conclusion

Protein degradation through the ubiquitinâ€• dependent proteasomal pathway has been implicated in cellular protein destruction. the ubiquitin-proteasome pathway is just beginning to be exploited as a target

for cancer therapy. in this study, we demonstrate that tamoxifen as a nonsteroidal antiestrogen is able to activate ubiquitin-proteasome pathway.

Keywords

Tamoxifen, ubiquitin, breast cancer, proteasome

Targeting pi3k/akt/mtor signaling in cell lung cancer: basic to clinical studies

Zeinab Zohrabzadeh,[1,*] Mohammad amin dehghani,[2] Reza kiani rad ,[3] Fatemeh dehghani ,[4]

1. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

In human malignancy such as non-small cell lung cancer (nsclc), the pi3k-akt-mtor pathway is normally deregulated. generally, the tumor proliferation, development and growth of nsclc is regulated by the pi3k/akt/mtor pathway, which is targeted by several new inhibitors. in clinical trials or preclinical studies, different types of new inhibitors that target this pathway have been detected.

Methods

In this research, the english article published in the pubmed database were searched using the keywords of mtor inhibitors, targeted therapy, non-small cell lung cancer, pi3k inhibitors, and pi3kakt-mtor pathway.

Results

Various clinical and preclinical studies have assessed different inhibitors of the pi3k pathway. in this regard, the detected inhibitors are dual pi3k-mtor, dual mtorc1-mtorc2, rapamycin and rapalogs for mtor inhibition, pan and selective inhibitors of pi3k, and akt inhibitors. auranofin is a medication approved by food and drug association (dfa) and has confirmed pharmacokinetic and safety profiles in humans. this drug has strong inhibitory effects in multiple sites of the pi3k/atk/mtor axis in human lung cancer cells, which makes it possible to quickly translate its novel use for lung cancer treatment.

Conclusion

According to the results of the study, a potential therapeutic agent in nsclc could be the inhibitors of pi3k signaling. therefore, in anti-lung cancer therapy that is mediated by auranofin, we can inhibit the whole pathway of pi3k/akt/mtor as a new mechanism of action.

Keywords

non-small cell lung cancerâ€• ; pi3kakt-mtor pathway; mtor inhibitor; pi3k inhibitor; targeted therapy

Tetracycline resistance gene (tet a) in escherichia coli strains isolated from biofilm in drinking water system in poultry farms

Mehrdad Ostadpoor,[1,*] Majid gholami- ahangaran,[2] Asiye ahmadi-dastgerdi,[3]

1. Azad University of shahrekord
2. Azad University of shahrekord

Abstract

Introduction

The aim of this study is the occurrence of tetracycline resistance determinant teta gene in escherichia coli (e. coli) strains that isolated from biofilms in dirinking water system in poultry farms

Methods

. for this, 60 samples were obtained from 6 different broiler chicken flocks in isfahan province. identification of e. coli was carried out by performing cultural and biochemical tests. antimicrobial resistance test was carried out using disc diffusion method. the polymerase chain reaction (pcr) was carried out to detect teta gene conferring resistance to tetracycline

Results

The microbiological results showed that 12 samples (20%) were yielded e. coli. 9 isolates (75%) were resistant to tetracycline in disc diffusion method. the results of pcr demonstrated that 33% of the total isolates contained teta gene.

Conclusion

Based on the presence of teta gene in tetracycline resistant e. coli in biofilm of drinking water system in poultry farms, there is a risk that this gene can be easily spread to other bacteria and from chicken to human.

Keywords

Chicken, tetracycline resistance, water supply.

The 511a>g- lepr gene transversion may be a genetic risk factor for idiopathic recurrent miscarriage: a case-control study in the mazandarn population

Masomeh Salehidoon,[1] Abasalt hosseinzadeh colagar,[2,*]

1. Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar
2. Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar

Abstract

Introduction

recurrent miscarriage is a common problem. recurrent miscarriage is determined as the loss of a gestation before 20 weeks. many markers have been introduced in the recurrent miscarriage. one of these markers is the gene encoding the leptin receptor (lepr) protein. the lepr protein categorized as a interleukin6 from the family of type1 cytokines with six isoforms: lepra, b, c, d, e, and leprf gene is one of the major genes on the biological pathway of obesity, before study show that expression of lepra and leprb are effective in stimulating of lh in the rat ovaries

Methods

To investigate the correlation of rs1137100 (511a>g) which is located on exon 6 of lepr with the risk of recurrent miscarriage in the iranian womens population.dna extraction and the sscp have been used for the blood sample of 70 patients and 70 controls participants

Results

Based on the obtained from sscp gel analysis frequency of genotypes that obtained in the controls were 22.8% gg, 51.4% ag and 25.7% aa, and in the cases were 12.8% gg, 61.42% ag and 25.7% aa. also, allelic frequency that calculated in controls were 51.4 and 48.5 percent for a and g allele, and in cases were 56.4 and 43.5 percent for a and g allele. statistical analysis revealed that the distribution of genotypes for 511a>g transition does show significant different (p = 0.36, or=1.26; 95% ci: 0.76-2.1) in case and control groups

Conclusion

Based on, we recommend that, the 511a>g- lepr gene transversion may be a genetic risk factor for idiopathic recurrent miscarriage in the mazandarn female population.

Keywords

Lepr gene; recurrent miscarriage; rs1137100 polymorphism; sscp

The anti alzheimers properties of hydro alcoholic extract of rosemary:

Faezeh Fallah,[1,*] Amir arasteh,[2]

1. Islamic Azad University of Rasht
2. Islamic Azad University of Rasht

Abstract

Introduction

Alzheimer is a type of dementia that causes problems with memory and thinking. the most important factors of alzheimer,s disease are the accumulation of beta amyloid proteins and free radicals in the brain. the purpose of this investigation is analyzing the anti alzheimerï¿½s properties of hydro alcoholic extract of rosemary leaf by anti nano amyloid fibrils and antioxidant methods.

Methods

At first, the leaves of rosemary were powdered and with the help of 96% ethanol, the hydro alcoholic extract of rosemary leaves was prepared. anti alzheimer effect of rosemary extract were measured with investigating by the presence of amyloid strands which done with congored spectroscopy method and by the antioxidant method which done with dpph method.

Results

After preparing the extract with a concentration of 10 mg/ml, the anti alzheimerï¿½s properties of rosemary hydro alcoholic extract were measured. the highest antioxidant activity was observed at the concentration of 10 mg/ml. the anti amyloid activity was observed at the concentration of 0.4 mg / ml of extract.

Conclusion

Due to the antioxidant and anti amyloid properties of the hydro alcoholic extract of rosemary leaves, this medicinal herb can be a perfect alternative for preventing and treating alzheimerï¿½s disease.

Keywords

Rosemary, anti alzheimer

The antioxidant effect of thymosin alpha-1 on a549 lung cancer

Jasmin Kharazmi-khorassani,[1] Ahmad asoodeh,[2,*]

1. Department of chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran;

Abstract

Introduction

Lung cancer also known as lung carcinoma is the second main reason of cancer death among men and women. approximately 14% of cancers are related to lung cancer. the main risk factors of lung cancer are smoking, air pollution and genetic factors. it was showed that oxidative stress which results to increase reactive oxygen species has a major role in the progression of several types of cancer including lung cancer. the production of these species are higher in cancer cells than normal cells. thymosin alpha-1 is considered as an injectable hormone which has been used for the treatment of some diseases such as hepatic b and some cancers. the primary objective of this study was to investigate the effect of thymosin alpha-1 on the generation of reactive oxygen species in a549 lung cells.

Methods

The production of reactive oxygen species was evaluated using dcfh-da probe and the reactive oxygen generation was detected by fluorescence probe called dcfh-da (2, 7-dichlorohydroflurescein diacetate). the plate was read through an excitation of 495 nm and emission of 530 nm and graph was plotted presenting the change at the level of ros.

Results

The result of our research indicated that treated a549 lung cancer cells with thymosin alpha-1 reduced the production of reactive oxygen species.

Conclusion

Our findings suggested that thymosin alpha 1 has antioxidant effect on a549 cell lines due inhibition the generation of reactive oxygen species.

Keywords

Lung cancer; oxidative stress; reactive oxygen species; thymosin alpha-1

The apoptotic effects of progesterone on adenocarcinoma colorectal cancer

Erfaneh Dalghi,[1] erfaneh dalghi,[2,*] Mohadeseh shayghan,[3]

1. Islamic Azad University
2. Islamic Azad University
3. Islamic Azad University
4. Shahid Beheshty University of Medical Sciences

Abstract

Introduction

Sex steroid hormones have diverse effects on cancer cells, however, the cellular and molecular basis is somehow unknown. the aim of this study was to investigate the effects progesterone on apoptosis in adenocarcinoma colorectal cancer cells.

Methods

In this laboratory-experimental study, ht29 cells were purchased from pasture institute and divided into control group and group exposed to cytotoxic dose of progesterone . real-time pcr was used to evaluate bax and bcl2 genes expression levels. the data were statistically analyzed between groups using anova.

Results

Apoptotic bax expression level significantly decreased and anti-apoptotic bcl2 expression level significantly increased ($p<0.01$) and decreased($p<0.05$), respectively in adenocarcinoma colorectal cancer cells exposed to cytotoxic concentration of progesterone in cell culture.

Conclusion

The results of this study indicated that progesterone can induce apoptosis in adenocarcinoma colorectal cancer cells leading to cell death in cancer cells.

Keywords

Progesterone , apoptosis, adenocarcinoma colorectal cancer

The assessment frequency of kras (codon 12, 13) gene mutation in patients with gastric cancer in northern iran

Mehrasa Asghari,[1,*] Anahita nosrati,[2] Iradj maleki,[3]

1. Department of Biology, Faculty of Basic Sciences, SCIENCE AND RESERCH Branch, Islamic Azad University, Tehran, Iran
2. Department of Pathology, Gastrointestinal Cancer Research Center, Imam Hospital, Mazandaran University of Medical Sciences, Sari, Iran
3. Department of Internal Medicine Mazandaran University of Medical Sciences Sari, IRAN

Abstract

Introduction

Gastric cancer is the second most common cancer after lung cancer in the world. the mutation in the kras gene is one of the causes of resistance to chemotherapy and radiotherapy in patients with cancer such as gastric cancer. the aim of this study was to evaluate the frequency of mutations in kras gene (codon 12 and 13) in patients with gastric cancer in northern iran.

Methods

This study was a case-control study including patients with gastric cancer who referred to imam khomeini hospital in sari during the years 2009 to 2015 and were treated. the pcr-rflp method was used in this study. the statistical analysis was performed using spss statistical software on 100 samples of cancer tissue from gastric cancer patients plus 50 samples of healthy tissue obtained from the surgery or endoscopy of the same patients.

Results

There were no cases of mutations in the kras gene (codon 12 and 13) from 100 samples from gastric cancer patients and 50 healthy tissue samples from the same patients

Conclusion

The review and analysis of the mutations of kras gene (codon 12 and 13) in more number of samples using other methods can be helpful in helping the diagnostic and therapeutic process of patients suspected of gastric cancer.

Keywords

Mutation, kras gene, gastric cancer

The association between multiple sclerosis and vitamin d: a comprehensive review

Sheyda Khalilian ,[1,*] Halimeh rezaei,[2]

1. Division of Genetics, Department of Biology, Faculty of sciences, University of Isfahan, Isfahan, IR IRAN

Abstract

Introduction

Multiple sclerosis (ms) is a chronic, neurodegenerative central nervous system disorder with an autoimmune origin. it is typically diagnosed between the third and fourth decade of life, with over 75% frequency in women. genetic, epigenetic, nutrition, climate or environmental factors can affect ms pathogenesis. the role of environmental factors such as vitamin d in progression of ms is complex. vitamin d has multiple functions that are important for the integrity of the immune system. recent genome-wide association studies (gwas), have shown that various single nucleotide polymorphisms (snps) are located in the vicinity of vitamin d receptor genes, which may impact the risk of vitamin d insufficiency and also developing ms. the development of new genetic tools such as chip-seq, has made it possible to recognize that the genomic binding region of the vitamin d receptor (vdr), is responsible for the association between ms and vitamin d. in this review, we try to connect the effect of vitamin d on the pathogenesis of the ms by discussing the vdr cistrome.

Methods

Pubmed, elsevier, and scopus databases were reviewed to introduce the most recent studies.

Results

Pro-inflammatory cytokines such as il-2 ,il-17,â€¦ expressed by the cd4+ t cells, facilitate the chronic inflammation and cause demyelination in cns. specifically the active form of vitamin d can inhibit the transcription of some pro-inflammatory cytokines and in this way, can play an anti-inflammatory role in immune system. vitamin d is identified as a ligand for vdr; factors that modify vdr expression such as methylation of vdr promoter, acetylation of histon 4 in vdr enhancers, levels of mir-125b and also polymorphisms of the vdr gene, can affect the function and metabolism of vitamin d.

Conclusion

Several studies have stated that the frequency of vitamin d deficiency has a significant role in causing the diseases such as ms, also the function of vdr, represents the effect of vitamin d in the body. since, we couldnâ€™t definitely emphasize the association between vdr polymorphisms and ms, further researches are needed to clarify this relationship.

Keywords

Multiple sclerosis, vitamin d, vdr,

The association of sperm dfi with growth factors in fallopian tube

Seyed omidreza Mousavi,[1] Roudabeh mohammadi,[2] Fatemehsadat amjadi,[3] Samaneh aghajanpour,[4] Maryam eslami,[5] Reza aflatoonian,[6,*]

1. 1-1. Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran. 1-2. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
2. 2. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
3. 2. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
4. 2. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran
5. 1. Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran.
6. 2. Department of Endocrinology and Female infertility, Reproductive Biomedicine Research Center, Royan institute for Reproductive Biomedicine, Tehran, Iran

Abstract

Introduction

Fallopian tube is a part of female reproductive system in which fertilization, sperm preservation, capacitation and so on usually occurs. the female reproductive organs are some of the few adult tissues that reveal regular intervals of rapid growth. as with many other tissues, different growth factors like vascular endothelial growth factors (vegfs), fibroblast growth factors (fgfs), heparin-binding egf-like growth factor (hb-egf) and epidermal growth factor (egf) seem to have major effect on the female reproductive tract growth particularly fallopian tubes. the aim of our study is to investigate the influence of sperm dfi on the expression of different growth factors.

Methods

In this study sperm samples from 20 donors with normal features were collected and classified to two groups of normal and abnormal dfi. the third group was fallopian cells without sperm. finally, sperms were co-incubated with fallopian cells for 24h. to evaluate the expression of mentioned growth factors, rna was extracted from cells of different groups, cdna was synthesized and reverse transcriptase polymerase chain reaction (rt-pcr) was performed on the prepared cdna samples with the use of primers designed for vegf, egf, fgf2, hbegf. finally the pcr products were run on % 1.7 gel electrophoresis.

Results

Data analysis indicate that the expression of different growth factors in abnormal dfi group was the lowest and in normal sperm group was lower than the control. however, for accurate investigation more studies should be done.

Conclusion

This study has shown that abnormal dfi can reduce the expression of some growth factors which have essential roles in sperm preservation and fertilization. therefore, this hypothesis might be true that decreased expression of growth factors can disrupt fertilization events.

Keywords

Growth factors, fallopian tube, sperm, dfi

The association of the polymorphism of the gene xrcc1 (arg399gln) with the risk of prostate cancer

Sheida Delkhosh,[1] , farzaneh tafvizi,[2] Zahra tahmasebi fard,[3,*]

1. 0
2. 0

Abstract

Introduction

The xrcc1 gene encodes a protein that is involved in the open editing system, because of the important role of the xrcc1 gene, the polymorphism of this gene can increase the risk of neoplasm in humans. the present study was conducted to find out the relationship between xrcc1 polymorphisms and prostate cancer.

Methods

In this case-control study, 156 patients with prostate cancer and 156 healthy individuals who were geographically matched were included in the study. polymerase chain reaction and restriction fragment length polymorphism (pcr-rflp) were used to determine the genotype. following this, the allelic and genotypic frequencies of snps were analyzed by statistical analysis.

Results

In arg399gln polymorphism, no significant difference was observed in the allele and genotype frequency with the risk of prostate cancer between case and control groups ($p > 0.05$). in addition, arg/gln genotype had a significant difference risk of pca among heavy smokers. also there was not a significant relationship between family history and risk of pca. in addition there was not a significant relationship between gleason score and genotype frequency

Conclusion

The xrcc1 arg399gln polymorphism, was not estimated the risk factor for prostate cancer.

Keywords

Prostate cancer, case-control study, arg399gln polymorphism

The association study of rs13381800 in promoter flanking site of tcf4 gene and schizophrenia among iranian schizophrenic patients

Mohadeseh Agahi,[1] Zahra noormohammadi,[2,*] Iman salahshourifar,[3] Niloufar mahdavi hezaveh,[4]

1. Departmnet of Biology, Science and Research Branch,Islamic Azad University, Tehran, Iran
2. Departmnet of Biology, Science and Research Branch,Islamic Azad University, Tehran, Iran
3. Departmnet of Biology, Science and Research Branch,Islamic Azad University, Tehran, Iran
4. Shaheed Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Schizophrenia is an acute mental disorder and many molecular studies are done to find variation in genes causing schizophrenia. one of the significant candidate genes is transcription factor 4 (tcf4)

Methods

In the present study, the analysis of the association between rs13381800 located in promoter flanking site of tcf4 gene and schizophrenia was performed by the pcr-rflp method with a sample number of 100 patients and 101 healthy individuals

Results

The results showed 0.09 of cc genotype frequency in tcf4 gene in case group of the current study while its alleles frequency was not reported for any similar races in dbsnp. chi-square test of the polymorphism showed no meaningful difference between case and control group for rs13381800 (p=0.38) and the results also represented no existence of a meaningful difference between patient individuals with cc or tt genotypes in the case of sex (p=0.912), smoking (p=0.595), (p=0.451) and treatment response (p=0.714)

Conclusion

The current population was not in hardy-weinberg equilibrium so no models could be predicted for the alleles. regarding the logistic regression result, no relationship between rs13381800 and schizophrenia were found. the study of the polymorphisms in tcf4 gene and their association with schizophrenia help us in a better understanding of this mental disorder and it can be useful for designing new treatments for the schizophrenia in the future

Keywords

Schizophrenia, polymorphism, tcf4, rs13381800 , snp

The bioinformatic evaluation of the interaction between tph2 gene in rs17110747 and rs17110566 in multiple sclerosis

Setareh Panahi dorcheh,[1,*] Kamran ghaedi,[2] Nasrin yazdanpanahi,[3] Banafsheh ashrafnia,[4]

1. Master of cellular and molecular Biology in the Islamic Azad university, Science and Research of Tehran
2. Department of Biology Faculty of sciences university of Isfahan,Iran
3. Department of Biology and Genetics Faculty of Biological sciences,Islamic Azad university of Falavarjan
4. Divition of cellular and molecular Biology ,NourDanesh institute of higher education,Meymeh,Iran

Abstract

Introduction

Multiple sclerosis (ms) is an inflammatory autoimmune disease of central nervous. tryptophan hydroxylase 2(tph2) which controls synthesis of serotonin in the brain has been suggested as a candidate for ms. the aim of this study is evaluation associates between polymorphisms rs17110566 and rs17110747 in tph2 with ms.

Methods

In this study, we scrutinized ncbi data-base to choose rs17110566 and rs17110747 which are located in non-coding and probably regulatory regions of tph2.using data bases like gencards and rsnpbase for rs17110566 and snp2tfbs and rsnpbase for rs17110747, we evaluated regions which single nucleotide polymorphisms (snps) are located.

Results

The results of bioinformatics analysis of gencards showed that chromosome region of 71972980 to 71972801 is a binding site for regulating factors that rs17110566 is located on there. according to bioinformatics findings, rsnpbase showed rs17110566 is regulatory snp and snp2tfb data base demonstrated that rs17110747 is located in binding site of transcription factors. therefore rsnpbase is shows that this snp is regulatory snp too.

Conclusion

Our results indicate that rs17110566 and rs17110747 are located in regulatory region on the gene tph2 , so they can related to ms. the accuracy of these results can be verified in future studies and experiments.

Keywords

Multiple sclerosis, tryptophan hydroxylase 2, snp

The cause of illness and metabolic treatment in infants

Zahra Mobin,[1,*] Daniyal afrazeh,[2]

1. Young Researchers and Elite Club,Zahedan Branch, Islamic Azad University, Zahedan, Iran
2. Young Researchers and Elite Club,Zahedan Branch, Islamic Azad University, Zahedan, Iran

Abstract

Introduction

Metabolic disease is inherited, if parents have a history of a metabolic disease, the baby will have a lot of chance for getting this disease. a child with the disease may suffer from lethargy, vomiting, seizure, and inability to breastfeed a few hours after birth. when a gene deficiency leads to severe metabolic disease, symptoms at birth will appear, but in most cases, genetic and protein defects are not severe, and the symptoms of a metabolic disease will appear a few months after birth.

Methods

The collection of information is from sites and scientific articles

Results

Sometimes, the underlying disorder leads to mild metabolic disease, and a few years after the childbirth comes with signs of developmental delay, mental retardation, developmental regression, muscle weakness, seizure, frequent vomiting or heart disease.

Conclusion

Nowadays, laboratory tests are used to screen for a metabolic disease in the offspring of parents who have a relative relationship with each other. in these tests, the levels of ammonia and blood acidity in the baby are calculated, which is reported by these toxic substances in a variety of metabolic disorders greater than normal. if the disease is diagnosed early and before its effects on the central nervous system, it will be treated well in the future. treatment of metabolic diseases with diet, vitamin supplementation and substitution of the substance protein is possible.

Keywords

Illness, infants, metabolic

The crispr revolution in cancer research and therapy

Narges Rashidi,[1] Amirhossein ahmadi,[2,*] Seyed javad hosseini,[3]

1. Department of Biology, Faculty of Science, Persian Gulf University, Bushehr, Iran
2. Department of Biology, Faculty of Science, Persian Gulf University, Bushehr, Iran
3. Department of Biology, Faculty of Science, Persian Gulf University, Bushehr, Iran

Abstract

Introduction

Cancer is a complex disease that arises from various genetic and epigenetic alterations which drive cellular transformation, tumor growth, cell invasion and metastasis. although several drugs have developed for cancer treatment so far, mortality and morbidity is still a major problem in all around the world. this may mainly attribute to the fact that the cancer biology, genetics and mechanisms of drug resistance remain to be fully understood. despite the large amount of data available on thousands of gene mutations in different cancers, much less is known about their function due to laborious and time consuming functional analysis techniques. however, introduction of crispr as a genome editing tool could revolutionize the cancer research and treatment. the clustered regulatory interspaced short palindromic repeats (crispr) and an endonuclease named crispr associated protein (cas) was first discovered as the defense system against bacteriophages in e.coli. in this system the cas endonuclease is guided by a targeting rna and induce a double strand break (dsb) in target site. crispr/cas9 system from streptococcus pyogenes together with a small guide rna (sgrna) was first used as a genome editing tool in 2013 in mammalian and now become a widely applicable dna editing system. in this system host cell could repair dsb through non-homologues end joining (nhej) or homology directed repair (hdr) which results in insertion/deletion or recombination respectively. the second way be exploited to introduce well defined mutations by transferring altered donor templates into targeted cells.

Methods

Pubmed a freely available search engine for the medline database was selected as literature search tool. a keyword of cacer combined with crispr retrieved original articles which were used to review and write this article.

Results

Crispr/cas9 technology opens new avenues for cancer research and therapy as follow: 1) target discovery by crispr/cas9 screens: in this method a cell population with diverse gene knockouts is generated and this knockout cell pools are mainly used to find genotype-specific vulnerabilities and drug targets in cancer researches. indeed, those genes which their functional depletion leads to a reduced viability can be potential drug targets. another application of crispr/cas9 screening is to find how cancer responds to drug treatment. 2) investigation of non-coding genome of cancer: the most part of the human dna consists of non-coding regions. these regions could be regulatory elements such as enhancers or non-coding rnas. the

expression of non-coding rnas is known to be dysregulated in cancer. in addition, the transcription of oncogenes can be controlled by enhancer elements. therefore, the comprehensive understanding of non-coding elements will provide deeper insights into cancer biology. recently, crispr/cas9 has shown its potential for the interrogation of noncoding elements. 3) generation of organoid cancer model: adult stem cell derived organoids are now popular in vitro model of healthy and diseased human epithelia. in this method stem cells from multiple adult tissue types are isolated and cultivated in 3d and finally form organoids in a cell culture dish. organoids provides the study of tumor development and progression in vitro. crispr/cas9 is the useful tool to development of cancerous organoid models. 4) genome editing and clinical application: the ability to edit genes, in humans, has been discussed long before genome editing technologies had been developed. the first clinical trial using crispr for cancer therapy has enrolled the first patient at sichuan universityâ€™s west china hospital in chengdu in 2016. in this trial the safety of programmed cell death protein-1 (pd-1) knockout engineered t cells ex vivo is evaluated in treating metastatic non-small cell lung cancer. this trials can be regarded as first proof-of-concept study for applying ex vivo crispr/cas9 knockout in cancer treatment.

Conclusion

Altogether, since its development into a genome editing tool, the crispr/cas9 technology has revolutionized biology by providing a simple and versatile method to manipulate the genome, transcriptome and epigenome across a broad range of organisms. the potential of crispr/cas9 for both basic and translational cancer research is yet beginning to unfold.

Keywords

Cancer, crispr, organoid, target discovery

The cytotoxic activity of transgenic trachyspermum ammi extract on gastric adenocarcinoma (ags) cell line

Masoumeh Nomani,[1,*] Seyed ahmad sadat noori,[2] Masoud tohidfar,[3] Hossein ramshini,[4] Forouzan karimi,[5] Esmaeil mortaz,[6]

Abstract

Introduction

Nowadays, with genetic engineering methods, the production of transgenic medicinal plants has been provided to improve several traits such as increasing of valuable secondary metabolites, resistance to biotic and non-biotic stress. one of the most important applications of these techniques is to increase of the valuable pharmaceutical substance with manipulation in its synthetic pathway in plants. medicinal plants are the most important sources of anticancer compounds, natural compounds such as alkaloids, terpenes, lignans and flavonoids that are found in plants with high cytotoxicity in nature. one of the anticancer effects of these plants is the induction of apoptosis, which causes the death of cancer cells. trachyspermum ammi is a well-known medicinal plant in iran with many pharmaceutical properties. this plant contains a significant substance called thymol. thymol is an important phenolic compound used to treat many diseases, such as gastrointestinal disorders, lack of appetite, respiratory problems, asthma, and as an antiseptic for wound healing. many pharmaceutical studies were done on this plant and showed no toxicity for human utilization.

Methods

At first genetic construct of pbi121-tps was produced. then this construct was transferred to trachyspermum ammi ecotype. to confirm the increasing thymol contains and producing transgenic plants, pcr and hplc analysis were done. then alcoholic extract from leaves of transgenic and non-transgenic of trachyspermum ammi were acquired. the gastric cancer cell line (ags) was purchased from the iranian biological resource center (ibrc). several concentrations of extract solution were prepared (100 - 200 - 400 - 800 - 1000 , 2000 Î¼g /ml). the cells were cultured in 24-well plate for 24 and 48 hours and incubated at 37 Â°c, 5% carbon dioxide. the cytotoxicity effects of the various concentration of thymol on ags cell were examined by mtt assay test and flow cytometry determined the apoptotic cell death rate

Results

Our finding demonstrated that the extract of transgenic trachyspermum ammi has a higher anticancer effect on ags cancer than the non-transgenic plant by suppressing cancer cell growth. extract of the transgenic plant with increasing concentration significantly decreased cell viability compared to control plant extract. also, with increasing incubation time, the cytotoxic effect of the extract enhanced and was a dose and time-dependent manner. the cancer cells exposed to the transgenic extract exhibited high apoptosis compared to non-transgenic extracts.

Conclusion

In this research, after confirmation of production of the transgenic plant, the anticancer effects of its extract on the gastric adenocarcinoma cancer were investigated. our results indicated that this extract has a high ability to produce apoptosis in cancer cell lines than non-transgenic plant extracts. due to the fact that the transgenic plant extract has high apoptosis effects on cancer cells, the cytotoxic compounds present in the extract of this plant can be a stimulant for the isolation, purification and identification of new and effective drugs in the treatment of gastric cancer and thymol might use as a tentative agent in the future to treat cancer.

Keywords

Gastric carcinoma, anticancer, appoptosis, thymol

The design of a real-time pcr assay to assess the effect of chemotherapy on gel e and esp genes of e.faecalis in the microbial flora of breast cancer patients

Farnaz Rahbarzare,[1,*] Farzaneh hosseini,[2] Mohaddeseh larypoor,[3]

1. Department of microbial biotechnology,Islamic Azad University,Tehran North Branch,Tehran,Iran
2. Department of Microbiology, Islamic Azad University, North Tehran Branch,Tehran,Iran
3. Department of Biology, Faculty of Science, Univers ity of Tehran North Branch , Islamic Azad University,Tehran,Iran

Abstract

Introduction

Breast cancer is an uncontrolled growth of abnormal cells that occurs in different regions of the breast. it is the most common cancer and the most common cause of cancer death among women in the world. chemotherapy is an effective and non-invasive method for cancer treatment, it shows a variety of side effects such as hair loss, reduced red blood cell count, infection, vomiting, oral ulcers, constipation and reduction of white blood cell count despite all the side effects of this method are not completely clarified. an important challenge to this therapy method, is the effects of chemotherapy on induction of microflora bacteria pathogenesis. the purpose of this study is the investigation of the side effect of the chemotherapy on enterococcus faecalis (a microflora bacteria) virulence genes in breast cancer patients.

Methods

To better understand the molecular mechanisms underlying this microflora pathogenesis changes, we have used the real time pcr to analyze gele and esp gene expression in the enterococcus faecalis of three groups samples. in this study, participators were divided into three groups a, b and c. group a included 60 healthy relatives of cancer patients, group b 60 breast cancer patients before chemotherapy treatment, group c breast cancer patients after one chemotherapy period. the biochemical tests needed for the identification and determination of enterococcus faecalis. then total rna was extracted from the stool of all the participators, after that cdna was produced. next, specific primers were designed using primer 3 and oligo 7 software. thus, virulence genes of e. faecalis (gele and esp) were evaluated by real-time pcr. data analysis was done by spss software version 19.

Results

Results showed a statistically significant correlation ($p<0.05$) over the expression level of gele and esp in group c (patients after one chemotherapy treatment) against group b (patients before chemotherapy treatment) and a (healthy relatives of cancer patients). also, no significant alteration observed in expression level of gele and esp between group a and b.

Conclusion

It seems that breast cancer does not affect the pathogenicity of microflora, but chemotherapy has side effects such as increasing the pathogenicity risk of the microflora of patients; it could change virulence gene expression of microbial flora. these side effects could cause further infections after finishing the chemotherapy of cancer. further gene expression studies could help to better understand of chemotherapy effects on the whole body and mechanisms of patients.

Keywords

Enterococcus faecalis, virolence factors, esp, gele, syber green i

The different doses of hydro-alcoholic extract of medicago sativa effects on spermatogenesis and sperm concentration in cadmium-induced oxidative damage in rats

Azad Bahrampour,[1,*]

1. Doctor of veterinary Medicine , Sanandaj Branch, Islamic Azad University, Sanandaj, Iran

Abstract

Introduction

The purpose of this study was to investigate the effect of different doses of hydro-alcoholic extract of medicago sativa on spermatogenesis and sperm concentration in cadmium oxidative damage due to the antioxidant quality of extract.

Methods

: in the interventional- experimental study, 30 male wistar rats were randomly divided into 5 groups. control group, t1, t2, t3 and t4 groups. in the group of t1, 2mg/kg chloride cadmium was administered intraperitoneal; t2, t3 and t4 groups, in addition to the chloride cadmium the extract of medicago sativa at125, 250 and 500mg/kg intraperitoneal was administered, respectively, for 10 days. then, on the last day, after blood collection and separation of serum, tca was measured. sperm numbers and percentage of sperm twisted tail were counted in the right epididymis. after measuring the right and left testicular weight and diameter, malondialdehyde and histological studies were examined. the data were analyzed by one way anova analysis and tukeyâ€™s test using spss 21.

Results

The highest number and percentage of sperm membrane integrity was in the control group and in t4 (doses of 125 mg/kg of extract) and the lowest in the group receiving cadmium (t1) and this different was significant ($p<0.05$). the highest concentration of mda was in the t1 group and the lowest in the group of the dose of 500 mg/kg (t2), respectively. the tca concentration was the lowest in t1 and highest in t2. the most average sertoli, spermatogonia, spermatocets and leydic cells was in the control group and the group of 250 mg/kg doses of extract, but the lowest was observed in t1.

Conclusion

The hydro-alcoholic extract of medicago sativa with an appropriate dose can have a positive effect on spermatogenesis and control testicular tissue oxidative stress by cadmium.

Keywords

Cadmium, medicago sativa, rat, spermatogenesis

The effect of problem solving training to midwife on the frequency of selective episiotomy in nulliparous women

Mina Ghalenovi,[1,*] Zahra abedian,[2]

1. master of midwifery, faculty member of sabzevar university of medical sciences, hran
2. Master of Midwifery, Faculty member of Mashhad University of Medical Sciences, Iran

Abstract

Introduction

The need for episiotomy is a decision made finally by midwives. problem-solving ability to overcome unforeseen situations helps and makes no other person needs. these skills increase the use of effective coping strategies. this study aimed to determine the effect of problem solving training to midwives on selective episiotomy in nulliparous women.

Methods

This randomized clinical trial was conducted on60midwives in maternity hospitals of mashhad in 2015.the subjects were selected by simple random then were divided into two groups based on random numbers table. the samples were asked to complete the demographic, occupational and bar-on problem solving questionnaire at the beginning and end of the study. in intervention group, midwives were asked to attend two 4-hours training sessions. they delivered2babies before the intervention (singleton, cephalic, term and without anomaly)and2after that. in the control group4deliveries were done. elective or non-elective episiotomy indications were determined by researcher according to the check list. data were analyzed by using spss16software and chi-square test, mann-whitney, wilcoxon. confidence level was considered0.95.

Results

Mean scores for problem solving midwives were23.2Â±2.2and23.1Â±2.0before and after intervention, respectively no significant difference was observed(p=0.320).there was no significant difference between before and after intervention in the control group(p=0.537).33.3%and41.7%of episiotomies were performed selectively before and after the intervention, respectively.there was no significantly difference between the two groups at the beginning(p=0.847)and end of the study(p=0.582)in terms of the frequency of selective episiotomy.

Conclusion

. in this study,short-term and temporary problem solving training workshops was not successful in improving the skills and increase the decision of more selective episiotomy by midwives

Keywords

Problem solving, midwife, nulliparous, selective episiotomy

The effect of acne on cognitive performance in women with polycystic ovary syndrome

Saideh Mehrabadi,[1,*] Shahideh jahanian sadatmahalleh ,[2] Anoshirvan kazemnejad ,[3]

1. Master of midwifery,faculty member of sabzevar university of medical sciences, Sabzevar,Iran
2. Assistant Professor, Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
3. Professor, Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.

Abstract

Introduction

The most important symptoms of polycystic ovary syndrome (pcos) include hirsutism, acne and increased level of androgen hormones. acne is the most common skin disease in pcos. acne is often associated with psychological distress, anxiety, and depression that may impair cognitive function such as attention, memory, executive functions, and psychomotor speed. the aim of this study was to investigate the effect of acne on cognitive performance in women with polycystic ovary syndrome.

Methods

This cohort study was performed on 53 patients with pcos, diagnosed with rotterdam criteria ,and a comparison sample of 50 healthy women with regular menses. the global acne grading system (gags) was used to determine acne and cognitive functions were assessed using the montreal cognitive assessment (moca).

Results

the age range of the participants was 18-40 years. no significant difference was observed between the two groups in terms of age (p=0.23), parity (p=0.13), bmi (p=0.32), educational level (p=0.58), occupation (p=0.47) and marital status (p=0.92). mean scores of both groups regarding acne and cognitive levels were evaluated. the average (Â± sd) acne score in patients was 11.60Â±6.89 and in control group was 8.64Â±6.20, p-value=0.02, which was statistically significant. also, the difference between the average cognitive function scores in patients (22.83Â±3.4) and control group (24.72Â±2.52) was statistically significant (p-value=0.002). however, no correlations were detected between moca components and acne in the case group.

Conclusion

the pcos patients showed significantly lower performance on the tests of cognitive function. also, the prevalence of acne in patients with pcos is more than that in normal counterparts. there was no significant relationship between cognitive function and levels of acne.

Keywords

Polycystic ovary syndrome, cognitive function, acne

The effect of amniotic membrane-derived mesenchymal cells transplantation on cardiac function improvement in a model of heart failure in male rats through the effect on the expression of bcl2, bax a

Maryam Kheila,[1,*] Nahid aboutaleb,[2]

1. iran university medical sciences
2. iran university medical sciences

Abstract

Introduction

The effect of amniotic membrane-derived mesenchymal cells transplantation on cardiac function improvement in a model of heart failure in male rats through the effect on the expression of bcl2, bax and p53 proteins

Methods

In this study, 35 male wistar rats were randomly assigned into 5 groups (7 in each group). study groups were: 1. control group, 2. heart failure group (hf), 3. sham group, 4. culture media group, 5. stem cells transplantation group (sct). heart failure model was induced by subcutaneous injection of 170 mg/kg/d isoproterenol during 4 consecutive days and the induction was confirmed by echocardiography 28 days later. in stem cells transplantation group, 3 Ã— 106 cells were transplanted into myocardial tissue in a 150 Âµl culture media. by use of echocardiography, cardiac function was examined. western blot method was used to determine the expression of bcl2, bax and p53 proteins.

Results

: echocardiography parameters showed that ejection fraction in hf group increased from 58.73Â± 0.9 to 81.25Â± 0.5 in the sct group which indicates 22.52 change in this parameter. fractional shortening increased from 27.8Â±53.58 in hf group to 45.6Â±55.91 in the sct group indicating a change of 22.52. protein level measurements showed increased levels of p53 and bax proteins in the hf group

Conclusion

: it seems that amniotic membrane-derived mesenchymal stem cells transplantation significantly improves the cardiac function in heart failure through effects on the expression of bcl2, bax and p53 proteins.

Keywords

heart failure ; amniotic membrane-derived mesenchymal cell , apoptosis

The effect of berberis vulgaris leaf aqueous extract on morphometric characteristics of the developing chick embryos

Fereshteh Naderiallaf,[1] Saeedeh zafar balanejad,[2,*] Jina khayatzadeh,[3] Fereshteh naderiallaf,[4]

1. Biology Department, faculty of sciences, Islamic Azad University, Mashhad Branch.
2. Biology Department, faculty of sciences, Islamic Azad University, Mashhad Branch.
3. Biology Department, faculty of sciences, Islamic Azad University, Mashhad Branch.
4. Biology Department, faculty of sciences, Islamic Azad University, Mashhad Branch.

Abstract

Introduction

Limb formation begins when mesenchymal cells from the lateral plate mesoderm and somitic mesenchymal cells proliferate in the morphogenetic limb field. one of the herbal plants with medicinal usage is barberry which scientifically known as berberis vulgaris. in this study, the effect of berberis vulgaris leaf aqueous extract on the limb formation was studied.

Methods

: 90 ross fertilized eggs were randomly divided in 5 groups as following: control group, sham-exposed group and experimental groups: 1) treated with berberis vulgaris leaf aqueous extract at 100 (mgr/ml) concentration. 2) treated with berberis vulgaris leaf aqueous extract at 200 (mgr/ml) concentration. 3) treated with berberis vulgaris leaf aqueous extract at 500 (mgr/ml) concentration. on the second day of incubation a window was opened on the eggs. on the third day (56 hours incubation) eggs were treated with 10 microliters of pbs in sham-exposed group and 10 microliters of the extract at concentrations of 100, 200 and 500 mgr/ml in experimental groups. on the twelfth day, weights and cr length and hind limb weight and length were measured by digital scale and caliper. the data were analyzed by t and anova ($p<0/05$) tests by using spss software.

Results

The comparison of weights and hind limb weight and length mean in experimental groups with control group showed a significant decrease in all experimental groups.

Conclusion

According to the results of this study berberis vulgaris leaf aqueous extract at a concentration of 100, 200 and 500 mgr/ml reduces the weight and the hind limb weight and length of the chick embryo.

Keywords

Limb formation, berberis vulgaris, chick embryo

The effect of bifidobacterium bifidum on tlr 2,9 genes expression in caco-2 cell line as intestinal epithelial cell line model

Maryam Ahmady,[1] Seyed davar siadat,[2,*] Mahsa alebrahim,[3]

1. Department of Molecular and Cellular Sciences,Faculty of Advanced sciences and Technologies,Tehran Medical Sciences,Islamic Azad University,Tehran,Iran
2. Microbiology Research Center Mycobacteriology,Pasteur Institute of Iran
3. Department of Physiology,Faculty of Advanced sciences and Technologies,Tehran Medical Sciences,Islamic Azad University,Tehran,Iran

Abstract

Introduction

The human gastrointestinal tract consists of more than 100 trillion microbial cells which is called as gut microbiota.gut microbiota has essential roles in human functions specially metabolic and immune system through their symbiotic interactions with the host.recognition pamps(pathogen-associated molecular pattern)of microorganisms by pattern-recognition receptors (prrs) is the primary component of innate immunity that is responsible for the maintenance of host-microbial interactions in intestinal mucosa.tlrs are subset of prrs that regulate inherent immune responses.gut microbiota affect host immunity due to have various pamps that constantly interact with tlrs.bifidobacterium bifidum is an important member of gut microbiota,they are anaerobic,rod shaped,gram positive bacteria that localization in anaerobic flora and belongs to the actinobacteria phylum and member of the bifidobacteriaceae family.according to the importance of bifidobacterium bifidum in gut ,and tlr as a kind of prrs,in this study we focused on the effect of b.bifidum ontlr2,9 genes expression in caco-2 cell line as intestinal epithelial cell line.

Methods

In this study b.bifidum was cultured in de man, rogosa and sharpe agar(mrs agar)at anaerobic atmosphere including 80%co2,10%h2,10%n2.caco-2 cell line(ibrc3010094)was prepared in dmem supplemented fbs and penicillin and streptomycin high glucose,caco-2 cells was treated with b.bifidum in multiplicity of infection(moi) = 74 for overnight.total rnas were extracted by thiazol solution(rnx) and reverse transcripted to cdna using cdna fermentaz synthesis kit.revers transcription-guantitative pcr(rtq-pcr)was performed to assay tlr2 and tlr 9 gene expression through syber green method. gene expression were measured based on delta delta ct (âˆ†âˆ†ct) method and gapdh as house keeping gene.finally, the significancy of the results is determined by independent sample t-test by spss and prism.

Results

Our rt-qpcr showed that the tlr2 and tlr9 mrna levels were change by b.bifidum in caco-2 cell line. tlr2 and tlr9 gene expression were decreased by b.bifidum at moi 74.this down regulatory effects of b.bifidum on tlr2 and tlr9 gene expression was significant based on $p<0.05$,$p<0.01$ respectively.

Conclusion

In conclusion we demonstrated that b.bifidum was able to down regulate the expression of tlr2 and tlr9 genes.according to the regulation of tlrs signaling in inflammatory response,the understanding of the important gut microbiota members could be effective in the improvement of gut microbiota interactions.

Keywords

Bifidobacterium bifidum,gut microbiota,toll like receptors,caco-2 cell line,inflammatory response

The effect of biomarkers with analysis epigenetics expression profile in diagnosis and treatment of prostate cancer

Hamidreza Raeespour,[1,*] Nafise taromi,[2] Sonia daraei,[3] Mahdokht forouzan moheb,[4] Elham zeinalifard,[5] Asma marzanbakhsh,[6]

1. Gene Pajoohane Ebne Sina genetic research Laboratory
2. Gene Pajoohane Ebne Sina genetic research Laboratory
3. Gene Pajoohane Ebne Sina genetic research Laboratory
4. Gene Pajoohane Ebne Sina genetic research Laboratory
6. Gene Pajoohane Ebne Sina genetic research Laboratory

Abstract

Introduction

Once pca patients eventually relapse and develop castration-resistant pca (crpc), which is more aggressive and incurable, the mortality rate increases significantly. although psa screening has been widely applied for pca diagnosis, there are obvious limitations. psa may increase in bph, leading to a high rate of false-positive diagnosis. thus, there is a need to identify novel non-invasive pca-specific biomarkers in addition to psa detection to improve diagnostic accuracy. long noncoding rnas (lncrnas), which are known to participate in various biological events such as cell differentiation, proliferation and death, are rna transcripts of more than 200 bp without protein coding function. over the past decade, accumulating evidence has demonstrated that lncrnas modulate diverse processes in tumor suppression, metastasis, progression and clinical outcome in multiple types of cancers, including pca. for example, pcat-1 is a transcriptional repressor and, a target of prc2, so promoting cancer cell proliferation. pca3 is a prostate-tissue-specific lncrna that is selectively overexpressed in pca patients compared to healthy individuals. of the imprinting-associated lncrnas, schlap1 has been extensively studied in pca. schlap1 increases with progression of pca and predicts poor prognosis of patients with pca.

Methods

1- we performed a search in pubmed with the following mesh terms: biomarker, prostate cancer, microrna, biomarker prostate cancer, personal medicine 2- the search was narrowed to original articles published in english.

Results

We found 10 publications that analysed the clinical impact of isolation and characterization of exosomes from cell culture supernatant using dualanti body-functionalized immune affinity system exosomes were first isolated from conditioned cell culture medium using a commercial kit. tem pictures showed that the vesicle size of isolated exosomes ranged from 30 to 120 nm in diameter (fig. 1a). the presence of exosomal marker protein cd63 was then analyzed by western blotting (fig. 1b). exosomal marker protein cd63 was enriched in exosome fractions as compared to cell lysates (fig. 1b). to further enrich prostate

tumor-derived exosomes, an immune affinity system was developed using magnetic beads conjugated with both anti-epcam and anti-psma antibodies based on our previous related researches (fig. 1c). to validate our isolation procedure, cd63 was probed on the samples from different fractions of the isolation process by western blotting. as shown in fig. 1d, the expression of cd63 for a certain number of total exosomes was pictured in the lane 1. then, the magnetic beads conjugated with anti-epcam and anti-psma antibody could effectively capture exosomes in equal amounts of total exosomes (lane 2 of fig. 1d), whereas there were significantly fewer exosomes in magnetic beads unbound fraction (lane 3 of fig. 1d). to test whether magnetic beads could nonspecifically bind to exosomes, unconjugated magnetic beads were incubated with exosomes, and it was found that magnetic beads alone had minimal capacity to bind to exosomes (lane 4 of fig. 1d), while most exosomes were present in the unbound fraction (lane 5 of fig. 1d). thus, the exosomes captured by conjugated magnetic beads were most likely to bind to dual-antibody as opposed to magnetic beads. based on recent literature and previous work in our laboratory (research in the molecular profiling of pooled circulating tumor cells from pca patients using dual-antibody-functionalized microfluidic device), it was decided to detect two lncrnas in tumor-derived exosomes and validate them in the tcga database (see online suppl. material, fig. s1).

Conclusion

In prostate cancer cells, androgen-regulated transcription factors, including fork head box a1, gata-binding protein 2 and octamer-binding protein 1, are recruited to ar chromosome binding sites. in coordination with ar, the ar-regulated signaling pathway is activated to modulate the overexpression of psa, transmembrane protease serine 2 (tmprss2) and other genes. tmprss2, a transmembrane serine protease, is expressed specifically in the prostate gland. ets transcription factors are important regulators of cell proliferation, differentiation and apoptosis. androgen-regulated ets gene fusions are the most commonly identified genetic alterations and are present in >50% of primary and metastatic prostate cancer cases. we can design a biomarker on a kit that lets us isolate the patient easily from a healthy person.

Keywords

Biomarker, prostate cancer, microrna

The effect of co-administration of morphine and neuroaid on nr2 and nr3 gene expression in hippocampus and striatum of rats

Katayoun Heshmatzad,[1,*] Mohammad nasehi,[2] Mohammad-rreza zarrindast,[3]

1. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
2. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
3. Cognitive and Neuroscience Research Center (CNRC), Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Morphine, a frequently used opiate analgesics, results in differential gene expression in the brain and spinal cord. tolerance and physical dependence, are the consequences of repeated administration of opiate receptor agonists. moreover, neuroaid has been reported to have neuroprotective properties. the aim of this study was to evaluate the nr1 and nr2 gene expression in striatum and hippocampus and assess the neuroaid capacity as the neuroprotection agent.

Methods

All experiments were performed on male rats obtained from pasteur institute weighing 220-240g at the beginning of the experiment. they were housed in groups of five in each cage and they were maintained under the controlled environmental conditions. a total of 20 rats were divided into 4 groups: control, morphine, morphine- neuroaid and neuroaid. in the neuroaid group, neuroaid administration was performed every other day through the 21-day morphine addiction procedure. all the groups were treated for 21 consecutive days and following the drug treatment, dissected part of the brain was removed on day 21 for the control, morphine and neuroaid groups. following the decapitation, different parts of the brain including hippocampus and striatum regions were removed from the skull and the regions were dissected on a plate full of ice. the samples were immediately lysed and the rna extraction procedure was carried out. the expression of nr1 and nr2 was evaluated by performing real time pcr. the statistical analysis was performed with one-way anova and t-test method.

Results

From the t-test analysis, it can be concluded that the morphine administration does not have any significant impact on the nr2 and nr3 gene expression in hippocampus and striatum ($p = 0.092$ and $p = 0.113$, respectively) by itself. furthermore, neuroaid administration did not have a noticeable effect on the nr2 and nr3 gene expression in hippocampus and striatum induced morphine ($p = 0.383$ and $p = 0.159$, respectively).

Conclusion

Taking together, all the findings suggested that the nmda main subunits does not change significantly following the morphine uptake in rats. moreover, we did not find neuroaid as a neuroprotection agent on responses induced by morphine.

Keywords

addiction; morphine; neuroaid; nmda

The effect of combined mir-200c replacement & cisplatin on apoptosis induction and inhibition of gastric cancer cell line migration

Mehri Ghasabi,[1,*] Behzad baradaran ,[2] Behzad mansoori ,[3] Ali mohammadi ,[4] Navid shomali ,[5] Naghmeh shirafkan,[6]

Abstract

Introduction

One of the main therapeutic approaches for cancer treatment is chemotherapy the major obstacle in this therapeutic technique is the onset of resistance during treatment process. according to the numerous reports, mir-200c is involved in many cancers, especially gastric cancer, mir-200c has been known as an effective factor in the elimination of chemotherapy resistance. in the present study the role of mir-200c and cisplatin were investigated in inhibition of migration and induction of apoptosis in katoiii cells.

Methods

Mir-200c mimics and lna-anti-mir-200c were transfected into katoiii cells. in order to evaluÂ¬ate the efficiency of combination therapy on migration and apoptosis induction in kato iii cells, we use wound healing assay and mtt assay and flow cytometry .

Results

: our results showed that overexpression of mir-200c is able to inhibit vegfr and mmp9 genes that impacts in metastasis. result of wound healing assay could confirm the inhibitory roles of cisplatin and mir-200c. mtt assay showed that mir-200c and cisplatin have positive impacts on apoptosis process in addition the apoptotic effect of cisplatin and mir-200c were more impressive when they were used simultaneously which may be is related to targeting rhoe gene. these results verify that mir-200c has effective role in chemotherapy.

Conclusion

: in summery, it is demonstrated that mir-200c repress the proliferation and migration of gastric cancer cells via targeted genes, also we concluded cisplatin and mir-200c have synergic effect and cisplatin was more effective in transfected cells.

Keywords

Gastric cancer, mir-200c, metastasis, apoptosis

The effect of cumin on weigh loss: a randomized controled trial

Mansoreh Mahmoudi,[1] Salehi ashraf,[2,*] hamid momeni ,[3] Kerami azam ,[4]

1. Khomein University of Medical Sciences.
2. Khomein University of Medical Sciences.
3. Khomein University of Medical Sciences.
4. Khomein University of Medical Sciences.

Abstract

Introduction

Obesity and overweight is a health problem in many countries. it is a risk factor for many chronic diseases. many medical, surgical and traditional methods are routinely used to treat the obesity but they are not fully successful or are acompained with side-effects. due to the lack of sufficient human studies on the effect of cumine on wight loss, this study aimed to investigate the effect of cumin on weigh loss in a sample human subjects.

Methods

A triple-blind randomized placebo clinical trial was conducted on 200 obese participants with overweight or abdominal obesity reffered to five healthcare center in khomein city. subjects were selected and then, were randomly allocated in two groups to receive either the cumin succus (n=100), or a placebo (n=100). data collection instruments consisted of a demographic questionnaire and a checklist for recording anthropometric measures. the participants in the one intervention group received a 15 ml bottle of cumin succus and were trained to eat 15 drops of the liquid with some water three times a day and continue the treatment for six months. anthropometric measures were assessed before the intervention and after six months. data were analyzed using spss software

Results

The mean weight of the subjects in the group received cumin succus was 89.34Â±7.52 kg which decreased to 82.33Â±7.43 at the end of the study ($p<0.002$). also, the mean weight of the subjects in the group received placebo was 87.16Â±8.42 which decreased to 85.82Â±8.39 ($p<0.002$). the mean weight loss in the group received cumin succus was 7.07Â±3.25 kg and in the group received placebo was 1.34Â±0.61 ($p<0.001$).

Conclusion

Using of cumin was effective on wight loss of overwight subjects. then, it may be used safly and effectively along with the medical treatments of obesity and overweight or as an alternative for the expensive and problematic treatments of obesity.

Keywords

Obesity, cuminum cyminum, herbal medicine, weight loss

The effect of e6 toxic protein expression in the growth rate of three strains of e. coli

Mohamad ehsan Madadi,[1,*] Zahra amini bayat,[2] Mehrdad hashemi,[3] Neda mousavi niri,[4]

1. Department of Genetics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran
2. Department of Biotechnology, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran
3. Department of Genetics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran
4. Department of Genetics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran

Abstract

Introduction

Cervical cancer is the fourth most common cancer worldwide, cervical cancer and its precursors are caused by various types of the human papillomavirus (hpv). the best-studied malignancy caused by hpvs is cervical cancer and it is now believed that over 99% of cervical cancers are caused by hpvs. hpv16 and 18 are thought to account for over 60% of these. among the early eight hpv proteins, e2, e5, e6, and e7 are regarded as being crucial for hpv immune escape and malignant progression. the e6 protein interacts with the p53 tumor suppressor protein, so it represents appropriate target for development of diagnostic and therapeutic tools. e. coli is most preferred system used for the production of recombinant proteins and the availability of improved genetic tools/methods are making it more valuable than ever. major challenges faced by this expression system are the expression of unusually difficult/complex proteins with rare codons or membrane and toxic proteins. the proteins expressed either in large amount or hydrophobic in nature tend to form insoluble mass. there are some strategies to improve expression of toxic proteins, such as use a more tightly regulated promoter (bl21-ai) and constitutive expression of phage t7 lysozyme (plyss) and â€¦ . in the present study, we apply three different strain of e.coli (bl21 de3, bl21 ai, de3 plyss) to achieve best one strain.

Methods

E.coli bl21 de3, bl21ai, de3 plyss strains were transformed with pet28aâ€“e6 vector. recombinant e. coli clones were grown in terrific broth (tb) containing kanamycin (50 Âµg/ml) for all strains, tetracycline (12.5 Âµg/ml) for bl21 ai and chloramphenicol (34 Âµg/ml) for plyss. bacteria were induced for the expression of the e6 cloned in pet28a with 1 mm iptg at an od600 of 1. the cell mass were harvested at different time of induction and the optical density of samples were determined.

Results

Three different spices were used for expression of hpv16-e6 antigen, , by comparing the growth rate of these three strains under the same conditions, it is observed that the highest growth rate was obtained in bl21 ai strain followed by de3 plyss and then bl21 de3.

Conclusion

Toxic proteins are proteins that cause cell death or severe cultivation and maintenance defects during the growth phase when their genes were introduced into e. coli strains. the function of the expressed toxic protein may be detrimental to the proliferation and differentiation of the host cell. highest expression level of e6 in bl21 ai strain showed that tight regulation of expression using pbad promoter is the most efficient method for this protein and this is due to absence of this toxic protein in the growth phase so cells can grow and differentiate then recombinant protein was expressed after induction.

Keywords

Cervix cancer , e.coli, recombinant proteins, hpv16-e6 protein, growth rate

The effect of educational intervention on the efficiency of nutrition and treatment in diabetic patients in bandar anzali, iran

Seyede hajar Khatami ,[1,*] Gholamreza sadeghi,[2] Seyyed aref abedin najafi,[3]

1. MS of health education, Guilan University of medical sciences, Guilan, Iran.
2. MS of Medicine, Guilan University of medical sciences, Guilan, Iran.
3. MS of Medicine, Guilan University of medical sciences, Guilan, Iran.

Abstract

Introduction

Diabetes is one of the chronic metabolic diseases and major health problems in the world. healthy eating and proper administration of the drug are effective in controlling diabetes. the aim of this study was to determine the effect of educational intervention on nutrition and treatment of diabetic patients.

Methods

This interventional study was conducted on 337 diabetic patients in bandar anzali villages in 2012-2014. the patients underwent educational intervention conducted over four 60 minute sessions. data were collected using a questionnaire (including 45 questions) filled out through direct interview before the intervention and 6 months after that. patient grades were ranked in sixth grade, and those with lower rank had better performance in controlling diabetes. analyzed using spss 19 software.

Results

The study was performed on 337 patients, 23.7% male and 76.3% female. before intervention, only 0.3% of patients had good performance and increased to 7.7% after intervention (groups 1 and 2). before intervention, 79.4% of patients had poor performance and after intervention 67.3% (group 5 and 6). before the intervention, 20.2% of the patients had an average performance and after the intervention increased to 29.3% (groups 3 and 4)

Conclusion

This study showed that educational intervention is effective in improving the performance of diabetic patients. therefore, it is recommended to use educational intervention in the care of diabetic patients. it is also recommended to use health education models instead of the traditional model to achieve a better result.

Keywords

Diabetes, bandar anzali , educational intervention , health education

The effect of engineered scaffolds on reconstruction of male reproductive system: a systematic review

Hamid Zaferani arani,[1,*]

1. 1. School of Medicine, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Regenerative medicine and tissue engineering technology may soon offer new hope for patients with serious injuries and end-stage reproductive organ failure. scientists are now applying the principles of cell transplantation, material science, and bioengineering to construct biological substitutes that can restore and maintain normal function in diseased and injured reproductive tissues. in addition, the stem cell field is advancing. in many cell-based tissue engineering methods, cells are obtained from a tissue, expanded in vitro, and then seeded onto a scaffold composed of an appropriate biomaterial. the present study aimed to determine the effect of engineered scaffolds on the reconstruction of the male reproductive system.

Methods

A pubmed database search was conducted between 2010 up to 2016 for articles addressing the effect of engineered scaffolds on the reconstruction of the male reproductive system using combinations of the following keywords: scaffold, tissue engineering, and male reproductive system.

Results

Biomaterials provide a three-dimensional scaffold for the cells adherence and from new tissues with appropriate structure and function. they also allow for the delivery of cells and appropriate bioactive factors to desired sites in the body. bioactive factors, such as cell-adhesion peptides and growth factors, can be loaded along with cells to help regulate cellular function. the ideal biomaterial should be biodegradable and bioresorbable to support the replacement of normal tissue without inducing inflammation. the biomaterial should also provide an environment in which appropriate regulation of cell behavior (adhesion, proliferation, migration, and differentiation) can occur such that functional tissue can form. three broad classes of biomaterials have been utilized in tissue engineering studies: naturally derived materials (e.g., collagen and alginate), acellular tissue matrices (e.g., bladder submucosa and small intestinal submucosa), and synthetic polymers such as polyglycolic acid (pga), polylactic acid (pla), and poly (lactic-co-glycolic acid) (plga). these polymers have gained fda approval for human use in a variety of applications, including sutures. because these polymers are thermoplastics, they can be easily formed into a three-dimensional scaffold with the desired microstructure, gross shape, and dimension by various techniques including molding, extrusion, solvent casting, phase separation techniques, and gas foaming techniques.

Conclusion

Regenerative medicine technologies for virtually every type of tissue and organ are developed. various tissues are at different stages of development. some are already being used clinically, such as engineered urethral tissue, while a few others are in preclinical trials and many more are in the discovery stage. recent progress suggests that engineered tissues may have an expanded clinical applicability in the future and may represent a viable therapeutic option for those who would benefit from benefits of reproductive tissue replacement or repair.

Keywords

Scaffold, tissue engineering, male reproductive system

The effect of high-fat diet and chronic stress on lipid metabolism

Fatemeh Rostamkhani,[1,*]

1. Department of Biology, Yadegarâ€‘eâ€‘Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction

Experimental studies have suggested that high dietary fat intake is associated with defects in lipid metabolism. the current study investigated the combined effect of high-fat (intra-abdominal cow fat) diet and chronic foot-shock stress on lipid metabolism.

Methods

Male wistar rats were divided into high-fat and normal diet groups, and each group was further segregated into stress and non-stress subgroups. foot shock stress was induced after 30 days of a high-fat diet, 1h/day for 7 days. plasma levels of triglyceride, cholesterol, free fatty acid, and corticosterone were measured. moreover, homa-ir index was evaluated.

Results

Stress increased plasma corticosterone concentration in both diet groups. however, the plasma corticosterone concentration in high-fat diet group was lower than normal diet one either in the presence or absence of stress. in high-fat diet stressed rats plasma free fatty acid levels increased, whereas plasma triglyceride and cholesterol remained unchanged in the presence or absence of stress. the homa-ir index did not increase significantly.

Conclusion

In summary, the present study showed that despite high fat diet increased plasma free fatty acid concentration in the presence or absence of stress, the homa-ir index, as a marker of insulin resistance, did not changed markedly. it can be concluded that, despite the effects of high intra-abdominal cow fat diet on lipid metabolism, insulin resistance was not elicited.

Keywords

Stress, high-fat diet, corticosterone, free fatty acid, homa-ir index

The effect of lactobacillus casei derived extracellular vesicles on the expression of toll-like receptor 2

Maryam Ebrahimi vargoorani,[1] Mohammad hossein modarressi,[2] Elahe motevaseli,[3] Farzam vaziri,[4] Seyed davar siadat,[5,*]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
2. Department of Medical Genetics, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
3. Department of Molecular Medicine, School of Advanced Technologies in Medicine, Tehran University of Medical Sciences, Te
4. Department of Mycobacteriology and Pulmonary Research, Pasteur Institute of Iran, Tehran, Iran.
5. Department of Mycobacteriology and Pulmonary Research, Pasteur Institute of Iran, Tehran, Iran

Abstract

Introduction

The use of probiotics represents a promising strategy for human health. one of the most common probiotic strains belongs to the genera lactobacillus. among the species of lactobacillus, lactobacillus casei is one of the best-documented, considered to be a probiotic with industrial applications. it has beneficial effects on human health such as significant improvements in immunity (galdeano and perdigon 2006), allergies (kumar et al. 2013), cholesterol levels (kumar et al. 2013). some studies have shown that l. casei improves the pattern of gut microbiota (sharma and devi 2014). lactic acid bacteria, are widely applied in the food industry. therefore, the identification and determining the advantage of molecules derived from lactic acid bacteria can be used to develop a new generation of functional compounds. one of the molecular components produced by bacteria is extracellular vesicles (evs). evs are spherical bilayers lipid structure that are in the range of 20â€“500 nm in diameter. these structures generally consist of varied cargo, such as toxins, lipoproteins, nucleic acids, and communication signals, and have crucial role in affecting metabolic and immune system (brown et al. 2015). in gram-positive bacteria, production of evs has been discarded owing to the absence of an outer membrane and visualization problems for penetration into the cell wall. this study aimed to show that lactobacillus casei can produce evs with similar morphology and size to other bacteria. since evs are an important agent to mediate the expression of genes. in this scientific research, we have examined to find out the effect of evs derived from l. casei on the expression of tlr2.

Methods

L. casei (atcc 393 strains) were obtained from the iranian biological resource center (tehran, iran). the bacteria were cultured in de man, rogosa and sharpe agar (mrs) (sigma-aldrich). in order to obtain more biomasses, a large volume of bacteria was cultured at 37Â°c for 24 hours in mrs broth. the evs were purified from the conditioned medium of l. casei using ultracentrifugation. physicochemical characteristics of these vesicles were compared using electron microscopy images, dynamic light

scattering (dls) analyzer, and sds-page procedure. the caco2 cells were treated with different concentrations of purified evs.

Results

The electron microscopy showed spherical vesicles that had an average diameter of 200nm. the extracted protein content was 2.4 in the ultracentrifugation method. also, protein bands of evs were identified in the range of 10-200 kd by sds-page. the dls analysis revealed populations of approximately 200 nm. the zeta potentials of the isolated vesicles were âˆ’0.5. it was determined that the evs of this bacterium at concentrations of 150 Î¼g / ml had no significant effect on the expression of tlr2 gene expression in comparison with the control (sucrose), whereas the expression of this gene in treatment of evs at concentrations of 50 and 100 Î¼g / ml decreased.

Conclusion

After extraction and evaluation of the physicochemical properties of l. casei derived evs, the induced effects of its vesicles on the expression of the tlr2 gene, we suggest that evs could be a candidate for modulating inflammatory responses. it may have many more beneficial discoveries regarding the impact of probiotic bacteria evs in the hostâ€“bacteria interaction.

Keywords

Lactobacillus casei , extracellular vesicles, toll like receptors

The effect of low level laser in repairing diabetic wounds on animal and human models

Hamed Salehbarmi,[1] Mahboubeh asgari,[2,*] Abdolrazagh barzegar,[3] Mohamad anvari,[4]

1. Legal medicine research center, Legal medicine organization ,tehran, Iran.
2. Legal medicine research center, Legal medicine organization ,tehran, Iran.
3. Legal medicine research center, Legal medicine organization ,tehran, Iran
4. Amirkabir university of technology, department of biomedical engineering

Abstract

Introduction

Diabetes mellitus is one of the most common diseases in iran and the world. diabetic foot is one of the most common and debilitating complications of diabetic patients, with wound healing delayed and can lead to amputation. methods various ways have been introduced to accelerate the recovery of chronic diabetic foot, including the use of bioportical stimulation with low-level lasers. however, it is not clear yet what the microbial load of the wound (as a wound healing prognosis factor) is affected by the low-level laser. the aim of this study was to evaluate the low-level laser on diabetic ulcers and treatment on it.

Methods

Patients with diabetic wounds of 1 to 3 wagner were enrolled. after providing satisfaction, patients underwent debridement of the standard surgical treatment of antibiotics. the patients were randomly divided into two groups of laser and placebo and lysing with a wavelength of 635 nm with a dose of 2j / cm2. animal studies are used because of the relative ease of working with rodents in most animal model studies. studies have also been conducted on the effects of llt on the repair of diabetic ulcers and the survival of skin flaps, skin ulcers repair. in this method, 20 diabetic rats and grade 3 ulcer were evaluated in the laser and drug group.

Results

Between and within groups, diameter, redness, and edema of the wounds were similar throughout the entire observation period. irradiation of the burns accelerate wound healing when compared with control wounds.

Conclusion

The initial phase of the study showed that the effect of the laser on the microscopic load or the rate of repair of the diabetic wound was only satisfactory with respect to the drug therapy, and additional studies were needed for further investigation.

Keywords

Low-level laser, diabetic wound treatment, diabetic wound medication

The effect of morphine on hippocampal cart gene expression in the presence and absence of crocin

Ehsan Ghavimi,[1,*] Mohammad nasehi,[2]

Abstract

Introduction

The fact that addiction crosses all socio-economic boundaries confirms that addiction is a disease, which affects the functioning of the brain and body. over time, addictions can seriously interfere with daily life. drug abuse is defined the numerous neuroadaptations and neuromodulations in the central nervous system (cns) which lead to compulsive and uncontrolled drug searching, tolerance, interdependence, withdrawal syndrome and other serious health and social problems. drug addiction, which can be determined as the forcible requesting and taking of drugs despite horrendous aftereffects or loss of control over drug use, is caused by long-lasting drug-induced changes that occur in certain brain regions. abuse of most substances will produce noticeable signs and symptoms. these may include physical or behavioral symptoms, most likely both. the frontal lobe allows a person to delay feelings of reward or enjoyment. in addition, the frontal lobe malfunctions and gratification is immediate. additional areas of the brain may also play a role in addiction. the anterior cingulate cortex and the nucleus accumbens, which is associated with enjoyable emotions, can enhance a personâ€™s response when exposed to addictive substances and hippocampus which depends to the limbic system and plays important roles in the consolidation of information from short-term memory to long-term memory. damage to this part by the drug has a direct impact on memory. morphine dependence is associated with long-term adaptive changes in the brain that involve genes expression, which control extracellular signals including hormones, neurotransmitters. role of the neuro protectives are the relative preservation of neuronal structure and/or function. the aim of this study was to investigate the alteration of cart expression in morphine addicted male rat following crocin administration in hippocampus nucleus.

Methods

Twenty male wistar rats weighing between 220 and 240 g were bought from pharmacology college of tehran university (tehran, iran) were used in the study. morphine injected with peritoneally with an escalating protocol for 21 days and crocin (0.8 mg/kg) i.p. every two days. the drugs were dissolved in sterile 0.9% saline and injected intraperitoneally at a volume of 1 ml/kg. animals were kept four per plexiglas cages (40 * 30 * 25 cm) with food and water freely available ad-libitum, under12:12-h light/dark cycle (light on at 07:00 a.m.) and the temperature maintained at 22 Â± 2 Âºc. before the start of an experiment, rats were first allowed to adapt to the laboratory conditions for a minimum of one week. rna extraction and cdna synthesis were performed and real-time pcr was measured by expression cart.

Results

As the observed results that the morphine decreased the level of cart peptide (pâ‰¤0.05). moreover, crocin did not alter cart gene expression levels by itself (p>0.05). also, crocin restored decreased of cart gene expression induced by morphine (p<0.01).

Conclusion

Rewards genes and addiction studies have provided an improved mechanistic understanding of morphine addiction. different changes in genes expression are reflected in the distinct linkage in the nucleus of the brain like hippocampus. according to this study, it seems that crocin can stop the effect of morphine addiction in the molecular states. in other words, this protective transducer for controlling gene expression is mainly the genes that are useful in the drug addiction process and its complications.

Keywords

Crocin, hippocampus nucleus, morphine, cart.

The effect of morphine on hippocampal cart gene expression in the presence and absence of neuroaid

Nasrin Malboosi,[1,*] Mohammad nasehi,[2]

1. Islamic Azad University, Tehran Medical Branch

Abstract

Introduction

Currently, addiction is one of the biggest problems concerning not only physicians but also all people who care about their personal and social health and well-being. it has long been established that genetic factors along with environmental (e.g., psychosocial) factors are significant contributors to addiction vulnerability. addiction can be divided into physical and mental types, in other words, it distracts the neural circuits involved in the reward system, stimulation and memory in the brain, resulting in biologic, physiologic, social and mental subsequences. cerebral reward system consists of dopamine-creating neurons in ventral tegmental areas of the mid-brain which send signals to various parts of the frontal areas of the brain involving the accumbens nucleus (one of its nuclei, amygdala (mass below the cortex often known to affect the brains emotional reactions) and the hippocampus (is a major component of the brains and the main part of the brain in long-term memory). morphine mechanism involves altering the central nervous system that decreases pain, so it is a strong type of opioid which comes from opium and is considered opiumâ€™s most important effective combination, that it can be a highly addictive drug. most of the studies in transcription factors engaged in addiction involved the accumbens nucleus of the brain. former studies presented the importance of cocaine and amphetamine in the regulation of cart peptide in drug reward and support system, mental stimuli in particular. there is no available information regarding the different stages of addiction and their effect in cart expression and the relationship between cart and drug abuse. in the present study, the changes in cart mrna expression levels are studied and the reward system related to drug abuse is considered in different sections.

Methods

This study was performed on 20 wistar male wistar rats weighing 220-240 were bought from pharmacology college of tehran university (tehran, iran). animals were randomly divided into 4 groups (5 animals in each group): control group were the first group, the second group was neuroaid, the third group were morphine, the fourth group was morphine- neuroaid. animals in each cage of plexiglas (25 x 40 x 40 x 40 cm) with free food and freely ad libitum, under 12:12-h light/dark cycle (light on at 07:00 a.m.) and the temperature maintained at 22 Â± 2 Âºc. animals were allowed to adapt to the laboratory conditions for at least 1 week before the experiments and each animal was tested only once. rats in the morphine and morphine- neuroaid group were administered 2 mg/kg morphine daily for the first 7 days, followed by 14 days of an increasing-dose regimen (10,12,14,16,18,20,22,24 ,36 mg/kg/day) and neuroaid 2.5mg/kg injected every other day . rna extraction and cdna synthesis were performed and real-time pcr was measured by expression cart.

Results

From the results of this study, morphine addiction significantly reduced cart peptide expression ($p<0.001$) in the hippocampus. regarding the use of supplementary medication, the neuroaid increased the expression of the cart. regarding the presence of morphine, neuroaid improved cart expression ($p<0.001$) induced by morphine.

Conclusion

The interest in the action of morphine in the central nervous system has remarkably developed during the last decade. this is due in part to the growing significance of morphine addiction and its subsequences in terms of life quality and costs for popular health systems in industrialized countries. the data showed that neuroaid can block morphine addiction effect on cart peptide thus neuroaid may decrease some effects of morphine in both behavioral and molecular field.

Keywords

Morphine, neuroaid, hippocampal nucleus, cart.

The effect of nigella sativa oil on serum lipids level in non-alcoholic fatty liver male rats

Mojgan Rahimi,[1,*]

Abstract

Introduction

Metabolic disorders, such as lipid disorders, are related to progression of non-alcoholic fatty liver disease (nafld) and cause cardiovascular problems. due to concerns about the long-term effects of chemical drugs, the use of natural compounds as alternatives or complementary treatments has been considered more than ever. so the aim of present study was to investigate the effect of nigella sativa oil on serum levels of lipids in non-alcoholic liver of rats.

Methods

In this experimental study, 24 male rats were divided into 3 groups. control group: under the normal diet. the control group received 6 weeks of high-fat diet for induction of fatty liver and then received saline oral administration for 3 normal weeks. experimental group: first they were subjected to high fat diet and then were fed orally with 5 ml/kg nigella sativa oil for 5 weeks. at the end of this period, blood samples were collected from animals for measuring serum levels of lipids and serum level of cholesterol and hdl levels were measured in serums. one-way anova was used to analyze the variables mean in the groups.

Results

Fatty liver induction cause to reduced cholesterol ($p = 0.001$) and hdl ($p = 0.001$) in rats. the use of nigella sativa oil increased cholesterol in rats compared to the control group ($p = 0.001$). hdl levels of group that consumed nigella sativa oil were significantly lower than control group ($p = 0.006$).

Conclusion

Use of nigella sativa oil can increase cholesterol levels in non-alcoholic fatty liver rats normal level.

Keywords

Non-alcoholic fonatty liver, nigella sativa oil, serum lipids

The effect of probiotic lactobacillus plantarum isolated from traditional semnan cheese on lipid profile and hyperglycemia of streptozotocin-induced diabetic wistar rats

Mahnoosh Parsaeimehr,[1,*] Mahmood ahmadi hamedani,[2] Sahar mosallemi,[3]

1. Food Hygiene Department, Faculty of Veterinary Medicine, Semnan University, Semnan, Iran
2. Clinical Department, Faculty of Veterinary Medicine, Semnan University, Semnan, Iran
3. Graduate Student, Faculty of veterinary medicine, Semnan university,Semnan

Abstract

Introduction

Diabetes is one of the most important metabolic disorders that is dramatically increasing and can cause many health complications. so probiotics can be considered as a natural and safe solution to control and delay such complications. the effect of probiotic lactobacillus plantarum isolated from traditional semnan cheese on lipid profile and hyperglycemia of streptozotocin-induced diabetic rats was evaluated.

Methods

In this study 24 male wistar rats were randomly divided into four groups (six rats in each group) as given below. group1: normal control rats, received normal saline (10 ml/kg), group 2: diabaetic control rats received normal saline (10 ml/kg), group 3: diabaetic rats received l.plantarum (2 cc/day.), group 4: normal rats received l.plantarum (2 cc/day). isolation and identification of lactobacillus plantarum from traditional semnan cheese were performed through biochemical tests and 16s rdna sequencing. hyperglycemia was induced in male rats by intraperitoneal injection of streptozotocin (65mg/kg). all treatments were orally administered to rats for 21 days .fasing blood sugar (fbs) was monitored at 0, 7, 14 and 21 days after induction of diabetes, lipid profile of blood serum of heart killed rats were measured at the end of experiment in 21th day. statistical differences among groups were analyzed using one-way analysis of variance (anova) followed by tukeyâ€™s multiple tests.

Results

The results of this study showed that lactobacillus plantarum suspension with 108 cfu/ml doses in treated diabetic rats significantly ($p > 0.05$) decreased fasting blood glucose and triglyceride compared to the control group.

Conclusion

According to the results of this study, it can be deduced that consumption of probiotic lactobacillus plantarum can be effective in improving biochemical parameters due to the destructive effects of diabetes mellitus and moreover, as a preventive measure and as a new auxiliary treatment approach for diabetic

patients can be considered. however, more clinical studies are needed to prove the exact effect of this probiotic on diabetes.

Keywords

Diabetes, probiotic, hyperglycemia, lipid profile

The effect of propolis extract on bax/bcl2 genes expression in adenocarcinoma gastric cancer cells

Masoome Dastvar,[1,*] Neda shoaei,[2] Dr.zahra deilami,[3]

1. Msc student ,Department of Genetic , Basic Science Faculty, Islamic Azad University, Zanjan Branch, Zanjan,Iran.
2. Msc student ,Department of Genetic , Basic Science Faculty, Islamic Azad University, Zanjan Branch, Zanjan,Iran.
3. Assistant professor , Department of Genetic , Basic Science Faculty, Islamic Azad University, Zanjan Branch, Zanjan,Iran.

Abstract

Introduction

Propolis extract is a natural product that has been made from various resins collected by the bee and used for centuries as an ethnic herbal remedy. it is known that wax has antimicrobial, antioxidant and anti-tumor activities. the bax protein is a functional antagonist and is a structural homologous bcl-2which can be accelerated to apoptotic bax complex to death signaling, but in response to bcl-2 elevation and its heterodiagnosis with bax, cell death is suppressed. therefore, the expression ratio of bax to bcl-2 determines the occurrence or absence of apoptosis. in this research we have studied the effect of propolis extract on bax/bcl2 gene expression ratio in adenocarcinoma gastric cancer cells.

Methods

The ags cells were incubated 37Â°c containing 5% co2 with 85% humidity, dmem with 10% fbs. the cells were treated with concentrations of 800, 1200, 2000 Î¼g /ml of propolis extract for 48 hours. rna extractin and synthesis of cdna have been done using special kits. the study of bcl-2/bax genes expression was performed by real time pcr .

Results

Analysis of results have shown that in all studied concentrations of propolis extract, there are significant increase in bax/bcl2 expression in ags cell line. increase in bax/bcl2 ratio in cells leads them to apoptosis.

Conclusion

The results of this study indicated that propolis extract has strong antiproliferative effects against cancerous ags cells. thus, propolis may provide a novel approach to the chemoprevention and treatment of human gastric cancer

Keywords

Bcl-2/bax, ags cells, propolis

The effect of propolis treatment on interleukin 10 expression and arthritis severity in balb/c mice with collagen induced arthritis (cia)

Zahra Harsani,[1,*] Fatemeh rohollah,[2]

Abstract

Introduction

Rheumatoid arthritis (ra) is an inflammatory systemic disease that affects the joints, tissues, muscles, tendons, and fibrous tissues. the prevalence of rheumatoid arthritis is between 0.3% and 1%, and is often seen in developed countries and the female population. this disease is associated with progressive joint damage. in the development of inflammatory diseases, including rheumatoid arthritis, there are large molecular factors involved. among these factors, cytokines play a key role. proinflammatory cytokines such as interleukin 1 and tnf have been considered as important factors in the progression of the disease of rheumatoid arthritis. functionally, another group of cytokines has their role in modulating the immune system and inhibiting inflammation. interleukin 10 is a cytokine that inhibits inflammation and has been shown in several studies to modify its effects on the molecular flares of inflammation. propolis is a natural compound that exhibits various biological activities due to the high concentrations of flavonoids, including phenolic acid. based on the results of recent studies, experimental animals treated with propolis lead to changes in their immune system activity. based on recent findings, propolis administration results in the improvement of arteritis-induced inflammatory symptoms in laboratory animal. the main hypothesis in the present study is that the propolis extract may be induced by the expression of interleukin 10 as an anti-inflammatory mediator, leading to the improvement of arthritis-inflammatory symptoms. therefore, the effect of propolis on interleukin 10 expression and arrhythmic clinical findings in balb / c mice was investigated in this study.

Methods

Balb / c mice entered this study. at first, the mice were divided into 10 groups of 4, and in each group animals received a different type of collagen type ii injection, and this method induced a different degree of arthritis in each group. also, some groups of mice received a dose of 6.6 mg / g of food intake from propolis, and some groups used ordinary foods. the animals were treated with propolis for 36 days. after completing the treatment, interleukin 10 expression level at both levels of mrna and protein was measured and compared using real-time pcr and elisa methods in different animal groups.

Results

Interleukin 10 has a significant relationship with propolis extract. propolis treatment results in increased expression of interleukin 10 at both levels of mrna and protein.

Conclusion

The results of this study indicate that propolis consumption for 36 days results in relief of arthritis symptoms and lesions in laboratory animals. propolis may have its anti-inflammatory effect by inducing interleukin 10 expression.

Keywords

Propolis, arthritis, inflammation, interleukin 10

The effect of sflt01 gene expression on cell proliferation and migration of bladder cancer cell line; 5637

Hajar Parsamehr,[1,*] Zahra-soheila soheili1,[2] Ehsan ranaei,[3]

1. National Institute of Genetic Engineering and Biotechnology
2. National Institute of Genetic Engineering and Biotechnology
3. National Institute of Genetic Engineering and Biotechnology

Abstract

Introduction

Bladder cancer is the most common urinary malignancy all over the world. . the pathologic angiogenesis plays an important role in bladder cancer tumor growth and progression .vegf is one of the primary required angiogenic factor for bladder cancer and is able to induce tumor angiogenesis and accelerate tumor growth. a dose-dependent increase in the expression of flt1 (fms-related tyrosine kinase 1) encoding vegfr-1 suggests that flt1 is an androgen target gene, linking ar.sflt01,which consist of the second immunoglobulin (igg)-likedomain of flt-1 fused to a human igg1 fc through a polyglycine linker 9gly has been previously generated with the inhibitory effect on vegf and placental growth factor(plgf).aim of this study is to evaluate the effect of sflt01 over expression on angiogenesis,proliferation, migration ,invasion ,and expression timp2,timp1, mmp2 and mmp9 of 5637 bladder cancer cell line

Methods

Sflt01-his tag-gfp sequence was designed synthesized and cloned in aav-mcs-gfp vactor. paavâ€“sflt01-his tag-gfp vector was transfected to 5637cell line through lipofection 2000 transfection. then extracted mrna was analyzed by real time pcr. protein secretion into the conditioned medium of transfected 5637cells and hek293t cells proved by western blotting. the effect of the condition medium 5637 cells and hek293t cells on in vitro angiogenesis in huvec cells was investigated by the invitro angiogenesis assay. 5637 cell migration was evaluated by scratch assay. 5637 cell invation was evaluated by invation assay,mmp-2 and mmp-9 activities were assessed by gelatin zymography as well. the cytotoxic effect of the constructson 5637 cells was determined and cell proliferation assay was performed through the mtt assay.

Results

Real-time pcr results showed significant over expression of sflt01 in treated 5637 cells .western blot proved sflt01 protein secretion in conditioned media. in vitro angiogenesis assay results showed decreased potential of tube formation in conditioned medium of treated 5637 cells and hek293t cultures. scratch assay showed significant difference in treated 5637 cells when compared to the control untreated cultures. invasion assay demonstrated that over expression of sflt01 reduced the invasion and migration of the cells mtt assay showed that sflt01 had no cytotoxic effect on 5637 cells. analysis of gelatin zymography

showed that overexpresstion of sflt01reduced the activity of mmp-2 and mmp-9 in 5637cellsâ€™ conditioned media.

Conclusion

Functional assessment of paav-sflt01 transfected cells, revealed that the secreted protein could be promising for inhibition of angiogenesis in animal model of cancer disease and tumorigenesis

Keywords

: bladder cancer, vegf,angiogenesis,5637 cells

The effect of tgf-Î²1 on sti-571-treated k562 cells according to the level of phosphorylation of akt,foxo3, and stat5

Masoome Bakhshayesh,[1,*] Ladan hosseini gohari,[2] Maid safa,[3]

1. Cellular & Molecular Research Center, Iran University of Medical Sciences,
2. Cellular & Molecular Research Center, Medical Laboratory Science Department, School of Allied Medicine, Iran University
3. Cellular & Molecular Research Center, Iran University of Medical Sciences,

Abstract

Introduction

Chronic myeloid leukemia (cml) is a malignant disorder related to the attendance of the bcr-abl fusion gene on the philadelphia chromosome which prevents the tgf-Î²1 signaling pathway, thus plays the central role in leukemogenesis. owing to the cellsâ€™ resistance to the tyrosine kinase inhibitor, sti-571, combination therapy has been recently proposed as an appropriate approach to treat this disorder. in this study, the effect of the combination of tyrosine kinase inhibitor, sti-571, with tgf-Î²1 on k562 cells was investigated

Methods

In this study, the effect of the combination of tyrosine kinase inhibitor, sti-571, with tgf-Î²1 on k562 cells was investigated. activation of survival and apoptosis cell signaling pathways was evaluated by measuring of the level of p-stat5, p-akt, p-foxo, parp, and p27.

Results

It is noteworthy that the activation of the arrested tgf-Î²1 signaling pathway by tgf-Î²1 in bcr-abl-expressing cells led to the collective activation of cell signaling pathways involved in both survival and apoptosis. results showed that the level of p-stat5, p-akt, and p-foxo were increased in survival pathways, while, apoptotic pathways, via the increase of parp and p27, and the reduction of mcl-1 and bcl-xl, were activated with significant differences in the number of sub-g1 phase and annexin-positive cells. the results of molecular and cellular analyses revealed that there was the significant difference between the control group and the experimental groups

Conclusion

Interestingly, the combination of sti-571 and tgf-Î²1 changed the tgf-Î²1 behavior and promoted apoptosis, derived from the action of sti-571. it seems that the combination therapy caused the arrest of the sub-g1 phase to a greater extent than when sti-571 was used individually.

Keywords

Bcr-abl oncogene, combination therapy, multi drug resistance, sti-571, tgf-Î²1.

The effect of thiosemicarbazones complexes (ni) on changes in nalt1 expression in the regulation of the notch signal pathway in the acute lymphoblastic leukemia class jurkat e6.1

Nedaa Zahmatkesh,[1,*] Dr.golnaz asaadi,[2] Dr.sina mirzaahmadi,[3]

1. Zanjan Azad University

Abstract

Introduction

Acute lymphoblastic leukemia (all) is the most common cancer in children. it consists of about a quarter of all cancers among people under the age of 15 years. acute lymphoblastic leukemia is a type of leukemia and bone marrow. searching for the cytotoxic activity of thiosemicarbazones and their metallic complex, creates a variety of different types of human tumor cells. the aim of this study was to evaluate the effect of thiosemicarbazones drug on the expression of long non coding nalt1 in the notch signal pathway in acute lymphoblastic leukemia in the jurkat e.6.1 cell line.

Methods

Thiosemicarbazones complex ni was prepared. different doses of ni were investigated with mtt test. then, the thiosemicarbazones complex ni was prepared at 0.5 and 1doses and the jurkat e.6.1 cancer cells with cell culture in two doses with 24 hours with thiosemicarbazones complex ni were investigated. rna extraction and cdna synthesis were performed and the expression of long non coding nalt1 and gapdh gene was evaluated as real time pcr house keeping gene. finally, the results were analyzed by rest software.

Results

Results of the research showed that the expression of long non coding nalt1 significantly decreased after treatment with thiosemicarbazones complex ni with (p-value < 0.001)

Conclusion

Given the results, it has been found that doses of 0.5 and 1 ni in 24 hours are the optimal doses and time of the effect of this complex.

Keywords

Lncrna nalt1, acute lymphoblastic leukemia, thiosemicarbazones ni

The effect of thymosin alpha-1 on the activity of catalase and glutathione peroxidase in a549 lung cancer

Jasmin Kharazmi-khorassani,[1] Ahmad asoodeh,[2,*]

1. Department of chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran;
2. Department of chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran;

Abstract

Introduction

Lung cancer is one of the most important lethal cancers in the world. the occurrence of lung cancer is estimated about 1.6 million deaths in 2012. increasing ros and rns are associated with some abnormalities including some cancers, diabetes and cardiovascular disease. antioxidant enzymes such as catalase and glutathione peroxidase are main types of antioxidant which protect the cells from the harmful effects of ros in body. it was showed that higher levels of ros are generated in cancer cells in comparison to normal cells. thymosin alpha-1 is a 28- amino acid peptide that was discovered by allan goldstein and colleagues in 1972. the aim of this study was to investigate the effect of thymosin alpha- on a549 cancer cells by evaluating the activity of catalase and gluthathione peroxidase.

Methods

In this study, a549 lung cells were cell cultured and the activity of antioxidant enzyme including catalase and glutathione peroxidase on a549 cancer cells treated with various concentration of thymosin alpha-1 was evaluated as described, previously. the activity of glutathione peroxidase was investigated using randox-ransel enzyme kit (randox, crumlin, uk). the reduce in absorption of catalase and glutathione peroxidase were determined using uv-spectroscopy at 240 and 340 nm, respectively.

Results

The results of this current study demonstrated that the activity of catalase on a549 treated cancer cells increased by enhancing the dosage of thymosin alpha-1 in comparison with control. catalase showed a significant higher activity at 12 Î¼g/ml of thymosin alpha-1. also the activity of glutathione peroxidase on a549 lung cancer cells treated with various dosage of thymosin alpha-1 was investigated. our results revealed that glutathione peroxidase activities significantly enhanced in a concentration dependent manner.

Conclusion

Our results suggested that thymosin alpha-1 indicated antioxidant properties and has protective effect on a549 lung cancer cells.

Keywords

Lung cancer; catalase; glutathione peroxidase; thymosin alpha-1

The effect of toughness on differentiate in the bioprinted scaffold

Amirhossein Bakhtiari,[1,*] Hamidreza behboodi,[2]

1. University of tehran

Abstract

Introduction

3d-bioprinting as a novel method use multiple aspects to produce a precise deposition of strands that result in the construction of scaffolds with controllable porosity. one of the most critical problems on the way of using this technique is about bio-ink. bio-ink must be biocompatible, biodegradable and have an appropriate viscosity which can print precise structures without harmful effect on cells located in them. high viscosity needs high printing pressure that causes high shear stress and cell damage. otherwise, low viscosity cause collapsing the strands into each other. for printing scaffolds along with cells, it needs to print in room temperature, for this purpose it needs to adjust the gel point in which the printed strand immediately do the sol-gel transition in room temperature till can print an accurate structure. here, we use a pre-crosslinking step by cacl2 that result in printing an accurate cell-embedded structure by different pore size in two different sides. we use vitamin d to study differentiation possibility on the stiff and smooth sides to understand the effects of the porosity on the differentiation process.

Methods

For selecting the best composition of three components, rheology analysis was done on 10 different samples, further select the composition with gel-point near the room temperature (25Â±1 ÌŠc). after sterilizing the hydrogel, mesenchymal stem cells with density 5e+5 cells/ml was mixed with hydrogel and centrifuge in 3500rpm for 1.5 min. for resulting in the more accurate printed structure, we use a novel method of two-step crosslinking by cacl2. design of the scaffold was done by solidwork as a 4 layer structure by strands in 45, 135, 0, 90 degree position. the print was done by 3d-printed extrusion-base (the printer was design and manufactured by our team). cartilage and platform were located in 32 ÌŠc and 25 ÌŠc respectively till provide the appropriate temperature terms for living the cells. the degradation rate of the scaffolds in different crosslinking conditions was analyzed in pbs (ph=7.4 and temperature 37 ÌŠc), the weight of the samples till complete destruction was recorded. for evaluation the roughness of crosslinked scaffold we use 3d-laser measuring microscopy and use sem for indicating the pore diameters. vitamin d for 20day was used to produce a bone tissue on two different sides of the printed scaffold.

Results

First of all, we select the bio-ink composition of 7%gelatin, 3%alginat, and 1%collagen as a composition that has the possibility to turn solid gel in room temperature. we indicate the gel point of this composition is 25 ÌŠc. it is noticeable that in thermoreversible polymers, gel-point detects where the loss tangent is independent of frequency in the oscillatory experiment. after selecting the best composition of bio-ink, we find the concentration and the time of crosslinking in an independent test to find a condition with

degradation time between 4-6 week that is satisfying for replacing of scaffold with ecm. as a result, we mixed 80mm cacl2 with bio-ink in the 1-1 ratio as a pre-crosslinking step and feed it into cartilage that according to laboratory observations let to having better control on the accuracy of printed structure. as a secondary step of crosslinking, 100mm cacl2 was sprayed on the printed scaffold, and after 1 hr, the samples were washed by deionized water. sem analyses of the printed scaffold show average width of 140 Î¼m and 430 Î¼m for small and large pore side, respectively. laser scanning indicate roughness of 1.23Î¼m and 0.32Î¼m for different surfaces that show a rigider surface for larger pore side. our observation indicated that differentiation of the mesenchymal stem cells to bone-tissue on the side with bigger pores is more significant compare to the smooth side.

Conclusion

Herein, we use alginate, collagen, and gelatin as a novel composition with compatible viscosity to print a precise scaffold for guided tissue regeneration aspects. for better control of the porosity of printed structure, we use a pre-crosslinking step by cacl2. further, use vitamin d to differentiate the printed scaffold into bone tissue.

Keywords

Cellular bio-printing, pre crosslinking step, differentiation

The effect of various concentrations of peganum harmala whole plant and seeds extract on luminescent light output of a bacterial biosensor

Shima Shayestehpour,[1,*] Mansour mashreghi,[2]

1. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Introduction

Herbal plants have been used to prevent or treat many diseases, but these plants are not harmless. peganum harmala is used as an antiseptic and is used to treat lung and liver diseases and to treat eczema. microbiological biosensors play an important role to analyze the environmental toxicants. by using genetic recombination techniques, microbial biosensors can be designed. one of these genes is the lux gene, which is used in the bioluminescence marker system. in this research, the side effect of hydro-alcoholic extract of peganum harlama and its seeds was studied on e.coli sm10 s1 luminescent biosensor.

Methods

Hydro-alcoholic extract of peganum harmala and its seeds was prepared by soxhlet method and various concentrations (0.001, 0.01, 0.1, 0.25, 0.5, 0.75 and 1 %) were prepared. 50 Î¼l of the biosensor were mixed with 450 Î¼l of different concentrations of the extracts and the bioluminescence light was measured by a luminometer.

Results

The results showed a slight increase in the luminescence light at the concentrations of 0.001 and 0.01% of peganum harmala whole plant extract, and the luminescence light decreased at the concentrations of 0.1, 0.25, 0.5, 0.75 and 1%, which the lowest was at 0.5% concentration. the results indicated a slight increase in luminescence light at the concentration of 0.001% of the seeds extract and the reduction in other concentrations was dose-dependent.

Conclusion

: in this study we found that e. coli sm10 s1 biosensor application in examining the side effects of various concentrations of p. harmala whole plants and seeds extract is an appropriate method and can be further used for other medicinal plants.

Keywords

Peganum harmala, microbial biosensor, luminescence

The effect of vitamin e types and their derivatives on the pathogenesis of cardiovascular diseases and cancer

Arman Nabati,[1,*]

Abstract

Introduction

Vitamin e is an important micronutrient involved in various oxidative stress-related processes. it is transported in plasma lipoproteins due to its hydrophobic nature, and the pathways involved in its cellular uptake are related to the lipoprotein metabolism. atherosclerosis is a major cause of stroke, myocardial infarction, coronary artery disease, and peripheral vasÂ¬cular disease. it is a slowly progressive and cumulative inflammatory disease characterized by excessive deposiÂ¬tion of cholesterol in the arterial wall. replacing vitamin e in atherosclerosis induces anti-inflammation, regulates the expression of genes in growth, apoptosis, and inflammation, modifies the immune response, and detoxification of xenobiotics. vitamin e deficiency may lead to various disorders such as ataxia, neurological disorders, and infertility

Methods

Î±-carboxyethyl-the Î±-tocopherol long-chain metabolites (Î±-lcm) like Î±-13ËŠ-cooh which results in the formation of middle-and short- chain metabolites (Î±-scm) with the catabolic end-product Î±-carboxyethyl-hydroxychroman (Î±-cehc11), respectively

Results

The Î±-lcm also affect macrophage foam cell formation by regulating uptake of ox ldl by macrophages via down-regulation of its phagocytic uptake, also Î±-lcm interfere with inflammatory processes by modulating activity of cox1 and cox2 and consequently by blocking production of pge2

Conclusion

It has been shown that Î±- cehc is anti-proliferative, anti-inflammatory, and anti- oxidative, inhibits ox ldl formation and protein kinase c (pkc) signaling. among other tocopherols, gamma-tocopherol was found to be more effective than alpha-tocopherol in its growth inhibitory effect on human prostate cancer cell lines, whereas delta-tocopherol has shown growth inhibitory activity against mouse mammary cancer cell lines. gamma- and delta-tocopherols can prevent colon, lung, breast and prostate cancers, while alpha tocopherol had no such effect.

Keywords

Vitamin e ; antioxidants; atherosclerosis; alpha-tocopherol; foam cell

The effect of zinc oxide nanoparticles synthesized by the green method from the hyssopus officinalis extract on the heart and troponin

Ghasem Rahimi,[1] Ehsan karimi,[2,*]

1. islamic azad university of mashhad
2. islamic azad university of mashhad

Abstract

Introduction

In recent years, great attempts have been made to produce nanoparticles because of their specific optical, chemical, electrical and photoelectric properties, which confirmed the various uses of these materials in the fields of catalysts, optics, biomedicine, mechanics(1) . zinc is a rare element in the body and is used as a food supplement. since zinc is present in many foods, researchers believed that zinc oxide nanoparticles (zno) have also low toxic effects in body. various studies have been conducted on the toxicity of zno, which have shown that the toxicity of zno nanoparticles is depend on factors related to the release of metal cations (2) . formation of zinc oxide nanoparticles have performed using both chemical and green methods, which the green methods, that are very common today, are completely safe compared to chemical methods (3).

Methods

In this research, 20 male white balb/c mice, 25-30 g purchased from razi vaccine and serum research institute, mashhad, iran. the animals were kept in special cages under controlled conditions (temperature of 22 Â° c and relative humidity 60 Â± 10%, 12 hours of light and 12 hours of darkness) with easy access to water and food. the mice were randomly divided into 4 groups (n = 5). group 1 was considered as a control group (without treatment). groups 2, 3 and 4 were administrated by doses of 100, 200 and 300 mg/kg, respectively. 1 ml of suspension of zno nanoparticles were given orally by gavage. each mouse has received doses until 20th day every 24 hours. ultimately, the mice were anesthetized by the ether blood samples were taken from the right atrium of the heart, then blood troponin was tested by elfa (enzyme-linked fluorescence assay) technique. each heart tissue was carefully separated from the body, washed by distilled water and after weighing fixed in 10% formalin for future histopathological examination. after processing each heart tissue the sections were stained with hematoxylin and eosin (h&e staining). observations was performed under microscope and images were taken. then, the pathologist was assigned to identify the desired tissue properties.

Results

Results have shown that by increasing the concentration of zno nanoparticles, the size of the heart was increased comparing to the control group. in addition, the darkness of the heart tissue treated with 300 mg/kg zno nanoparticles is more than the control sample. considering the molecular basis of muscle contraction which is results of shortening the sarcomers due to the mixing and displacement of the

proteins present in the myofilaments; by increasing the concentration of zno nanoparticles, we noticed changes in the form of focal and situational of muscle tissues. in the sample treated with 300 mg/kg, changes in the sarcoma series and the onset of necrosis and hyperemia were observed. the results of troponin test were negative all samples. it is believed that in the treatment with higher concentrations and in a longer period of time, the troponin is turned into a positive state, which ultimately indicates the presence of troponin which results in heart infarction.

Conclusion

The purpose of this study was to investigate the effects of zno nanoparticles synthesized by the green method from h. officinalis extract on heart tissue and troponin. in the treated mice, zno nanoparticles caused a change in histopathology of the heart tissue within 20 days. in addition, these changes increased with increasing concentration zno nanoparticles, which greatest effects was observed at a concentration of 300 mg/kg resulted in tissue necrosis and pericarpic phenomena. however, negative results were obtained in the troponin test. it is likely that with increasing treatment time and increasing the concentration, they will show a stronger form in the form of an infarction. more investigato on toxic results of zno nanoprticles should be perfomed in order to determine the mollecular basis lays behind diagnostic and therapeutic application of zno nanoparticles.

Keywords

Zinc oxide nanoparticles; hyssopus officinalis plant; balb/c mice; troponin.

The effects of a single nucleotide polymorphism in oatp2 gene on susceptibility to hyperbilirubinemia in an iranian neonates

Hassan Mehrad-majd,[1,*] Abbas boskabadi,[2] Fatemeh khatami,[3] Gholamali mamouri,[4]

1. Clinical Research Unit, Mashhad University of Medical Sciences, Mashhad, Iran
2. Department of Pediatrics, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
3. Department of Pediatrics, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
4. Department of Pediatrics, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Introduction

several genetic analyses have clearly linked a number of single nucleotide polymorphisms (snps) with idiopathic hyperbilirubinemia in newborns. recently it has been proposed that the variation in the oatp2 gene may contribute in neonatal hyperbilirubinemia. the present study was undertaken to explore the correlation of oatp2 rs2306283 polymorphism with the risk of hyperbilirubinemia in an iranian neonates.

Methods

Whole blood samples of the enrolled infants were collected and applied for dna extraction. genotypes for the oatp2 rs2306283 (388 a âž” g) polymorphism were detected by polymerase chain reaction combined with restriction enzyme analysis (pcr-rflp) in 100 infants with hyperbilirubinemia and 100 controls. the genotypes and allele frequencies of the polymorphism were compared in each group.

Results

The genotypes and allele frequencies of the rs2306283 variant exhibited no significant association with neonatal hyperbilirubinemia neither in the crud state nor after adjustment for gestational age, gender and birth weight in different genetic models ($p > 0.05$).

Conclusion

The results indicated that oatp2 rs2306283 (388 a âž” g) polymorphism does not appear to markedly play a role in the susceptibility to develop idiopathic hyperbilirubinemia among iranian neonates

Keywords

Oatp2, hyperbilirubinemia, polymorphism, neonates

The effects of bifidobacterium bifidum on infected wound healing in diabetic rats

Shahab Jamaran,[1,*]

1. Department of Microbiology, Science Faculty, Islamic Azad University of Arak, Iran

Abstract

Introduction

Probiotics are microorganisms in the digestive tract (gastrointestinal tract). in addition to helping the digestion of complex molecules, also it helps the immune system and reduces inflammation. the beneficial effects of this bacterium on gastrointestinal ulcer healing have been proven eventhough quantitative research has been done on the therapeutic effects of these bacteria on skin ulcers, especially the repair of skin lesions in diabetic people. the aim of this study was to investigate the effect of bifidobacterium bifidum on skin ulcer healing.

Methods

After isolating the probiotic bacteria strains and examining the production of exopolysaccharides, bifidobacterium bifidum with the ability of producing exopolysaccharides, were selected. then, wistar male rats were divided into 2 groups: control group and experimental group . a square scar in the size of 1.5 Ã— 1.5 cm on mice back was made bifidobacterium bifidum probiotics that were added to eucerin. a control group was treated with eucerin without any probiotic clinical changes and histopathological effects of bifidobacterium bifidum probiotic on wound healing were evaluated every day and on 1, 3, 7, 14 and 21 days post-operation respectively

Results

The results of the study were analyzed using the mean Â± sd standard deviation and analyzed by anova. there was also a progressed increase in wound healing, but there was no significant difference between control and experimental groups. the difference is in the number of immune cells (neutrophils, macrophage and lymphocytes)

Conclusion

In this study, we observed that the probiotic bacteria consumed decreased inflammation and contributed to the process of wound healing in the experimental groups.

Keywords

Bifidobacterium bifidum, probiotic, infected wound

The effects of lgk974 and aspirin drugs on gene expression cox-2 in colorectal cancer cells

Malihe Bagheri,[1] Amirreza hesari,[2] Parisa ziasarabi,[3] Faezeh ghasemi,[4,*]

1. 1- Molecular and Medicine Research Center, Department of Biotechnology, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
2. 1- Student Research Committee, Faculty of Medicine, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
3. 1- Student Research Committee, Faculty of Medicine, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran
4. 4- Blood Transfusion Research Center, High Institute for Research and Education in Transfusion Medicine,Next to Milad To

Abstract

Introduction

Colorectal cancer (crc) remains a major public health problem worldwide. regarding cyclooxygenase -2 (cox- 2) overexpression in most crc tissue and is associated with processes such as angiogenesis, inhibition of apoptosis, and metastasis of colon cancer cells, we have examined the effects of lgk974 and aspirin drugs on cox- 2 in sw742 colorectal cancer cells compared to oxaliplatin drug in vitro.

Methods

Mtt (methyl tetrazolium assay) colorimetric assay was used to investigate cell viability in the presence of drugs. real time pcr was used for the measurement of the effect of the drugs in cox-2 gene expression. statistical analysis was determined by one-way anova and tukey multiple range analysis (spss 19.0 software ($p < 0.05$).

Results

The analysis of the results indicated that treatment with lgk974 and aspirin drugs inhibited the growth of sw742 cancer cells. also, in this cell line, treatment with ic50 concentration of lgk974 and aspirin decreased expression of the cox-2 gene by 1.52 and 1.93 log fold change respectively.

Conclusion

We conclude that lgk974 and aspirin drugs cause inhibition of growth and decreases expression of the cox-2 gene in the sw742 cancer cells in vitro. so, these drugs might serve as a new strategy for the treatment of crc.

Keywords

Aspirin, lgk974, colorectal cancer, sw742

The effects of mir-324-5p overexpression on key genes involved in the hedgehog oncogenic pathway in chronic myelogenous leukemia cells

Sepide Samiei zafarghandi,[1,*] Reihaneh ramezani tamijani,[2] Sadegh babashah,[3]

Abstract

Introduction

Hedgehog (hh) signaling, a highly conserved developmental pathway, has been proven as an important pathway to maintain lsc function. the loss of hh pathway impairs the development of bcr-abl-induced chronic myeloid leukemia (cml) and depletes cml stem cells. therefore, it is intriguing to postulate that the aberrant acquisition of self-renewal property due to aberrant activation of hh signaling contributes to the cml progression. this highlights the necessity of inhibition of other targets besides bcr-abl, like hh signaling that regulate leukemic self-renewal, in order to inhibiting proliferation of bcr-abl-positive cd34+ lscs.

Methods

Primary cd34+ cells were isolated from six patients suffering cml in blast crisis phase using macs immunomagnetic separation system. overexpression of mir-324 was done by plenti-iii-egfp. expression levels of hh genes and mir-324-5p were measured by real-time pcr.

Results

The present study revealed that overexpression of mir-324-5p led to down-regulation of smo and gli1, resulted in decreased cell proliferation in cml cd34+ cells. thus, smo and gli1 appears to be an essential target of mir-324-5p during pathogenesis of cml.

Conclusion

This study is the first evidence of the involvement of mir-324-5p-mediated regulation of hh signaling in pathophysiology of cml. our findings lead us to suggest that down-regulation of mir-324-5p may be a possible mechanism for unrestricted activation of the oncogenic hh pathway in cml; therefore, the restoration of mir-324-5p expression could be of benefit in inhibiting the proliferation capability of cd34+ cml cells that represent a potential source of relapse in patients suffering cml.

Keywords

Chronic myeloid leukemia; cd34+ stem cells; hedgehog signaling pathway; self-renewal; proliferation

The effects of vitamin b12 on spatial learning and memory in adult male rats

Nastaran Zamani,[1,*]

Abstract

Introduction

Vitamin b12 is a water-soluble vitamin that deficiency leads to the accumulation of homocysteine (an unnecessary amino acid). neuronal damage induced by homocysteine has been shown in some areas of the brain, including the hippocampus involved in the learning process and memory. considering the relationship between low concentration of vitamin b12 and high concentrations of homocysteine with cognitive impairment, the effect of different doses of vitamin b12 on learning and spatial memory in y-maze task in adult male rats was investigated.

Methods

Thirty five adult male rats were randomly allocated into four groups: group 1, the control, without any injection; groups 2, 3 and 4, vitamin bâ,• â,, treatment groups, each group received vitamin bâ,□â,, (5, 10 or 15 mg/kg, ip daily for ten days) and group 5, vehicle-treated group that received saline (0.2ml, ip daily for ten days) as vitamin b12 vehicle. at the end of the treatment with vitamin b12 or vehicle the rats were trained in y-maze task for five days in order to study spatial learning and twenty five days after training, a retention test was performed to determine long-term memory.

Results

The results showed that treatment with vitamin b12 in groups 10 and 15 mg/kg ($p<0.05$), significantly improved spatial learning. also, the comparison between vehicle and control groups indicated that there were no significant differences ($p>0.05$) between these groups that suggested saline had no effect on spatial learning. moreover, no significant difference was observed between the results in the 5th day of training and the memory retention of the 30th day.

Conclusion

The results of this study indicated that intraperitoneal injection of vitamin bâ,• â,, in doses of 10 and 15 mg/kg for ten days has a positive effect on spatial learning and enhanced the learning in adult male rats in y-maze task.

Keywords

Vitamin b12; homocysteine; spatial learning; spatial memory, y-maze

The expression of recombinant dimethylaniline monooxygenase from pseudomonas aeruginosa for oxidation of antibiotics

Shamsozoha Abolmaali,[1,*] Shamsozoha abolmaali,[2] Nasrin shojaie,[3]

1. Semnan University
2. Semnan University, Semnan, Iran
3. Dep. of Biotechnology, Semnan University, Semnan, Iran

Abstract

Introduction

Antibiotic- resistant pseudomonas aeruginosa play an important role in the pathogenesis of human diseases. bioinformatic's studies indicate dimethylaniline monooxygenase exist in pseudomonas aeruginosa. it is able to metabolize drugs and some antibiotics, such as imipenem as well as the human fmo-dependent enzymes.

Methods

In this study, dimethylaniline monooxygenase was studied in silico. however, practically the gene from pseudomonas aeruginosa was amplified by pcr, cloned in a pet-22b and expressed heterologously in e.coli bl21 (de3). the recombinant proteins were analyzed by sds-page method and purified by affinity chromatography with his-tag residues.

Results

The results revealed that the enzyme was >99 % identical to dimethylaniline monooxygenase within pseudomonas species, and among the strains of p. aeruginosa. the gene was 1353 bp in length, which expressed a 450-amino acid, 49 kda protein. the expression of the gene was induced by 1mm iptg. the sds/page gel analysis showed the protein in 47 kda molecular weight. functional analysis of the isolated dimethylaniline monooxygenase is under processing.

Conclusion

These findings open new perspectives in human oxidative metabolism.

Keywords

Pseudomonas aeruginosa, dimethylaniline monooxygenase, recombinant proteins

The frequency of e. coli isolates of urinary tract infections and their antibiotic resistance patterns in patients referred to imam khomeini hospital of shirvan during second semester of 2017

Moein Hamidi hesari ,[1] Jafar hemmat,[2,*] Meead banitorfi,[3]

1. North khorasan university of medical sciences, Bojnurd,Iran
2. Biotechnology Department, Iranian Research Organization for Scientific and Technology(IROST),Tehran, Iran
3. Department of Microbiology, Sabzevar Islamic Azad University

Abstract

Introduction

Urinary tract infection (uti) is the most common extra-intestinal infection caused by enterobacteriacea bacteria. escherichia coli is the most common cause of urinary tract infection that causes 80 to 90 percent of urinary tract infections in young women. treatment of these infections has been difficult due to increasing antibiotic resistanses, therefore, selection of appropriate antibiotic has an effective role in controlling and treatment of the infection.

Methods

This cross-sectional study was performed on urine specimens in patients referred to imam khomeini hospital in shirvan during the second 6 months of 2017. strains were identified using biochemical tests including tsi, simmon citrate, sim, methyl red, etc., and differential culture media. antibiotic resistance pattern of the isolates was performed by kirby-bauer diffusion dispersion and on the muller hinton agar medium and according to the clsi guideline. the evaluated antibiotics were ampicillin, trimethoprim sulfamethoxazol,, cefazolin, cephalothin , gentamicin, norfloxacin and ofloxacin.

Results

out of 2395 studied urine samples, the culture of 112 (4.67%) samples were positive. a total of 72 urine samples were positive for escherichia coli (64.2%). out of the 7 antibiotics used, the most antibiotic resistance were related to ampicillin (72.5%), trimethoprim (57.7%), cefalotin (50%), cefazolin (48.3%), norfloxacin (31%), and the lowest resistance to gentamicin (11.6%).

Conclusion

: the study showed that escherichia coli is the most common cause of urinary tract infections and an ever-increasing increase in antibiotic resistance in e. coli bacteria. according to the study, gentamicin and ofloxacin are the best choices in treatment of urinary tract infections in this region of northeast of iran.

Keywords

Urinary tract infection, antibiotic resistance, escherichia coli

The function of exosomes in prostate cancer

Ali Akbari barogi,[1,*] Asiyeh jebelli,[2]

Abstract

Introduction

Prostate cancer is the second most common cancer in men. the prostate produces the fluid that carries sperm cells and is located below the bladder and in front of the rectum. nearly all prostate cancers begin in the gland cells that make prostate fluid. this is called an adenocarcinoma. early prostate cancer is generally asymptomatic while advanced prostate cancer can cause frequent urination, the feeling that the urethra is blocked and blood is observed in the semen. the prostate-specific antigen (psa) test is currently used to diagnose prostate cancer.

Methods

Exosomes are nano-sized membrane particles that are secreted by cells that transmit information from cell to cell. exosomes have been detected in nearly all kinds of body fluids, including blood, urine, saliva, amniotic fluid, cerebrospinal fluids, bile, ascites, tears, breast milk and semen. they have been found to play a vital role in many biological processes, including intercellular communication, immune function, development and differentiation of stem cells, neuronal function, cell signaling, tissue regeneration and viral replication. cancer derived exosomes can induce angiogenesis which plays a key role in the development of prostate cancer. prostate cancer exosomes have also been shown to further regulate the tumor microenvironment through activation of stromal cells to a disease-supporting myofibroblast-like phenotype and may be capable of modulating myeloid cells, thereby regulating immune and inflammatory responses within the tumor microenvironment.

Results

Exosomes can shield cancer cells from therapeutic antibody attack, leading to the failure of antibody therapy. exosome contents play an important role in the drug resistance of prostate cancer cells. for example, mir-34 in prostate cancer cells and cell-derived exosomes targeted bcl-2 to regulate the response to docetaxel. exosomes could confer docetaxel-resistant cancer cells to docetaxel-sensitive cancer cells. a recent study identified 29 deregulated mirnas in exosomes from paclitaxel resistant prostate cancer cells, and these exosome-derived mirnas may contribute to prostate cancer chemoresistance. prostate cancer cell lines also produce typical exosomes, positive for prostate and cancer-associated antigens. the prostate cancer cell line lncap, for example, produces positive exosomal expression of psa and psma, prostate markers.

Conclusion

There is also clear positive exosomal expression of 5t4 antigene by lncap. in addition, prostate cancer cells derived exosomes can present tgf-Î² in vitro to transform fibroblasts to myofibroblasts via the

activation of tgf-Î²/smad3 signaling. in the metastatic prostate cancer cell line pc-3, 266 proteins were identified with two or more peptide sequences. many of these proteins have previously been detected in exosomes, indicating that pc-3 vesicles have basic features in common with other types of exosomes at the protein level. in summary, there is sufficient evidence to suggest that prostate exosomes are capable of regulating cancer cell metabolism and tumor metastasis, and are capable of transferring drug resistance from one cell to another. such exosome-mediated effects, may impact tumor progression through direct or indirect mechanisms.

Keywords

Prostate cancer, exosome, angiogenesis, chemoresistance

The function of exosomes in wound healing

Samin Abdolzadeh,[1,*] Maryam taghavi narmi,[2] Asiyeh jebelli,[3]

1. Department of Biological Science, Faculty of Basic Science, Higher Education Institute of Rab-Rashid , Tabriz , Iran
2. Department of Biological Science, Faculty of Basic Science, Higher Education Institute of Rab-Rashid , Tabriz , Iran
3. Department of Biological Science, Faculty of Basic Science, Higher Education Institute of Rab-Rashid , Tabriz , Iran

Abstract

Introduction

Exosomes are biological nanoparticle molecules which have a role in a paracrine and endocrine signaling as the intracellular markers. they have been found in physiological fluids such as urine, plasma, cerebrospinal fluid, and human milk and can be transferred between cells to mediating cell-to-cell communication and interactions. they are involved in many processes including immune signaling, angiogenesis, stress response, senescence, proliferation, and cell differentiation. exosomes contain proteins (membrane proteins, endosome-associated proteins, and lipid raft protein), rnas (structural rnas, trna fragments, vault rna, y rna and mirnas), signaling lipids, cytokines and growth factors. exosomes release components that due to lack of a signal sequence can not be secreted by the usual transport pathway between er and golgi.

Methods

Recent studies have demonstrated that exosomes can influence tissue responses to different status such injuries, infections, tumorigenesis and disease. they are one of the key secretory products of various cell type especially adipose mesenchymal stem cells (amscs) to regulate tissue regeneration like wound healing and restore tissue and organ damage. hence, understanding these exosomes effects may help to improve wound management and highlight a new therapeutic model for cell-free therapies with decreased side effects for the wound repair.

Results

Initial studies reported that the therapeutic potency of amscs was due to the fact that they easily differentiate into various cell types such as chondrocytes, adipocytes, osteoblasts or endothelial cells. however, it has now emerged that amscs may predominantly act in a paracrine fashion and secreted exosomes. exosomes derived from amscs can result in changes to cell proliferation, migration and collagen synthesis, which can benefit wound healing. amscs-exosomes shorten the healing time and reduce scar formation of mouse skin incision wound. amscs-secreted exosomes can enter into the cytoplasm of fibroblasts. lipid raft-mediated endocytosis is responsible for exosomes uptake through

erk1/2-heat shock protein 27 signaling in fibroblasts. besides, mirnas and proteins derived from exosomes mediate signal transduction in target cells following endocytosis, or membrane fusion.

Conclusion

exosome contents, after interval to cell, promote migration, proliferation and collagen secretion of fibroblasts. local injection of exosomes has also been reported to promote regeneration of damaged tissue. in vivo observations indicate that exosomes can be recruited to wound area via tail vein blood circulation, assembling around the wound on day 7 post-injection, aiding in the healing process. this phenomenon might be similar to the homing function of stem cells. it has been postulated that exosomes can avoid recognition/detection by the immune system, and maintain the integrity of cell membrane to avoid degradation. the injection of human amscs to mouse skin accelerates cutaneous wound healing in treated mice compared to control mice. interestingly, intravenous injection was superior at wound healing as compared to local injection and presumably loss of exosomes during local injection may contribute to this difference. in vivo studies showed that collagen i and iii distributions were promoted by exosomes in the early stage of wound healing, a result that was confirmed by with increased expressions of collagen i and iii. these results suggest that exosomes promote the early stages of wound healing by shortening healing time, while in the late stages, they might inhibit collagen synthesis to reduce scar formation. however, the specific mechanisms through which exosomes contribute to wound healing requires further investigation. in summary, the strong in vitro and in vitro evidence that amscs-exosome have promising potential for clinical application in soft tissue wound healing.

Keywords

Exosome, wound healing, stem cells

The function of long noncoding rnas in colorectal cancer

Maryam Taghavi narmi,[1,*] Samin abdolzadeh,[2] Asiyeh jebelli,[3]

1. Department of Biological Science, Faculty of Basic Science, Higher Education Institute of Rab-Rashid , Tabriz , Iran
2. Department of Biological Science, Faculty of Basic Science, Higher Education Institute of Rab-Rashid , Tabriz , Iran
3. Department of Biological Science, Faculty of Basic Science, Higher Education Institute of Rab-Rashid , Tabriz , Iran

Abstract

Introduction

Colorectal cancer (crc) is the main cause of cancer mortality worldwide. its poor prognosis is mainly ascribed to high recurrence rates. various genetics factors are associated with development of crc. long noncoding rnas (lncrnas) constitute one of the largest classes of transcripts with >200 nucleotides in length that do not encode for proteins. lncrnas act as an essential regulator in almost every aspect of biology. they interact with dna, rna, protein molecules and/or their combinations, acting as an essential regulator in chromatin organization, and transcriptional and post transcriptional regulation. lncrnas have been widely implicated in various diseases such as cancer.

Methods

increasing evidence suggests that several lncrnas are dysregulated and play critical roles for tumor initiation, growth, and metastasis in tumorigenesis. lncrnas can be regulated by key oncogenes and tumor suppressors, adding complexity to the intricate crosstalk between protein coding genes and the noncoding transcriptome. therefore, lncrnas serve as a promising target for cancer diagnosis and therapy. different lncrnas have been discovered that affect crc formation. the lncrna small nucleolar rna host gene 1 (snhg1), for example, contributes to the promotion of tumor development. however, the connections between snhg1 and crc are still unclear.

Results

Snhg7 with a length of 2176 base pairs is another one of the recognized lncrnas which is located on chromosome 9q34.3. snhg7 inhibits apoptosis and promotes the proliferation, migration, and invasion in many cancers. the lncrna h19 has been identified as an oncogenic gene and elevated expression of h19 is tightly linked to tumorigenesis and progression of multiple cancer types including crc. in addition to high expression of h19 in primary crc tissues, it provides a role as a novel regulator of epithelial to mesenchymal transition (emt) in crc. h19 is also associated with the stemness of colorectal cancer stem cells in crc specimens.

Conclusion

Overexpressed in colon carcinoma-1 (occ-1), another main lncrna, is one of the earliest annotated lncrnas in crc. however, its function remains largely unknown. occ-1 knockdown by rna interference promotes cell growth both in vitro and in vivo, which is largely due to its ability to inhibit g0 to g1 and g1 to s phase cell cycle transitions. in addition, overexpression of occ-1 can suppress cell growth in occ-1 knockdown cells. lncrna occ-1 can regulate the levels of a large number of mrnas at post-transcriptional level through modulating rna binding protein stability of hur. emerging evidence indicates the effect of lncrna plasmacytoma variant translocation 1 (pvt1) in tumourigenesis of crc. however, its specific function on the proliferation, invasion and metastasis of crc are still poorly understood. in summary, the innovations in rna-sequence technologies and computational biology could identify lncrnas at a rapid pace and introduce them as a candidate targets for crc diagnosis and therapy.

Keywords

Lncrna, snhgs, h19, occ-1, pvt1

The impact of medicinal plants on primary dysmenorrhea

Kolsom Salehi,[1,*] Fatemeh kazemi navaei,[2] Seyedeh zahra mirzaki,[3] Mohadeseh seifi,[4]

1. Islamic Azad University, Babol Branch,Babol,Iran
2. Islamic Azad University,Babol Branch,Babol,Iran
3. Islamic Azad University,Babol Branch,Babol,Iran
4. Islamic Azad University,Babol Branch,Babol,Iran

Abstract

Introduction

Background and objective: primary dysmenorrhea refers to the painful menstrual cramps without pelvic pathology. its cause is the increased production and secretion of prostaglandins from endometrium during menstruation. studies have been conducted in this regard due to the high prevalence of primary dysmenorrhea in reproductive age as well as its potential impact on the quality of life of young women and girls. this study has been conducted aiming to investigate the impact of traditional medicine and medicinal plants on primary dysmenorrhea

Methods

Search method: the information used for this review paper was searched from the mag iran, sid, google scholar and pub med databases using the keywords of traditional medicine, medicinal plants, primary dysmenorrhea and treatment. out of 35 related published papers from 2007 to 2017, 19 papers with the most relevance to the studied subject were used in writing this review

Results

Results: given the positive impact of traditional medicine such as medicinal plants on primary dysmenorrhea and the well-known complications of chemical drugs, these plants may be used to treat the patients with primary dysmenorrhea and enhance the quality of life of women and girls of reproductive age.

Conclusion

Conclusion: the results obtained from most of the conducted studies revealed that medicinal plants studied in this research such as sideritis, fenugreek, valerian, ginger, aloe vera gel, wheat germ, fennel, echinophora and cinnamon had anti-inflammatory and analgesic properties as well as a beneficial impact on relieving the primary dysmenorrhea pain without any side effects.

Keywords

Keywords: traditional medicine, medicinal plants, primary dysmenorrhea, treatment

The impact of regular swimming exercise on oxidative stress and sirt1 gen expression in the panceratic tissue of type 2 diabetic rats

Hamed Heydari,[1,*]

1. Department of physiology, Faculty of medicine, Tabriz university of medical sciences, Tabriz, Iran

Abstract

Introduction

It was known that oxidative stress has a key role in the woesening of diaabtes and sirt1 is one of the factors regulating oxidative stress. there is not enough evidence on the effect of swimming exercise on type 2 diabetes mellitus (t2dm) -induced panceraic oxidative stress and it s effect on sirt1 expression.. this study aimed to evaluate the effect of regular swimming exercise on expression level of sirt1 and pancreatic oxidative stress type 2 diabetic male rats

Methods

Twenty eight male wistar rats were randomly devided into four groups (n=7): sedentary control,exercise, sedentary diabetic and diabetic + exercise. diabetes was induced by high fat diet (hfd) and a low dose of streptozotocin (35 mg/kg, i.p). in exerciced groups, one week after the induction of diabetes, rats were subjected to swimming (60 min/5 days a week) for 12 weeks. at the end of the intervention and after the sedation with ketamine and xylazine, the pancreatic tissue was prepared and was used for determination of antioxidant enzymes (including sod, gpx and cat activities), mda level and sirt1gen expression.

Results

T2dm negatively affected the panceratic antioxidant defense as indicated by reduced sod, gpx cat and increased mda levels. swimming exercise significantly reduced mda level and ameliorated sod ($p<0.01$), gpx ($p<0.05$) and cat ($p<0.001$) in diabetic pancerase tissue. sirt1 expression downregulated by t2dm, however swimming exercise increased it.

Conclusion

Regular swimming exercise ameliorated oxidative stress via upregulation of sirt1 in the pancerase of type 2 diabetic male rats

Keywords

Swimming exercise; oxidatitie stress; sirt1; type 2 diabetes

The increase of light emission of luminescent bacteria: optimization using nanoparticles

Shadab Jabbarzadeh,[1,*] Mehdi zeinoddini,[2] Saman hosseinkhani,[3] Azade azizi,[4]

1. Malek Ashtar University of Technology, Tehran, Iran
2. Malek Ashtar University of Technology, Tehran, Iran
3. Tarbiat Modares University, Tehran, Iran
4. Malek Ashtar University of Technology, Tehran, Iran

Abstract

Introduction

Vibrio fischeri and vibrio harvey are the gram-negative bacteria of the vibrionaceae family that produce blue light and seen with the naked eye. the mechanism of light emission is dependence to an enzyme that named luciferase. these bioluminescence bacteria as biological markers could be used for measuring of food and water pollution. the aim of this work is the optimization of light emission of these bacteria using silver, silica and magnetic nanoparticles.

Methods

In this study, the effect of silver, silica and magnetic nanoparticles in the culture and light emission of two species examined v. fischeri and v. harvey was determined. for this, v. fischeri and v. harvey cultured in a seawater medium with different concentrations and type of nanoparticles at 25 Â° c at 200 rpm. the growth rate and light emission of these bacteria was measured in 2 hour intervals using spectrophotometer and luminometer, respectively.

Results

The data was showed that silver and silica nanoparticles reduced the growth and decrease of light in two species. but, the effect of magnetic nanoparticle in two concentration of 50 and 150 Âµg/ml has been showed positive effects on growth rate and cause more stability of light from bioluminescence activity.

Conclusion

The culture optimization of these bacteria could be used for design of suitable kit in order to assessment of food and water pollution.

Keywords

Optimization, light emission, nanoparticle, vibrio.

The influence of metal nanoparticles on pseudomonas aeruginosa

Niloufar Rashidi,[1,*] Mojgan oshaghi,[2] Parisa roshani asl,[3]

1. Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
2. Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran
3. Faculty of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Today, the treatment of infections caused by gram-negative pathogens has become a major challenge in the medical world, because of the expanding antimicrobial resistance in the healthcare setting. among infections caused by these bacteria, pseudomonas aeruginosa as the second most frequent pathogen, has a prominent role. antimicrobial resistance has led to a serious limitation in treatment options for p. aeruginosa infections. the continuous emergence of bacterial resistance has challenged the research community to develop novel antibiotic agents. nowadays, nanotechnology has emerged as a modern and innovative strategy to develop new formulations based upon metallic nanoparticles (nps) with antimicrobial properties. this review aims to indication a short review for approaches on the control of p. aeruginosa using various types of metal nanoparticles, their benefits, limitations and the possible modes of their action.

Methods

The information of this article was collected by searching the keywords related to the subject on the electronic databases such as google scholar, pubmed and scopus and surveying different scientific articles published in reliable online journals.

Results

Numerous studies have been done on the metal based nanomaterials including quantum dots, various metallic and metal oxide nps. studies have shown that metals such as zinc, titanium, cadmium, magnesium, iron, manganese, copper, silicon, gold, selenium, silver and tellurium at the nano-scale, control various cellular metabolisms in p. aeruginosa and also display bactericidal and antibiofilm activities against this pathogen. the difference between the negative charge of the microorganism and the positive charge of the nanoparticle acts as an absorption electromagnet between the nanoparticle and the microbe and causes the nanoparticle to bind to the cell surface and thus can cause cell death. the generation of reactive oxygen species, binding with cell wall and change in permeability of the cell membrane, reaction with thiol groups of surface proteins of bacterial cells and inactivation of dna are the most common mechanisms of action of nanoparticles.

Conclusion

Based on the results of the studies, metal nanoparticles have an inhibitory effect on p. aeruginosa. therefore, they can consider as an appropriate alternative to prevent or treatment of p. aeruginosa infections. main effect on pathogens, selective toxicity to biological systems, decreasing dominant resistance and costs are the features which make metal nanoparticles the suitable candidates for biomedical applications

Keywords

Pseudomonas aeruginosa, metal nanoparticles, antimicrobial, antibiofilm

The investigation of wild olive (olea europaea subsp. cuspidata) leaves effects on reproductive health among iranian women

Rayan Partovi,[1] Alireza iranbakhsh,[2,*] Masoud sheidai,[3] Mostafa ebadi,[4]

1. islamic azad university science and research branch, Tehran, Iran
2. islamic azad university science and research branch, Tehran, Iran
3. shahid beheshti university faculty of science
4. islamic azad university science and research branch, Damghan, Iran

Abstract

Introduction

The ability of giving birth to a child is one the most important subjects among the family. therefore, lots of researchers have been focused on new therapy methods to prevent and/or cure impregnability. in recent years, using medicinal plants to amend or treat different diseases have been raised due to some certain benefits against chemical drugs such as fewer side effects and less costs. in the present study, we have investigated the impact of olea europaea subsp. cuspidata leaves extract on reproductive health among iranian women

Methods

In order to ensure the confidence of results, the medical case of fifty women with impregnability have been studied. using different olive based products were the only common factor of these women. different medical tests were taken to determine the mechanism of impregnability

Results

Taking different medical tests, it was found that despite formation of embryocyte, in 60 percent of them the cell was unstable and died in a few days

Conclusion

Nowadays, thousands of researchers have been focused of reproductive health among different societies all over the world. therefore, finding new therapy methods in dropping the impregnability rate are extremely important. according to our investigations, one of the major factors in impregnability was using olive leaves extracts in women. furthermore, we suggest more critical molecular studies to determine the main mechanism of this incidence

Keywords

Olive, reproductive health, sterility, fertility

The long non-coding rnas; a new trend in molecular biology â€Žof infectious diseases

Reza Gheitasi,[1,*] Sanaz jourghasemi,[2] Hamed manoochehry,[3] Sara khosravi,[4]

1. MSc student of Immunology, Students Research Committee, Hamadan University of Medical Sciences, Hamadan, â€ŽIran.â€Ž
2. MSc student of Immunology, Students Research Committee, Hamadan University of Medical Sciences, Hamadan, â€ŽIran.â€Ž
3. â€Ž2. Ph.D. student of medical biotechnology, Students Research Committee, Hamadan University of Medical â€ŽSciences, Hamada
4. MSc student of Microbiology, Students Research Committee, Hamadan University of Medical Sciences, Hamadan, â€ŽIran.â€Ž

Abstract

Introduction

â€Ž brucellosis is another example of infectious disease and one of the five most common zoonotic â€Žbacteria in the world (1). evidence suggests that non-coding rnas undoubtedly have an â€Žundeniable function in infectious disease, such as brucellosis. in these abnormalities, by use of â€Žreplacement or inhibition of non-coding rnas is emerging as a new novel way in treatment. in â€Žthis review, we focus on long non-coding rnas (lncrnas) that are involved in brucellosis (2). â€Žwe define the long noncoding rnas and indicate a brucellosis-inclined list of lncrnas, and â€Ždescribe some of the role of lncrnas in infection (3), as well as current and future research â€Žprograms for lncrnas for the treatment of infectious disease, especially brucellosis.â€Ž

Methods

Pubmed, scopus, and google scholar were searched from january 2013 to may 2018. based on â€Žinclusion and exclusion criteria ten relevant experimental studies with moderate bias were â€Žselected. the effect of long non-coding rna new player in brucellosis was evaluated. â€Ž

Results

Our analysis showed that the presently available evidence confirmed the therapeutic potential â€Žof lncrnas in significantly inhibition and improvement of brucellosis symptoms. â€Ž

Conclusion

Lncrnas are an emerging field of investigation as they are suggested to regulate key biological â€Žprocesses, including cellular proliferation and differentiation, and their aberrant expression is â€Žstrongly associated with infectious disease (4). an improved understanding of the role of â€Žncrnas in brucellosis would provide valuable information about key infection-promoting â€Žpathways and might be

highly useful for diagnostic and prognostic assessments (3). this â€Žknowledge might also lead to advancement in the management of brucellosis through the â€Ždevelopment of novel personalized ncrna-based therapies.â€Ž

Keywords

Lncrnas, new marker, infectious disease, zoonotic bacteria, brucellosis

The main role of honey in wound dressings for wound healing management

Maliheh Yaghoobi,[1,*]

1. University of Zanjan

Abstract

Introduction

Honey is a viscous, supersaturated sugar solution derived from nectar gathered and modified by the honeybee. honey has been used since ancient times as a remedy in wound care. honey dressings are widely available and promoted as effective wound treatments, but only in more recent times has a scientific explanation become available for its effectiveness. many studies and some trials has suggested that honey may accelerate wound healing. honey has many other properties that make it an ideal wound dressing. it appears to draw fluid from the underlying circulation, providing both a moist environment and topical nutrition that may enhance tissue growth. histologically, honey appears to stimulate tissue growth in animal and human controlled trials, fewer inflammatory changes, and improved epithelialization. the aim of this review was to assess the effects of honey compared with alternative wound dressings and topical treatments on the of healing of acute (e.g. burns, lacerations) and/or chronic (e.g. venous ulcers) wounds.

Methods

In this study, after describing about the characteristics of acute and chronic wounds, we will try to describe characteristics of ideal wound dressings for these wounds. followed by a brief explanation the production process of different wound dressings from traditional to modern, we present the most widely used biomaterials and bioactive molecules that involved in the structure of some wound dressings. the methods of usage the honey and its dosage in the composition of dressings are studied.

Results

It has been reported from various clinical studies on the usage of honey as a dressing for infected wounds that the wounds become sterile in 3-10 days. others have reported that honey is effective in cleaning up infected wounds. it has also been reported that honey dressings stop advancing necrosis. honey has also been found to act as a barrier preventing wounds from becoming infected, preventing cross-infection, and allowing burn wound tissue to heal rapidly uninhibited by secondary infection. it has been observed that under honey dressings sloughs, necrotic and gangrenous tissue separated so that they could be lifted off painlessly, and others have noted quick and easy separation of sloughs and removal of crust from a wound. rapid cleansing and chemical or enzymatic debridement resulting from the application of honey to wounds have also been reported, with no eschar forming on burns. several other authors have noted the cleansing effect of honey on wounds. it has also been noted that dirt is removed with the bandage when honey is used as a dressing, leaving a clean wound. honey has also been reported to give deodorization of offensively smelling wounds.

Conclusion

Honey is an ideal first-aid dressing material, especially for patients in remote locations when there could be time for infection to have set in before medical treatment is obtained: it is readily available and simple to use. it would be particularly suitable for first-aid treatment for burns, where emergency dousing or cooling frequently involves the use of contaminated water which then leads to heavy infection of the traumatised tissue. as well as providing an immediate anti-inflammatory treatment the honey would provide an antibacterial action and a barrier to further infection of the wound. the available studies suggest that honey dressings promote better wound healing than other antibiotics (silver sulfadiazine) agents for burns.

Keywords

Honey, antimicrobial properties, wound dressing, acute wound, chronic wound, wound healing

The natural phenolic compounds as modulators of nadph oxidases in hypertension

Mozhdeh Yousefian langroudi,[1,*] Neda shakour,[2] Hossein hosseinzadeh,[3] A.wallace hayes,[4] Farzin hadizadeh,[5] Gholamreza karimi,[6]

1. Department of Medicinal Chemistry, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran
2. Department of Medicinal Chemistry, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran
4. University of South Florida College of Public Health, USA; Michigan State University, East Lansing, MI, USA
5. Department of Medicinal Chemistry, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad. Iran.
6. Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Ir

Abstract

Introduction

Hypertension is a major public health problem worldwide. it is an important risk factor for other cardiovascular diseases such as coronary artery disease, stroke, heart failure, atrial fibrillation, peripheral vascular disease, chronic kidney disease, and atherosclerosis. purpose: there is strong evidence that excess ros-derived nadph oxidase (nox) is an important agent in hypertension. it augments blood pressure in the presence of other pro-hypertensive factors such as angiotensin ii (ang ii), an important and potent regulator of cardiovascular nadph oxidase, activates nox via at1 receptors. nadph oxidase, a multi-subunit complex enzyme, is considered as a key source of ros production in the vasculature. the activation of this enzyme is needed for assembling rac-1, p40phox, p47phox and p67phox subunits. since, hypertensive patients need to control blood pressure for their entire life and because drugs and other chemicals often induce adverse effects, the use of natural phenolic compounds which are less toxic and potentially beneficial may be good avenues of addition research in our understand of the underlying mechanism involved in hypertension. this review focused on several natural phenolic compounds as berberine, thymoquinone, catechin, celastrol, apocynin, resveratrol, curcumin, hesperidine and g-hesperidine, and quercetin which are nox inhibitors. in addition, structure activity relationship of these compounds eventually as the most inhibitors was discussed.

Methods

This comprehensive review is based on pertinent papers by a selective search using relevant keywords that was collected using online search engines and databases such as sciencedirect, scopus and pubmed. the literature mainly focusing on natural products with therapeutic eï¬*f*cacies against hypertension via experimental models both in vitro and in vivo was identified.

Results

It has been observed that these natural compounds prevent nadph oxidase expression and ros production while increasing no bioavailability. it have been reported that they improve hypertension due to formation of a stable radical with ros-derived nadph oxidase and preventing the assembly of nox subunites

Conclusion

: it is clear that natural phenolic compounds have some potential inhibitory effect on nadph oxidase activity. in comparison to other phenolic plant compounds, the structural varability of the flavonoids should off different impacts on oxidative stress in hypertension including inhibition of nadph oxisdase and direct scavenging of free radicals.

Keywords

Reactive oxygen species (ros); nox; apocynin; catechin; curcumin

The necessity of updating old cells to rejuvenate a persons

Saied Mohammadzadeh,[1] Prokhorov leonid,[2,*] Goudochnikov v.i.,[3]

1. Lorestan University, Faculty of agriculture
2. Lomonosov Moscow State University Faculty of Biology
3. Council of International Society for DOHaD

Abstract

Introduction

It is well known that the number of healthy, vital cells decreases in organs during aging, and the number of dead cells increases, some of which are replaced by connective tissue. it follows from this: to solve the problem of aging, it is necessary that any organ always consists of viable, young cells capable of performing the appropriate functions. in our research we have tried to show that in order for the culture of cells (including organ or tissue, etc.) always to be dominated by young working cells, it is necessary to constantly renew the cellular population, i.e. to eliminate old cells and thus create opportunities for young cells to divide and restore the population of cells (as well as the population of cells in the organs, so that they can again perform their functions). it is shown that under certain conditions it is possible to achieve that the culture of cells in a closed space can live for indefinitely long time

Methods

The experiments use spontaneously transformed chinese hamster cells (tchc) derived from subcutaneous connective tissue, line b11dii â€“ faf28, clone 431. cell cultures grow in hermetically closed by rubber stoppers 3 glass flasks of carrel with diameter of 54 mm at a temperature of 370 c. in the experiment begun on november 2, 2002, the growth medium mem with 10% bovine serum is used. tchc are not subcultivated, i.e. cells are not removed from the surface of the flask, as in the classical reseeding, flasks do not change, but once in 15-16 days changing the medium is performed to fresh one. throughout the experiment since 2002, which continues to the present moment, the number of living cells in each flask is considered. in another experiment, the same cells tchc are used, but they are grown on another medium â€“ dmem with 5% bovine serum with antibiotics (100 u/ml penicillin and 100 ug/ml streptomycin). cells grow in the same conditions. the experiment lasts over 5 years (since june 15, 2013).

Results

We found in the first experiment that the cells in the culture remain alive for 15 years (more than 5500 days) and in second experiment over 5 years. the old cells die, unfasten from the growth surface and move into the growth medium. in the destroyed form, they are present in the growth medium. thus they free up space for other cells. if at this point to pour out the old growth medium, together with it old and destroyed cells are removed, and after adding a fresh medium, the remaining living cells in the flasks, begin to divide again and again reach the saturating density. then the process repeats itself

Conclusion

To remove old cells in the body could try to use some enzymes that are able to destroy cell membranes.the discovered phenomenon can be a significant addition to the general range of evidence for the author s methods of rejuvenation and a significant increase in life expectancy

Keywords

Cell culture, rejuvenation, life expectancy

The optimization of ppsp15 purification from the salivary glands of iranian phlebotomus papatasi

Seyedeh maryam Ghafari khalaf mohamadi,[1] Parviz parvizi,[2,*] Sahar ebrahimi,[3] Ali bordbar,[4]

1. Pasteur institute of Iran
2. Pasteur institute of Iran
3. Pasteur institute of Iran
4. Pasteur institute of Iran

Abstract

Introduction

Sand fly saliva contains proteins with modulating host immune system and plays an important role in both blood feeding and outcome of leishmania infection. the profile of salivary proteins were examined and analyzed from different endemic foci of p. papatasi by focusing on endemic antigens for vaccine production.

Methods

Sand fly specimens were caught from endemic area of zoonotic cutaneous leishmaniasis in northern khorasan province, iran by sticky papers and cdc light traps. different methods of protein extraction were employed and a new technique was developed because of lack of enough number of specimens. proteins were extracted from salivary gland tissue with a lysis buffer. purification was performed using reverse phase hplc with a linear gradient protocol from 40 to 60% of acetonitrile.

Results

Sds-page revealed 15 separated bands ranging 11-275 kda. the protein of ppsp15 was isolated with 15kda weight in 60% acetonitrile. among sp15 like proteins, ppsp15 is the first report of a very high hydrophobic protein of salivary glands from iranian p.papatasi.

Conclusion

For vaccine production against leishmaniasis, local salivary gland proteins and efficient extraction method should be intended. depending on locations, choosing different and suitable proteins should be considered.

Keywords

Ppsp1; rp-hplc; sds-page; iranian phlebotomus papatasi

The pathogenic effect of human t-cell leukemia virus type i (htlv-1) in adult tâ€• cell leukemia/lymphoma is mediated through tax-stimulation of wnt signaling pathway

Mahdieh Mollaie,[1,*] Fateme khalaji,[2] Fateme naderi,[3]

1. zabol university of medical science
2. zabol university of medical science
3. zabol university of medical science

Abstract

Introduction

Having a tight association with a variety of human diseases,(htlvâ€• 1) a retrovirus that infects 20 million people worldwide, recently captured tremendous attentions and considerable number of researches are now on the way to identify a precise mechanism of action for this complex deltaretrovirus. htlv-1 was the first retrovirus to be shown to be the etiologic agent of a severe and fatal cd4+ lymphoproliferative disease, adult tâ€• cell leukemia/lymphoma (atll). it is well established that tax, which perturbs cell cycle regulation and modulates cellular gene expression has a critical role in the transformation of infected cells. given to the interconnection between tax and various oncogenic signaling pathways, it was of particular of interest to dissect whether tax regulatory protein could stimulate wnt axis, an important signaling pathway activated in acute leukemia.

Methods

We have chosen both the htlv-i-infected t-cell lines and the non-infected jurkat leukemic t cells. to investigate whether tax expression is correlated with alteration in the phosphorylation of gsk-3Î² and Î²-catenin,a critical components of wnt signaling ,immunoblotting was applied on extracts from htlv1-infected t-cell lines or human jurkat tcells transfected with tax cdna expression plasmid. next, rq-pcr was done to evaluate the mrna expression level of a large cohort wnt associated genes in both cell lines. to address the impact of tax on the regulation of cell cycle and apoptosis, dna content analysis and annexin-v staining were also performed, respectively.

Results

the results of the present study clearly demonstrated that tax-stimulated the wnt signaling pathway in both htlv-i-infected and tax-transfected human t cells is associated with the alteration in the phosphorylation level of gsk-3Î² and Î²-catenin. moreover, we found that tax not only down-regulated the transcriptional activity of p21 and p27, two well-known cyclin-dependent kinase inhibitors, resulting in progression of cell cycle, but also prevented apoptosis, through disturbing the balance between pro- and anti-apoptotic target genes.

Conclusion

taking these findings together, the aberrant activation of wnt axis is suggested to contribute to cellular immortalization and transformation induced by htlvâ€• 1 infection.

Keywords

Htlv-i, tax, adult tâ€• cell leukemia/lymphoma (atll), wnt signaling.

The potential ability of microrna-targeted human adenovirus type 5 to replicate and lyse breast cancer cells

Mohammad Shayestehpour,[1,*] Shaghayegh yazdani,[2] Talat mokhtari-azad,[3]

1. Autoimmune Diseases Research Center, Kashan University of Medical Sciences, Kashan, I.R. Iran
2. Department of Microbiology, Faculty of Advanced Science & Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
3. Department of Virology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Microrna (mir)-targeting method is the newest approach to decrease cytotoxicity of oncolytic viruses in normal cells. in this strategy, mir binding sites are inserted into the viral genome so that viral replication can be regulated by concentration of cellular microrna. microrna-145 is reportedly downregulated in breast tumors but expressed frequently in normal cells. this study was aimed to evaluate the ability of two mir145-5p-targeted adenovirus 5 to replicate and lyse the breast cancer cells, but not normal cells.

Methods

Control and recombinant adenoviruses carrying five or ten copies of mir145-5p binding sites were generated using pad/v5-dest and pentr11 vectors according to gateway cloning technology. the viruses inoculated at an moi of 1.0 into normal human mammary epithelial cells (hmepc), bt-20, mda-mb-453 and mcf-7 breast cancer cell lines. the viral titers were measured 12, 24, 36 and 48 h postinfection using tissue culture infectious dose 50 (tcid50) assay, and adenoviral genomes at 48 h after infection were measured using quantitative real-time pcr. at 3 and 6 days post-infection (moi: 2.0), cell viability was estimated by 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (mtt) assay.

Results

Titer of control virus and adenoviruses carrying mir145-5p binding sites in breast cancer cell lines (bt-20, mda-mb-453, mcf-7) - with a low level of mir145- exponentially increased within 48 h. hmepc had a high level of mir145; therefore, the replication of adenoviruses carrying mir binding sites in hmepc was inhibited by endogenous mir145-5p at all-time points after infection. dna copy number of adenovirus carrying 10mir sites in hmepc was approximately 22 times lower than that of adenovirus carrying 5mir sites. six days after infection with adenovirus carrying mir binding sites, viability of bt-20, mda-mb-453 and mcf-7 breast cancer cell lines was in the range of 35-45%, while over 80% of normal breast cells (hmepcs) retained their viability.

Conclusion

Microrna145-5p-targeted adenovirus can potentially replicate and selectively lyse breast cancer cells with low cytotoxicity in normal cells. increasing the number of microrna binding sites within the adenoviral genome confers more selectivity for viral replication in cancer cells.

Keywords

Adenovirus, breast cancer, microrna

The potential role of nanoscale exosomes in the diagnosis of diseases

Seyedeh farzaneh Mahdavian,[1] Shabanali khodashenas limoni,[2,*]

1. department of medical biotechnology,faculty of new medical technology,mazandaran university of medical science,sari,iran
2. department of medical biotechnology,faculty of new medical technology,mazandaran university of medical science,sari,iran

Abstract

Introduction

Exosomes are 50_150 nm vesicles. they are part of the intracellular communication network which is released to the extracellular environment. they contain many types of macromolecules such as protein, mirna, noncoding rna and mrna. most of the cells (prokaryote and eukaryote) can secrete exosomes which contain specific biomolecules. in mammalian, exosomes are found in body fluids such as blood, urine, saliva and etc. because their contents reflect the physiological condition of parent cells and their existence in most biological fluids, exosomes have the potential to play a role as a liquid biopsy biomarker. abnormal cells also secrete exosomes whit specific cargos. in this review, we tried to present a definition about exosomes and summarize the role of them in the formation and progression of diseases. we also reviewed researches about exosome proteomics, exosome_ derived mirna and long non-coding rna profiling types of diseases including cancers(lung adenocarcinoma, pancreatic, gastrointestinal and etc), neurodegenerative, infectious and cardiovascular diseases.

Methods

Keywords of exosomes and diagnosis are searched in google scholar, pubmed and scopus and articles were reviewed from 2013 t0 2018

Results

Survey of exosome derived mirna, lncrnas and protein demonstrated differences in types and level of contents between patient and healthy samples. these evidence has indicated that exosome could be used as non-invasive diagnostic biomarkers.

Conclusion

It is now clear that exosomes have a major role in the physiological process in both normal and abnormal tissues. although exo-biomarkers are non- invasive and accessible, there are limitations for translation of exo-biomarkers to a clinical setting. such as lack of standardization of methods for isolation and characterizing them. in addition, the condition of sampling can influence the level of producing exosomes and subsequences analysis. so there is a requirement to standardization of methods for sample handling and characterization.

Keywords

Exosomes, diagnosis,mirna

The practical applications of organoid systems

Zahra Nabizadeh,[1] Ali akbar shaebani,[2,*]

1. Medical Biotechnology Department, Biotechnology Research Center, Semnan University of Medical Sciences
2. Medical Biotechnology Department, Biotechnology Research Center, Semnan University of Medical Sciences

Abstract

Introduction

Miniature organs called organoids are three-dimensional cell cultures of stem cells or induced pluripotent stem cells from various organs such as intestine, liver, brain, kidney, stomach and retina that can model main attributes of whole organs. in organoid systems for organizing a large range of tissue types require only a small number of cells.

Methods

This is a review article.

Results

Current technical advances in developing the organoids of the intestine and liver have shown the practical potential of organoid systems as a valuable tool for employing in biomedical researches such as the modeling of disease, examing organ development and tissue morphogenesis, testing cytotoxicity for drug screening and developing organoid-based treatments including regenerative and personalized medicine. in addition, apart from the above-mentioned, the organoid technologies can also be used for developing cancer organoids in order to model cancer development and treatments.

Conclusion

In spite of the enormous applications of organoid-based technologies, they have important limitations that must to be overcome. in this paper, we will present a comprehensive review on recent advances in the development of organoid-based systems and their applications in biomedical researches. also there is a particular focus on main limitations of these systems.

Keywords

Organoids; organoid-based systems

The prediction of the genes-microrna target involved in the inflammatory pathways of colorectal cancer by bioinformatics tools

Nashmin Fayazi hossieni,[1] Pouria samadi,[2] Masoud saeedi jam,[3,*]

1. Department of Molecular Medicine and Genetics, Hamadan University of Medical Sciences, Iran
2. Department of Molecular Medicine and Genetics, Hamadan University of Medical Sciences, Iran
3. Department of Molecular Medicine and Genetics, Hamadan University of Medical Sciences, Iran

Abstract

Introduction

In recent years, studying cell regulatory systems such as gene regulatory networks and cellular signaling networks have been regarded. microrna that regulates the gene expression through binding to the end of the target mrna have oncogenic and tumor suppressive role in various cancers. recently, microrna (mirna) have emerged as another layer of gene regulation. chronic inflammation plays a key role in altering tumor microenvironment, angiogenesis and metastasis. inflammation is controlled by various inflammatory mediators such as cytokines, chemokines, prostaglandins, and microrna. in this study, by employing several bioinformatics tools we examined the interactions between effective inflammatory genes and microrna in the development of colorectal cancer in the form of network.

Methods

The 27 genes involved in the inflammation were found from relevant articles from 2000 to 2018. mirwalk tool was used to find gene-microrna targets, david for pathway analysis, string for construct protein-protein interconnection network and cytoscape to identify the topological properties of the network.

Results

Finally, 18 genes including 8 inflammatory genes and 10 microrna were identified in this interconnection. interferon gamma (ifng) with the highest degree was identified as the most important node. also, two microrna including mir-5692a and mir-1200, which were not introduced in previous studies of colorectal cancer, were also identified.

Conclusion

Mir-5692a and mir-1200 can be introduced as new candidates for further study on colorectal cancer.

Keywords

Inflammation, colorectal cancer, microrna, gene regulatory network

The pregnancies outcome following icsi-pgs and icsi in patients with recurrent gestational trophoblastic disease

Zahra Chekini,[1] Maryam hafezi,[2,*] Hamid gourabi,[3]

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
2. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
3. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Abstract

Introduction

Gestational trophoblastic disease (gtd) is a heterogeneous neoplastic group of diseases characterized by abnormally proliferating trophoblastic tissues. most of all gtd cases are hydatidiform mole (hm). genetically, the presence of excess paternal genome (dispermia) and maternal chromosome loss resulted in 46xx embryo (androgenic hydatidiform mole). recurrent gtd are defined by the occurrence of at least two gtd pregnancies in the same patient. women with a history of one gtd have an approximately 1% chance of recurrence in subsequent pregnancy; however the recurrence rate is 20 to 28% higher after two gtd pregnancies. intracytoplasmic sperm injection (icsi) could be prevent of recurrent gtd through ensure fertilization by a single sperm. however, following the icsi method, several of the gtds was also reported. following further studies, it was observed that the icsi with preimplantation genetic screening (pgs) assurances that only one spermatozoa enters oocyte, and on the other hand, it can identify the 46xy embryos that can prevent of recurrent gtds. we aimed compared the pregnancy outcomes of recurrent gtds that undergone with icsi and icsi/pgs process.

Methods

In this retrospective study, we recruited all couple who referred to royan institute causes infertility complaint with gtd history during 2010 to 2015 years. gtd confirmed by serial Î²hcg titer, ultrasonography and histopathology assessment of the evacuated uterine contents. a questionnaire was used to obtain information about the demographic and clinical characteristics and consequences of icsi and icsi/pgs cycles. statistical analysis was assessed by spss version 21.

Results

In this study, we analyzed all patients with gtd history that included total 56 cycles icsi / pgs and icsi cycles. from among them icsi and icsi/pgs was 32 cycles (57.1%) and 24 cycles (42.9%), respectively. then, we analyzed between women with only one gtd history who underwent icsi cycles (72.1%) and who was â‰¥2 gtd history that performed icsi/pgs cycles (27.9%). total cycles were twelve. the demographic characteristics of all groups were not statistically significant (p>0.5). the mean age of icsi / pgs and icsi

group at administration time was 34.13Â±3.86 and 33.88Â±4.22years, respectively. in all groups, the total dose of received gonadotropins, total oocyte retrieved numbers, the number of mii and the embryos in the icsi/pgs group were significantly higher than the icsi group (pâ‰¤0.05). pregnancy outcome was shown, gtd not observed in all groups, however, ongoing pregnancy for icsi and icsi/pgs in both compared group was 20%-20.6% and 16.5%-20.8%, respectively, which was almost the same. also, fertility failure rate was lower in icsi/pgs group (54.2-58.8%) compared to icsi group (70-69%).

Conclusion

Therefore, despite receiving a high dose of gonadotropins in icsi/pgs cycles and achieving more embryos, the success rate of pregnancy in both icsi and icsi/pgs groups is approximately the same, while in both groups gtd was not observed, which can indicate that both of these methods can be effective in preventing gtd pregnancy by considering that icsi/pgs is an expensive method.

Keywords

Gestational trophoblastic disease (gtd), recurrent gtd, intracytoplasmic sperm injection (icsi), pre

The prevalence of sapovirus in children and adults with acute gastroenteritis from tehran and alborz provinces

Mahtab Dehbozorgi,[1,*] Seyed reza mohebbi ,[2] Seyed masoud hosseini,[3] Mohammad namayan,[4] Shabnam kazemian,[5] Mohammad reza zali,[6]

1. Department of Microbiology, Faculty of Biological Sciences, Shahid Beheshti University
2. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences
3. Department of Microbiology, Faculty of Biological Sciences, Shahid Beheshti University
4. Department of Microbiology, Faculty of Biological Sciences, Shahid Beheshti University
5. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences
6. Gastroenterology and Liver Diseases Research Center, Research Institute for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences

Abstract

Introduction

Sapovirus (sv) infection is a public health concern which plays an important role in the burden of diarrheal diseases, causing acute gastroenteritis in people of all ages in both outbreaks and sporadic cases worldwide. the molecular properties of sapoviruses are characterized as nonenveloped, positive-sense, single-stranded rna genome and belong to the caliciviridae family. the aim of this study was to determine the frequency of sapovirus infection among tehran and alborz provinces children and adults groups suffering from acute gastroenteritis symptoms.

Methods

A molecular epidemiological study of svs prevalence was performed in two provinces of iran (tehran and alborz) from november 2017 to june 2018. a total of 150 stool specimens were collected from hospitalized patients with acute gastroenteritis and stored at -70oc until use. viral rna was extracted and reverse transcription nested-pcr was employed to amplify and detect sv genome.

Results

The study population comprised of 83 males (55%) and 67 females (45%) with the age range from 1 month to 80 years. main clinical symptoms were diarrhea, nausea, vomiting, fever, abdominal pain and headache. totally, 4 of 150 samples (2.6%) were positive for sapovirus infection. (2.4% vs 2.9% respectively, p value=0.605)

Conclusion

Although the frequency of sv infection among studied cases was low, it revealed the presence of this virus as pone of the causes of infectious diarrheal diseases. the findings indicate that sapovirus is one of the neglected etiologies of acute gastroenteritis among patients from tehran and alborz provinces especially in younger children. therefore setting up proper diagnostic tests and investigating the sapovirus infection is a necessity for controlling the sapovirus sporadic cases and outbreaks.

Keywords

Acute gastroenteritis, sapovirus, frequency, molecular detection

The relationship between brca1 gene rs1799950 polymorphism and breast cancer in iranian women

Shirin Mohammadi toudeshki,[1,*] Tahmasebifard zahra,[2] sotoodehnejadnematalahi fattah,[3]

2. department of biology,Islamic Azad university of Roudehen branch, Roudehen, Iran.
3. Department of Stem Cells and Developmental Biology at Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.

Abstract

Introduction

Breast cancer is the most common cancer in the world and is the second leading cause of death in women. among the predisposing factors of cancer, genetics is one of the major factors affecting other factors, such as the environment and nutrition. tumor-sensitive tumors in breast cancer, including brca1, make women more susceptible to breast cancer. in this study, the relationship between rs1799950 polymorphisms of brca1 gene and breast cancer in iranian women was investigated.

Methods

100 patients with breast cancer and 100 normal samples were selected. all of the specimens were captured and their dna was extracted by salting out. after confirmation of purity of dna, the sequence was amplified by pcr technique and cut off with specific enzyme. then the genotypes of the results were determined by the number of cut bands. the results were determined using spss software and xÂ², logistic regression, and so on

Results

The gg mutant genotype was not significantly associated with the two groups (p value: 0.082, or: 1.746, ci95%: 0.930-3.281). this genotypic mutant has a significant relationship with body mass index (p-value: 0.004) and histopathologic changes (p-value: 0.0001). however, with age (p-value: 0.331) and grade of cancer (p-value0.147) the relation of the term does not indicate meaning.

Conclusion

Genetic change from a to g in position 356 of brca1 gene (rs1799950) is not related to the risk of breast cancer in iranian patients.

Keywords

Breast cancerØŒ brca1ØŒ pcrØŒ rs1799950

The relationship between midwife job stress and selective episiotomy in nulliparous women

Mina Ghalenovi,[1,*] Zahra abedian,[2]

1. master of midwifery, faculty member of sabzevar university of medical sciences, hran
2. Master of Midwifery, Faculty member of Mashhad University of Medical Sciences, Iran

Abstract

Introduction

Episiotomy is a common cause of maternal trauma in nulliparous women. many studies have confirmed the selective episiotomy. one of the reasons for occupational stress and burnout among midwives is due to traumas that occur during delivery to patients. deciding whether or not to perform episiotomy is ultimately done by the perpetrators of childbirth. the aim of this study was to determine the relationship midwife job stress and selective episiotomy in nulliparous women. .

Methods

This was a descriptive correlation study performed in maternity hospitals in mashhad in 1394. at first, the 60 midwife working at the maternity hospital, who was satisfied to participate in the study, provided the coudron job stress questionnaire. this questionnaire consists of four sections of job stress, health stress life, the stress of personal life, individual person stress. as well as demographic information and midwifery job information, then information about 120 pregnant (for each midwife, two maternity care items were controlled); nulliparous, cephalic, singleton and abnormal body delivered by midwives was collected. episiotomy information was collected by a checklist containing episiotomy indications , the reasons for the midwife to perform episiotomy and etcetra prepared by the researcher. data were analyzed by spss software 16. mann-whitney nonparametric test was used for non-normalization of two variables.

Results

Findings showed that comparing the mean of job stress (p= 0/22), health stress life(p= 0/53), the stress of personal life(p= 0/44) and individual person stress(p= 0/1) in two groups (selective and non-selective episiotomy) showed no significant difference. job stress score in the selected group was 23.7 Â± 3.2 and in the non-selective group was 23 Â± 1.2, and the test showed no significant difference between the two groups (p = 0.085).

Conclusion

The present study showed that there is no significant relationship between the midwife job stress and selective episiotomy in nulliparous women. therefore, it is suggested that studies with more samples, other psychological skills, and even the training of these skills on the performance of midwives.

Keywords

Episiotomy, midwife, job stress, nulliparous

The relationship between vitamin d and gestational diabetes

Fatemeh massomeh Akbarzadeh,[1,*] Fatemeh kazemi navaei,[2]

1. Azad University of Babol
2. Azad University of Babol

Abstract

Introduction

: diabetes is considered as the most common disease around the world, which occurs for about 2 to 13% of pregnancies. gestational diabetes has maternal complications, such as pre-eclampsia, long term complications of metabolic syndrome, type 2 diabetes, and fetal complications such as macrosomia, shoulder dystocia, asphyxie, infant respiratory distress syndrome (irds) and infant hypoglycemia. vitamin d deficiency can be considered as one of the factors related to the incidence of gestational diabetes. this study was carried out aimed to investigate the relationship between vitamin d and gestational diabetes.

Methods

This review article was extracted after searching the resources from the databases of pubmed, scopus, sid, medline google scholar with keywords such as vitamin d deficiency, diabetes, pregnancy, pregnancy outcomes, glucose intolerance, and 35 relevant articles first reviewed, then old articles and those that were less relevant to the subject were deleted, and the 12 new articles with the most relevance to the subject were used in writing this study.

Results

according to our studies, vitamin d plays an important role to help balance and absorb calcium and it is considered as most important known role of vitamin d. vitamin d deficiency is a common problem during pregnancy around the world. a strong relationship is observed between vitamin d deficiency and adverse pregnancy complications, but the role and metabolism of this vitamin during pregnancy is still not well known. according to the results of some studies, vitamin d plays an important role in secretion and insulin dysfunction. the level of vitamin d has been lower in some women with gestational diabetes compared to normal pregnant women and it has been associated with the risk of developing gestational diabetes, however, no significant relationship has been reported in several studies between vitamin d deficiency and gestational diabetes.

Conclusion

: the consequences of vitamin d deficiency in mother and child can be significantly improved by early diagnosis and intervention. it seems that screening for vitamin d deficiency in women who decide to become pregnant in the near future is a necessary step to be treated appropriately if needed.

Keywords

Vitamin d deficiency, diabetes, pregnancy, pregnancy complications, glucose intolerance

The reproductive outcomes following transfer of blastocysts cultured from thawed cleavage stage embryos

Tahereh Madani,[1,*] Poopak eftekhari-yazdi ,[2] Nadia jahangiri,[3] Parvin monsef,[4] Azar yahyaei,[5] Samira vesali ,[6]

1. Department of Endocrinology and Female InfertilityØŒ Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR
2. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR
3. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR
4. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR
5. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR
6. Department of Epidemiology and Reproductive Health, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR

Abstract

Introduction

Many studies have reported that blastocyst transfers result in a better reproductive outcome following art treatment. thus, in ivf practice, there is a shift from early cleavage stage embryo transfer to blastocyst transfer. in this study, an attempt was made to compare pregnancy rate in transfer of thawed cleavage stage embryos and blastocysts cultured from thawed cleavage stage.

Methods

This randomized controlled trial study was conducted between 2015 and 2018, on 213 women undergoing frozen-thawed embryo transfer (fet) cycle. patients with age > 37, previous surgery on the uterus and ovaries, history of recurrent abortion, uterine or sever male factor infertility and poor ovarian reserve excluded from the study. women were randomly assigned to one of the two groups of thawed cleavage embryo transfers (108) and transfers of blastocysts from thawed cleavage embryos (105). the primary outcome measure was clinical pregnancy and secondary outcome measures were rates of implantation, ongoing and miscarriage. for data analysis, spss software was used. in all tests, the significance level was considered less than 0.05.

Results

Both groups were comparable in regards to mean age, body mass index, infertility duration, number of achieved oocytes and mii oocytes, hormone levels, number and quality of frozen-thawed embryos transferred and endometrial thickness on embryo transfer day between groups. no statistically significant

differences were found in rates of clinical pregnancy (40.7 vs. 45.7; p= 0.464), implantation (20.7 vs. 25.0; p= 0.256), ongoing pregnancy (40.7 vs. 43.8; p= 0.650) and miscarriage (0 vs. 4.2; p= 0.495) with thawed cleavage embryo transfers compared with transfers of blastocysts from thawed cleavage embryos.

Conclusion

These data suggest that in fet cycles, transfer of blastocysts from thawed cleavage embryos doesnâ€™t seem to produce better reproductive outcomes than thawed cleavage embryo transfers. a further large clinical trial study design is suggested.

Keywords

Blastocyst, cleavage embryo, frozen-thawed embryo transfer

The review of six early genes encoded by the human papillomavirus (hpv) viral genome in incidence cervical cancer

Zahra Baghersad,[1,*]

1. Master of midwifery, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Introduction

Infection by human papillomavirus (hpv) is a major etiological factor associated with cervicalâ€“uterine cancer, though cancer incidence in infected women is low. although, it is predicted that stem cells are the target of hpv oncogenes during cancer initiation, viral replication and expression of major hpv oncogenes (e.g., e6, e7) occur in the suprabasal layers of the growing epithelium to ensure a productive infection. neoplasias of the genital tract include cervical (cin) and a fraction of these neoplasias progresses to invasive cancers. hpv infection is detected in almost all cervical, half of the vulvar and approximately 70% of cervical tumors. the present study aimed to define the review of six early genes encoded by the hpv viral genome in incidence cervical cancer.

Methods

This study is a review (review article) analysis was performed of systematically using keywords "human papillomavirus, cervical cancer, cin, hpv oncogenes" in information resources "pubmed, up to date, google scholar, biomed, wiley online library, elsevier" among 1995 to 2018 years and found 74 articles and 3 theses were connected with topics that that have been used of full-text articles.

Results

There are six early genes that are encoded by the hpv viral genome. the e6 and e7 proteins are expressed from the p97 promoter and are viral oncogenic proteins. the e6 protein binds to the p53 tumour suppressor in host cells, causing ubiquitination and degradation of p53 and thereby preventing growth arrest. the e7 protein binds to the retinoblastoma protein (prb) tumour suppressor and disrupts the interaction between prb and the e2f family of transcription factors. this then allows e2f to transactivate its target genes, many of which are necessary for dna replication. together, e6 and e7 control cell proliferation and are primarily responsible for the expansion of infected cells. the e1 and e2 proteins are expressed from the p670 promoter and serve as regulatory proteins and are required for viral replication27. the e2 protein is a dna-binding protein that binds near the viral origin and recruits the e1 helicase to the viral origin. e2 also has the ability to act as a transcription factor by regulating the p97 promoter and thus, e6 and e7 gene expression. lastly, the e4 and e5 proteins are also involved in viral genome amplification although the e1 and e2 proteins play a more important role. the phenotype of the cervical neoplasia was suggested to vary depending on the expression levels of e6 and e7 were suggested to increase from cervical intraepithelial neoplasia grade 1 to 3 (cin1 to cin3). these interactions of hpv proteins with cellular pathways of the host

cell will give a chance for potential targets for hpv based cancer treatment strategies. additionally, e2 gene is also believed to take a part in cervical cancer since in about 35% of hpv induced cervical cancers full length viral genomes are expressed regulation of gene expression is changed when the viral dna integrates with the cell chromosomes. this integration leads to a continuous expression of e6 and e7 proteins causing accumulation of mutations of the cellular dna and promoting malignancies.

Conclusion

These accumulations of mutations, mostly monosomies, trisomies, structural changes, chromatid gaps and breaks and double minutes, are often detected in cervical cancers as well as other epithelial tumors. increased expression levels of e6 and e7 in high-risk hpv type infections causes cin2+ phenotypes. this phenotype leads genetic changes that contribute to cancer progression. these suggest that low expression levels of e6 and e7 does not affect the function of the cellular targets in cin1 and therefore does not contribute to cancer progression. in cin2/ cin3+, the viral deregulation assists the viral episome into the host cell chromosome. this may further cause deregulation of e6 and e7 expression. in clinical vaccine trials it was shown that young women can have cin2+ soon after infection. for these cases, it is possible that deregulation of the gene expression is due to cell signaling changes or epigenetic modifications, such as viral dna methylation. an important step has been taken towards prevention of hpv induced cervical cancers with the use of vaccines against hpv. however, due to various reasons, including the unavailability of the vaccines in certain regions of the world or the high costs of the vaccines, the wide application of the vaccines is not available. therefore, in case of cervical cancer development, early detection strategies and treatment play a vital role to prevent any deaths. the treatment for the early cervical cancers is usually performed by conisation or radical hysterectomy. for the more advanced tumors, cisplatin based chemo-radiotherapy is preferred that results in 65-80% survival rates. surgical excisions are usually the standard for the hpv associated anogenital lesions. the treatment strategy for cin is to eliminate the abnormal hpv infected precancerous cells and maintain the cervical integrity. one of the most commonly used treatments for cin involves loop electrosurgical excision procedure, electrofulgaration and cryotherapy.

Keywords

Hpv, cervical cancer, cin, hpv oncogenes.

The role of antioxidant allagic acid in recovering spermatogenesis in a copper nanoparticles-injured rat model

Zahra Almasi,[1,*] Akbar vahdati,[2] Mohsen forouzanfar,[3] Mehrdad shariati,[4]

1. Department of Biology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
2. Department of Biology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
3. Department of Biology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
4. Department of Biology, Kazeroon Branch, Islamic Azad University, Kazeroon, Iran

Abstract

Introduction

The fertility science has faced with major challenges for management of sperm disorder. nowadays, many water pollutants affect the male reproductive system, and common therapeutic methods often results in unsatisfactory results. there is an increasing interest in this topic (nanoreprotoxicity), due to the overall fertility decrease in industrialized countries, but there is still much to know concerning the effect of water pollutants on the reproductive system. nanoparticles (nps) are defined as particles between 1 and 100 nm in size (astm international), with unique size-dependent physical and chemical properties, compared with their larger counterparts (suh et al. 2009). metal nps play an increasing role in consumer products, biomedical applications and in the work environment (taylor et al. 2012). nps are capable of binding to cells as well as macromolecules like proteins and dna (asharani et al., 2009), subsequently, leading to alterations in dna integrity or affecting its synthesis and finally causing and affecting adverse health effects. elsewhere, nonspecific oxidative stress has been suggested as one of the greatest concern in nanoparticle-induced toxicity (nel et al., 2006). copper nanoparticles (cu-nps) are employed as antimicrobial and antifungal additives in water treatment, textiles, and paints (maisano et al., 2015). cu-nps toxicity in male reproduction has only been investigated in few studies. studies in vivo showed when such processes concern germline cells, the result may be altered spermatogenesis and fertility, subsequently affecting the reproduction rate and health of the offspring (ema et al., 2010). in a new study by gallo et al. (2018), performed on sea urchin, cu-nps exposure decreased spermatogenesis, impaired mitochondrial activity and increased the production of reactive oxygen species (ros) and lipid peroxidation. further understanding of natural antioxidant drugs and their effects on the reproductive system could help improving infertility treatments in patients. traditionally, antioxidant drugs could have commonly been used to treat free radicals, cellular process and tissue injured after inflammation and activation of cellular signalling processes by producing ros such as superoxide anion (o2-), hydrogen peroxide (h2o2), and/or hydroxyl radical (â€¢oh). ellagic acid is a natural polyphenolic compound which has properties such as antioxidant activity to preventing lipid peroxidation and protecting germ cells from oxidative damage (pari and sivasankari, 2008; turk et al. 2008; najafi et al. 2018), by scavenging of free radicals and suppression of oxidative damage to dna (festa et al., 2001). since studies on the rat model and including cu-nps and sperm quality data are lacking, the present study was designed to investigate the effect of antioxidant ellagic acid on the recovery of spermatogenesis, histology and sexual hormones (fsh, lh and testosterone) in a cu-nps rat model.

Methods

Sixty adult rats were divided into six groups in a factorial arrangement of cu-nps and allagic acid treatments. rats received for 48 days a standard diet (controls), or a standard diet plus saline (sham). treatment groups orally received (1): 200 mg/kg cu-nps, (2): 50 mg/kg allagic acid, (3): 200 mg/kg cu-nps+10 mg/kg allagic acid and (4): 200 mg/kg cu-nps+50 mg/kg allagic acid. one day after the last treatment, spermatozoa were recovered from epididymis, blood was processed for sex hormones concentration (testosterone, fsh and lh) and testes were processed for histology.

Results

The administration of cu-nps reduced testicular weight and volume, sex hormones concentration (testosterone and lh), the number of spermatogenic cells (including spermatogonia, spermatocytes, spermatids), and leydig cells in testis rats when compared to control ($p<0.01$). treated groups did not show significant changes in fsh concentration and sertoli cell count. administration of cu-nps with allagic acid significantly ($p<0.01$) reverted the spermatogenesis, hormonal levels and histology similar to controls, however not attaining the same sperm quality than controls

Conclusion

Cu-nps is clearly detrimental for spermatogenesis and overall testicular structure and function, whereas antioxidant allagic acid treatment improved testicular function and reverted cu-nps -induced azoospermia

Keywords

Allagic acid, copper nanoparticles, rat, spermatogenesis, sex hormones

The role of cellular scaffolds in biomedicine

Zahrasadat Razavi,[1,*]

1. fisiology reaserch center of iran university of medical science

Abstract

Introduction

Today, tissue engineering research is expanding extensively so that it has the potential for de novo to build organ and tissue. in order to improve the cell and tissue culture efficiency in tissue engineering, it is necessary to create an ex vivo in vivo mode of the bodys three-dimensional conditions. to achieve this goal, the target tissue cells are grown on the scaffolds. scaffolds are structures based on materials in the extracellular matrix that have been treated with different treatments. initially, the drug was used only for the transfer of medication and hormone to the body, but further research showed that these materials have the ability to maintain, maintain and even transmit the cells to the body.

Methods

In this paper, we are trying to help researchers to find out the right scaffolding with less time and less cost by using the information contained in the published articles and organized the information inside them.

Results

Selecting the type of scaffold is the most important part of the work so that the replacement of the damaged tissue is finally seen. the scaffold not only allows the cell to be connected, but also causes the migration of cells, the transfer of biochemical factors, the release of food, waste materials and the production of cells. in order to achieve this goal, the scaffold must have some structural properties. in this paper, we will try to examine the types of these scaffolds.

Conclusion

research has continued to proliferate cells on scaffolds to increase the efficiency of 3d cultivation. for this purpose, it is necessary to simulate the internal environment, which is used for simultaneous culture of target cells and stromal cells. in the present paper, information on the various aspects of scaffolds, including history, gender, and types of scaffolds and their applications in medicine and tissue engineering, has been reviewed. a very diverse and convenient way to produce polyethylene (pla) and pcl described (polycarbonate) (pcl) electro phobic is a nano fibers scaffold. widely used as scaffold material adapted to structural engineering for tissue engineering. here, graphene oxide (ngo) points in electro-sponge structures of pla or pcl during the electrophysin process are aimed at enhancing mechanical properties and verifying osteobiophysics. (ngo) strongly integrates into the existing fiber with secondary interactions with electricity, and the quality of the fiber heal. the nano filtration scaffolds increase. the mechanical properties, increased hydration, adequate cytotoxicity and osteobiofic acid quality are better. therefore,

they will have a very high potential for bone tissue engineering programs. the high porosity and cross-sectional area are better for adaptation and cell proliferation. pla and pcl have been successfully developed for various types of electrosurgical nano filter scaffolds.

Keywords

Bio-medicine , nano scaffold , pcl

The role of diet in gestational diabetes mellitus and child outcomes: a systematic review

Somaye Pouy,[1,*] Latif panahi,[2]

1. Student Research Committee, Guilan University of Medical Sciences, Rasht, Iran.
2. Student Research Committee, Guilan University of Medical Sciences, Rasht, Iran.

Abstract

Introduction

Diet is the fundamental treatment of patients with gestational diabetes mellitus (gdm), however, there are few studies regarding the appropriate diet for maintain euglycemia and improved perinatal consequences. this systematic review aims to survey the efficacy of dietary interventions with improved glycaemia and improved birth weight outcomes in women with gdm.

Methods

A comprehensive search was done from published studies with key words of dietary regiments, maternal glycaemia and birth weight that were gathered from 8 databases. data were extracted in duplicate using prespecified forms.

Results

3,125 studies screened and 20 involving 2131 woman and 820 neonates were included. the study results show that a healthy dietary interventions in intervention group had a larger decrease in fasting and postprandial glucose in comparison to control group (âˆ’5.06 mg/dl]; p = 0.01 and âˆ’8.66 mg/dl; p = 0.0009, respectively). also, the study results indicate that modified dietary interventions significantly reduced the risk for macrosomia and lower infant birth weight (rr 0.44 [95% ci 0.67, 0.78]; p = 0.09), large for gestational age births (rr, 0.45; 95% ci, 0.35â€“0.56), shoulder dystocia (rr, 0.44; 95% ci, 0.33â€“0.88) and gestational hypertension (rr, 0.56; 95% ci, 0.55â€“0.72).

Conclusion

A low glycemic index diet decreases risk for many important adverse pregnancy outcomes and its association with any neonatal complications. low glycemic index interventions favorably influenced outcomes related to maternal glycemia and birth weight.

Keywords

Dietary regiments, maternal glycaemia, birth weight.

The role of epigenetics in the treatment of cancer

Mojtaba Ranjbari,[1,*] Milad esmatparast,[2]

1. Department of biotechnology Islamic Azad university of urmia,iran
2. Department of biology Islamic Azad university of urmia,iran

Abstract

Introduction

Epigenetics involves the study of heritable changes in the regulation of gene activity and expression that are not dependent on gene sequence. main mechanisms of epigenetic modifications are dna methylation, histone modification and nucleosome positioning. several studies have shown that these modifications are related to cancer initiation, progression or tumor metastasis. in contrast to genetic mutations, most epigenetic modifications may be reversible and preventable. therefore, the resetting of aberrant epigenetic states in neoplastic cells is an expanding therapeutic approach to treat or prevent cancer

Methods

The current study is a kind of review study in which the crucial data have been collected; in addition, keywords have been used systematically to search for related articles in reputable site

Results

It is now clear that the disorders of epigenetic mechanisms can affect and compound with oncogenic mutation and cause to promote tumor growth. so, the management of aberrant epigenetic states as a way to target the formation and progression of cancer is a logical and effective therapeutic approach. an understanding of the link between epigenetic deregulation and cancer is applicable to prognosis as well as treatment.

Conclusion

It seems that many aspects of epigenetics are still unknown; moreover, various studies are ongoing to explore other epigenetic mechanisms, their relationship with each other as well as the development, and progression of various diseases especially cancer

Keywords

Epigenetics, cancer, epigenetic therapy

The role of hotair lncrna as a marker for the prevention and diagnosis of lung cancer

Marjan Zarif yeganeh,[1,*] Hanieh pourkalhor,[2]

Abstract

Introduction

Background: since lung cancer is one of the most common cancer cases in iran and the world, a large proportion of patients with this cancer are diagnosed at a stage of the disease that conventional therapies do not have an effect on prolonged lifetime of patients and invasion and metastasis it ultimately leads to the death of patients.the necessity of recognizing molecular mechanisms at the beginning, progression and especially invasion and metastasis of the lung tumors to introduce molecular markers for early diagnosis, prognosis and, ultimately, treatment of this cancer is very much needed.

Methods

Research method: a review article is a collection of information from up-to-date articles in the pubmed, google scholar databases, ncbi.

Results

Results: hotair has been cooled down and rna has been supplemented with 2185 nucleotides and six exons. this rna is an oncogenic agent that can be used as a diagnostic biomarker for various cancers, and plays a key role in the onset and progression of cancers. in addition, it has been shown there is a significant relationship between hotair relative expression in tumor and metastasis of lung cancer, so that the mean of this gene expression in metastatic patients is higher than non-metastatic.

Conclusion

Conclusion: the results of the studies of this gene may be effective in the future diagnostic management of patients with lung cancer. the measurement of the level of the expression of the hotair gene can help us to find out the progression of cancer levels and make it possible to survive individually predict.

Keywords

Lung cancer, hotair gene, metastasis

The role of oxidative stress in ischemic stroke patients, a case â€“ control study

Afsoon Talaie,[1,*] Fardin faraji,[2]

1. MSC of Nutrition , Phd Candidate Of Biochemistry, Health Department , Islamic Azad University, Arak Branch, Iran
2. Associate professor of Neurology, Arak University Of Medical Sciences, Arak , Iran

Abstract

Introduction

in the past few years, oxidative stress was attended as one of the causal factors of ischemic stroke. in terms of the role of genetic, geographic and ethnic factors in the prevalence of stroke, we designed the study to compare the oxidative stress of stroke patients with normal healthy subjects in this geographic area.

Methods

In this case-control study, 36 patients older than 50 years with ischemic stroke and 45 healthy age and sex matched subjects, were enrolled . 10 cc blood was drawn from all subjects. the samples were centrifuged and the plasma was separated. to assess total antioxidant capacity (tac), lipid peroxidation (malon dialdehyde , mda) frap-tba and hu methods were used respectively and thiol level was also measured . the result was analyzed by using t-test in both groups.

Results

The result showed that total antioxidant capacity () and thiol plasma levels were lower in stroke patients than healthy subjects, but only the thiol group was significantly different (p=0.525, p= 0.001 respectively). on the other hand lipid peroxidation (mda) showed a slight but non-significant difference in stroke patients compared with controls.

Conclusion

These findings suggest that oxidative stress in patients with acute ischemic stroke may be the result of an imbalance in oxidant/antioxidant homeostasis. practically it may be useful to recommend antioxidant medication or diet to these patients.

Keywords

Free radicals, ischemic stroke, oxidative stress

The role of pet/ct in monitoring treatment and prognosis of gastric cancer

Sara Zahmatkesh,[1,*] Mohammad hossein jamshidi,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Fdg pet/ct is a useful modality to differentiate responders from nonresponders to neoadjuvant therapies to prevent side effects of unnecessary treatments and to optimize treatment approach by changing therapy to a second-line regimen. in a retrospective study of 130 patients, the patientsâ€™ management altered in 15% of the cases based on fdg pet/ct findings. also, fdg pet/ct provides prognostic information in gastric cancers.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

In a prospective study comprising 44 patients with locally advanced gastric cancer, the authors calculated a 2-year survival of 90% versus 25% for metabolic responders and nonresponders, respectively, 2 weeks after commencement of cisplatin-based chemotherapy (p = .002) the early diminished fdg uptake of primary gastric cancer is a prognostic factor representing favorable response to therapy, and better prognosis is presumed for patients with gastric cancer who experience a complete metabolic response to chemotherapy. moreover, there is a significant correlation between a high standardized uptake value (suv) of the primary gastric malignancy on fdg pet/ct and poor overall survival. in a retrospective study of 151 patients with metastatic lymph nodes from gastric cancer, song et al. shared the point that the preoperative suvmax of the involved lymph nodes on fdg pet/ct is an independent prognostic factor for both overall and recurrence-free survival.in addition, a high suv of the primary gastric tumor was correlated with malignant nodal involvement and noncurative surgery.

Conclusion

Finally, fdg pet/ct is a strong predictor of therapy response and an independent predictor of overall survival in patients with nonmetastatic esophageal cancer.

Keywords

Pet/ct, monitoring treatment, gastric cancer.

The role of tgf-Î² signalling pathways as therapeutic targets in glioblastoma

Mohammad amin Dehghani,[1,*] Saleh rasras,[2] Maryam shirani,[3] Fatemeh dehghani,[4] Seyyed hossein hassanpour,[5] Seyyedeh zeinab karami,[6]

1. Department of Toxicology, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Department of Neurosurgery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. Department of Toxicology, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
4. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
5. Young Researchers and Elite Club, Yasooj Branch, Islamic Azad University, Yasooj, Iran
6. Department of Biology, Faculty of Basic Sciences, Yasouj University, Yasouj, Iran

Abstract

Introduction

Purpose: this study aimed to investigate the role of tgf-Î² in glioblastoma and to assess its value as a therapeutic factor.

Methods

Methods: we extracted all relevant studies of tgf-Î² signaling on the treatment of glioblastoma by searching electronic databases pubmed, embase, web of science from inception to feb 28,2017.

Results

Results: tgf-Î² plays a complex double part in the initiation of brain tumor, its development, progress, and malignancy. astonishingly, in carrying out its dual role, it acts as both a tumor suppressor and promoter. this review article exemplifies numerous contradictory accounts in the studied literature, stressing that additional consideration is vital in explaining how and when tgf-Î² changes from its suppressor role to acting as a promoter tgf-Î² plays a dual role in oncogenesis where it is a solid proliferation inhibitor of epithelial cells and astrocytes. furthermore, it is considered a factor of tumor suppression. diversely, tgf-Î² turns into an oncogenic element in some tumors, especially in high-grade glioma. the tgf-Î² has proven to play a vital part in invading tumor cells, including gbm.

Conclusion

C onclusion: in this review, we attempted to offer a comprehensive coverage of tgf-Î² and some related cytokines throughout the formation of glioblastoma and its development. the purpose of recent experimental methods is to introduce innovative cancer treatment methods that target the tgf-Î² pathway. finally, tgf-Î² signaling is closely associated with the development of glioblastoma and contributes to all key features of tumor cell biology.

Keywords

Glioblastoma, tgf-Î², smad, hgf/c-met, autophagy, immunosuppression

The size of tumor affects the expression of of her1 (egfr) in ffpe gastric cancer patients

Naeimeh Roshanzamir,[1,*] Fatemeh dadkhah,[2] Ù• elham moslemi,[3]

1. Tehran university
2. Islamic Azad University of East Tehran
3. Islamic Azad University of East Tehran

Abstract

Introduction

Gastric cancer is one of the commonest malignant tumor worldwide and the highest mortality rates have been reported in east asia, including japan, korea, and china (28.1 per 100,000 males, 13.0 per 100,000 females). its treatment remains a challenge for physicians. the epidermal growth factor receptors are egfr, her2, her3 and her4. of the four epidermal growth factor receptors, egfr and her2 are well-known oncogenes involved in gastric cancer .egfr (her1) is a transmembrane protein that consists of an extracellular ligand binding domain, a transmembrane region and an intracellular domain with intrinsic tyrosine kinase activity. her1 and her2 overexpression are regarded as prognostic factors and targets of treatment.

Methods

In a case-control study, quantitative real-time pcr was used to analyze changes in her1 gene expression in formalin-fixed, paraffin-embedded of 25 t2d patients with gastric cancers and 25 controls. after slicing and deparaffinization, rna of samples was extracted and then cdna synthesis using of m-mulv enzyme and oligo dt and random hexamer primers were done. statistical analysis of research by graph pad prism software with the t-test procedure was done.

Results

results of real-time pcr showed her1 gene expression increased in most patient compared to normal control.(p valueâ‰¤0.005) and by increasing the size of the tumor, the amount of gene expression in the patients increased significantly(p valueâ‰¤0.005). it was determined that the expression of the her1 gene is directly related to progression in cancer stage..

Conclusion

Her1 overexpression is strongly associated with tumor progression and poor prognosis of patients with gastric cancer. egfr and her2 positivity are considered to be negative prognostic factors in gastric cancer. it may become a new prognostic factor and a target of treatment.

Keywords

Gastric cancer, her1, real-time pcr

The study of association between tumor necrosis factor Î± polymorphism and increased risk of prostate cancer among shohada-e-tajrish hospital patients

Saeideh Alidoost,[1,*] Mohsen habibi,[2] Farkhondeh pouresmaeili,[3] Zahra noormohammadi,[4] Eznollah azargashb,[5]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.
2. Central Laboratory, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran-Iran
3. Infertility and Reproductive Health Research Center (IRHRC), Shahid Beheshti University of Medical Sciences, Tehran, Iran; Department of Medical Genetics, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
4. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran.
5. Department of Social Medicine, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Prostate cancer is a major health concern as it has the second highest incidence rate among cancers in men. because of the heterogeneity of the tissue involved with prostate cancer and bph, information obtained from a single biopsy is not sufficient to diagnose and guide treatment decisions. we are looking for new biomarkers enable us to detect the disease at an early stage and allow proper and timely treatment. tumor necrosis factor Î± (tnf-Î±) play an important role in prostate cancer. genes, encoding this cytokine, contain single nucleotide polymorphisms, which are associated with differential levels of gene transcription. the purpose of this study was to investigate the association between tnf-Î±-238g>a (rs361525) polymorphism and prostate cancer.

Methods

In the present study, 320 samples including 100 pca patientsâ€™ samples, 110 samples from bph patients and 110 samples from healthy individuals were recruited from shohada-e-tajrish hospital, tehran- iran. all participants provided written consent and a personal questionnaire covered age, bmi, psa level, smoking consumption, family history of cancer and detailed medical history. genomic dna from peripheral blood samples were obtained using salting-out method. the presence of tnf-Î± promoter rs361525 snp was investigated by pcr-rflp method, using specific primers. the products were digested with mspi restriction enzyme. digested products were separated on 12% polyacrylamide gel electrophoresis (page). the genotypes were determined based on the length of the desired bands. chi-square (Ï‡2) tests was applied to assess statistically significant differences between subjects. binary logistic regression analysis was used to compute the odd ratios (ors) with 95% confidence intervals (cis). deviation of the genotype frequency from the hardy-weinberg equilibrium was tested using chi- square analysis. p-values<0.05 were considered as statistically significant. all statistical analysis were done using ibm spss statistics v 25.0 software.

Results

The comparison between normal and cancer groups showed that in rs361525, the genotype ag compared to gg increases the risk of prostate cancer (ors=1.827) while not significant (p>0.05), psa significantly increases the risk of prostate cancer (ors=38.401) (p=0.039), age over 70 years significantly increased the risk of prostate cancer (ors=7.367) (p=0.043), bmi (ors=1.107) and smoking (ors=1.208) generally increase the risk of cancer while not significant (p> 0.05).

Conclusion

Our results suggest that tnf-Î±-238g/a (rs361525) polymorphism could not be used as a putative biomarker for early diagnosis of prostate cancer. however, this suggestion requires further studies of a larger population.

Keywords

Tnf-Î±, prostate cancer, benign prostate hyperplasia, rs1800629, polymorphism

The study of bifidobacterium bifidum induction effects on fasting induced adipose factor (fiaf) gene

Mahla Sheikh,[1] Seyed davar siadat,[2,*] Mahsa alebrahim,[3]

1. Islamic Azad University of Medical Sciences
2. Pasteur Institute of Iran,
3. Islamic Azad University of Medical Sciences

Abstract

Introduction

The human gastrointestinal tract (git) has a complex community of microrganisms which is known as a gut microbiota . gut microbiota are affect variuse in essential physiological mechanisms including glucose / lipid metabolism . one of the human factors which is affected by gut microbiota is the fasting induced adipose factor (fiaf). fiaf activation is regulatey pathway which is control lpl activaion over activation of lpl resulted in increase fat storage which is involved obesity related process. bifidobacterium bifidum, belongs to the actinobacteria phylum and member of the bifidobacteriaceae family b. bifidum gram-positive bacterium that is not motile, anaerobic, rod-shaped and not spore-forming .which is play a significant role in gut microbiota host interaction, accordingly we focused on induction effect of bacterial responses on the expression of fiaf gene in the caco2 cell line intestinal epithelial cell line.

Methods

in this study , bifidobacterium bifidum was cultured in the rogosa and sharpe agar(mrs agar) at anaerobic atmosphere including 80% co2 , 10% h2 , 10% nâ,, . human intestinal epitelial cells , caco (ibrc 3010094) is growen by using dmem high glucose , which is supplemented with fbs and penicillin streptomycin. after overnight treatment of caco-2 cells with b.bifidum in multiplicity of infection(moi) = 74, total rna was extracted using thiazole solution (rnx) . rna was transcribed to cdna using cdna fermentas synthesis kits. the rt- quantitative pcr (qpcr) technique based on cyber green method was performed to assesy expression of fiaf gen . gene expression were evaluated based on delta delta ct (âˆ†âˆ†ct) method and gapdh as house keeping gene finally, the significance of the results is determined by independent sample t-test by spss and prism.

Results

Our rt-qpcr result showed that, the fiaf mrna level was increased by bifidobacterium bifidum in caco2 cell line at moi 74. this up regulatory effect of b.bifidum on fiaf gene expression was significant based on $p<0.05$ is meaningful .

Conclusion

Considering the importance role of bifidobacterium bifidum in host interaction especially metabolism and role of fiaf in obesity-related processes in, according to the study which is shown the ability of b.bifidum to upregulation the expression of the fiaf gene , understanding importance of the gut microbiota members can be helpful for treatment of obesity and sickness associated with it.

Keywords

Bifidobacterium bifidum , fasting induced adipose factor(fiaf), caco2 cell line , gut microbiota , o

The study of prognostic factors of survival in patients with breast cancer referred to cancer research center

Parviz Shahmirzalou,[1,*]

1. Department of Biostatistics, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran

Abstract

Introduction

Breast cancer is a malignant tumor that starts from cells of the breast and is seen mainly in women. itâ€™s the most common cancer in women worldwide and is a threat to their health. the purpose of this study is to fit cox proportional hazards model for prediction of survival and determining the years of survival in patients.

Methods

The 366 patients with breast cancer in cancer research center were included in the study, then cox proportional hazard model were used with variables such as tumor grade, number of removed positive lymph node, human epidermal growth factor receptor 2(her2) and several other variables. kaplan-meier curves were plotted and multi-year of survival was evaluated.

Results

The mean age of patients was estimated to 48.13 years old. variable for consumption of fatty foods ($p=0.033$), recurrence ($p<0.001$), tumor grade ($p=0.046$) and age ($p=0.017$) were significant. the overall 1- year, 3-year and 5-year survival rate was found as 93%, 75% and 52%.

Conclusion

The presence of covariates and using the cox proportional hazard model are effective in predicting the survival of the individual and this model distinguished 4 effective factors in the survival of patients.

Keywords

Breast neoplasms, cox model, proportional hazards models, survival analysis

The study of synergistic effects of paraoxonase (pon1) 55 m allele and of buche non-uu phenotype on the risk of systemic lupus erythematosus: influence on lipid and lipoprotein metabolism and oxidativ

Farzane Lotfi,[1,*] Asad vaisi-raygani ,[2] Fariborz bahrehmand ,[3]

1. Department of Clinical Biochemistry, Kermanshah University of Medical Sciences
2. Fertility and Infertility Research Center, Kermanshah University of Medical Sciences
3. Kermanshah University of Medical Sciences

Abstract

Introduction

There is some evidence indicating lipid peroxidation can affect progression of atherosclerosis, cardiovascular diseases (cvds) and glomerulonephritis in systemic lupus erythematosus (sle) patients. human butyrylcholinesterase (buche) and paraoxonase-1 (pon1) are two major bioscavenger enzymes that are associated with inflammation, oxidative stress and lipid metabolism. hyperlipidemia, increase in lipid oxidation reactions and defects in antioxidant status may lead to increased oxidative stress and high frequency of cvds in sle. it has also been suggested that deficiency in the function of the antioxidant system and an increase in reactive oxygen release (ros) may play an important role in the pathogenesis of sle. this study is the first investigation to examine the association of buche phenotypes, pon1 (l55m; pon-55-m) polymorphism, the levels of malondialdehyde (mda), neopterin, lipid-lipoprotein and activities of buche and arylesterase activity (are) of pon with severity of sle.

Methods

The present case-control study consisted of 109 sle patients and 101 gender- and age-matched, unrelated healthy control subjects from the population of west iran. buche activity with its phenotypes and are activity of pon1 were measured by spectrophotometry. the pon1 55 met>leu (m>l) polymorphism was detected by pcr-rflp. plasma mda and serum neopterin was measured by hplc. plasma lipids levels were measured by the standard enzymatic method.

Results

We found that the pon-55-m allele and buche non-uu act synergistically to increase the risk of sle by 2.5 times (1.03-6.7, pâ€‰=â€‰0.044). there was a significant negative correlation between severity of sle with serum buche activity (râ€‰=â€‰-0.31, pâ€‰<â€‰0.001) and positive correlation with serum neopterin level. the sle patients with the pon-55-m (m/lâ€‰+â€‰m/m) allele or with buche non-uu phenotype had significantly lower serum are and buche activities than those with pon-55-l/l or buche-uu phenotypes, respectively. in addition, their serum levels of mda, neopterin and ldl-c were significantly elevated, suggesting that these individuals are more susceptible to cvd.

Conclusion

Our findings indicated that the buche non-uu phenotype and pon 55m allele are significant risk factors for sle. we have demonstrated that the buche non-uu phenotype synergistically increases the risk of sle in individuals carrying the pon-55m allele. the carriers of m allele or non-uu buche phenotype have distinctly reduced serum are activity and elevated serum levels of mda, neopterin and ldl-c, suggesting that these individuals may be more susceptible to oxidative stress, impairment of the antioxidant system, abnormal lipid metabolism, bp, cvd and myocardial infarction. however, because of the heterogeneous picture of sle and the influence of a subset of risk factors in the development of the disease, further studies are needed to shed light on the contribution of the m allele of pon1 and non-u phenotypes of buche in the development of sle in different ethnicities.

Keywords

Butyrylcholinesterase; arylesterase; pon1 ; sle

The study of the level of recombinant e7 expression in four strains of e.coli

Sheida Khatibi,[1,*] Zahra amini bayat,[2] Neda mousavi niri,[3] Mehrdad hashemi,[4]

1. . Department of Genetics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran
2. Department of Biotechnology, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran
3. Department of Genetics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran
4. Department of Genetics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, IR Iran

Abstract

Introduction

Cervical cancer is one of the leading world causes of cancer morbidity and mortality in woman, with more than 98% related to a human papillomavirus (hpv) infection origin. infection with specific subtypes of hpv has been strongly implicated in cervical carcinogenesis. the identification and functional verification of host proteins associated with hpv e6 and e7 oncoproteins may provide useful information in understanding cervical carcinogenesis and the development of cervical cancer-specific markers. the advent of functional genomics and proteomics has provided hope of discovering novel biological markers for use in the screening, early diagnosis, prognostication and prediction of response to therapy. infection with human papillomavirus type 16 (hpv-16) is the main factor associated with development of cervical cancer. the hpv-16 e6 and e7 proteins are constitutively produced in cervical carcinomas, and e7 was shown to interact with several cell compounds, causing deregulation of the cell cycle and cell transformation. e7 is a 98-amino-acid nuclear phosphoprotein that is devoid of any known enzymatic activity. e7 protein is widely studied because of its implication in carcinoma onset. it is also considered to be a good antigen candidate for the development of new vaccines against cervical cancer. in this study, we compared expression level of hpv e7 protein in four different strains of escherichia coli (rosetta, bl21 de3 ai, bl21 de3 plyss, bl21 de3).

Methods

for construction of a vector expressing the e7 multi-epitope protein, the synthetic coding sequence of e7 protein was cloned into pet28a(+) vector. in the recombinant vector was transformed into the bl21(de3), plyss, rosetta, bl21 (de3) ai e.coli strains then isolated colonies were grown in tb medium containing appropriate antibiotic (kanamycin (50 Âµg/ml) , chloramphenicol (34 Âµg/ml) , tetracycline (12.5 Âµg/ml) and incubated in a shaker at 37Â°c until the optical density at 600 nm (od600) reached 1. protein expression was induced by adding 1 mm isopropyl-Î² thiogalactopyranoside (iptg) and the cultures were incubated at 37Â°c for 4 h or overnight. cells were harvested by centrifugation (22 o c, 6000rpm, 5 minute) and lysed by lysis buffer (urea 8m) and sonication. the recombinant protein was characterized by sds-page

Results

for the best expression of hpv-16e7, four expressing e.coli strains (de3) the expression patterns of the recombinant protein were analyzed.e7 protein was expressed in all four strain of e.coli in the same condition. the best expression level was achieved in rosetta strain after 4 hour induction following overnight induction.18 % of total protein obtained in rosetta strain compared to 10% in bl21(de3).

Conclusion

Cervical cancer is a worldwide public health problem among women, especially in emerging nations. to improve the control of cervical cancer, new adjuvant diagnostic and therapeutic strategies are required. advances in immunology, genomics and proteomics have accelerated our understanding of the genetic and cellular basis of many cancer types. cervical cancer is a member of the virus-related neoplasms, with its initiation and promotion associated with persistent infection of oncogenic hpv. rosetta host strains are bl21 lazy derivatives designed to enhance the expression of eukaryotic proteins that contain codons rarely used in e.coli. these strains supply trnas for the codons aua, agg, aga, cua, ccc, gga on a compatible chloramphenicol resistant plasmid. because of the presence of some rare codon in the e7 gene sequence cloned in the vector, using rosetta strain overcome this problem and the better yield was achieved in this strain.

Keywords

E.coli, recombinant proteins, hpv-e7 protein, expression level , cervix cancer

The study of the urtica extract on htert gene expression in gastric adenocarcinoma cells (ags)

Fakhraddin Mirzakhani,[1,*] Zahra deilami khiabani,[2]

1. Islamic Azad University, Hidaj Branch, Zanjan,Iran
2. Islamic Azad University, Zanjan Branch, Zanjan,Iran

Abstract

Introduction

Gastric cancer is one of the most common cancers that human societies face nowadays. aberrant expression of genes is one of important factor in cancer appearance. telomerase reverse transcriptase (htert in humans) is a catalytic subunit of the enzyme telomerase which, together with the telomerase rna, comprises the most important unit of the telomerase complex. telomerase lengthens telomeres in dna strands, thereby allowing senescent cells to continue cell division and become potentially immortal, as is often the case with cancerous cells. in this project we have studied htert expression in ags cell line which was treated with urtica extract. herbal extracts have been mentioned for fewer side effects in the treatment of diseases, including cancer.

Methods

Ags cells cultured in dmem with 10% fbs then treatment have done with concentrations of 800, 1200 and 2000 Î¼g / ml of utrica extract for 48 hours. extraction of rna and cdna synthesis was performed using specific kits. the htert gene expression was measured by real time pcr.

Results

The results showed the significant reduction of htert gene (approx. 99%) in all concentrations of urtica in ags cell line.

Conclusion

Htert may become therapeutic targets for cancer treatment and urtica as herbal extract decreased the expression rate of htert significantly.

Keywords

Htert, urtica, ags cells

The use of alhagi extract as a traditional herbal medicine in ameliorating rheumatoid arthritis

Alireza Bahiraee,[1,*] Reyhane ebrahimi,[2] Mahbouba ahmadi ,[3] Solaleh emamgholipour ,[4]

1. Department of Medical Genetics, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
2. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
3. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
4. Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

One of the most recognized elements in the pathogenesis of rheumatoid arthritis (ra) is the up-regulation of matrix metalloproteinase 9 (mmp-9), an enzyme responsible for matrix degradation. alhagi is known to have traditional uses in the treatment of inflammatory diseases including rheumatism. the aim of this study was to investigate the effects of alhagi extract as a traditional herbal medicine on the levels of mmp-9 and also tissue inhibitor of metalloproteinase 1 (timp-1) in peripheral blood mononuclear cells (pbmcs) of ra patients.

Methods

In this study, 12 ra patients and 12 healthy subjects aged between 38-66 years (all women) were recruited from the outpatient clinic of the rheumatology service of dr. shariati hospital of tehran university of medical sciences, tehran, iran. pbmcs were isolated and treated with two concentrations of alhagi extract (100 and 500 Âµg/ml) for 24 h. gene expression of mmp-9 was evaluated by real time-pcr based on sybr green. mmp-9 activity in pbmcs was measured using zymography and timp-1 levels in supernatant of pbmcs were quantified using the highly specific r&d systems quantikineÂ® elisa kit (usa), according to the manufacturerâ€™s instructions.

Results

Alhagi treatment caused a significant decrease in the expression of mmp-9 mrna in the concentration of 500 Âµg/ml in both healthy and patient groups (p= 0.003 and p=0.05), respectively. however, this effect was not observed when a concentration of 100 Âµg/ml of alhagi extract was used. moreover, the inhibitory effect of alhagi treatment on mmp-9 activity was statistically significant in the concentration of 500 Âµg/ml in both healthy (p=0.003) and patient (p=0.02) groups and also in the concentration of 100 Âµg/ml in healthy group (p=0.02). however, no significant effect was observed on timp-1 levels following exposure of pbmcs with alhagi extract in two studied groups.

Conclusion

Putting these findings together, alhagi may have an effective role in the control of joint destruction in ra at least partly by inhibition of mmp-9 production. this study provides supporting evidence for the use of this plant as an anti-inflammatory remedy in ra patients.

Keywords

Rheumatoid arthritis, alhagi, matrix metalloproteinase 9 (mmp-9)

The use of stem cell in military medicine

Maede Fekri,[1,*] Rostam rezaein,[2] Jalal mohammadi khoshraj,[3] Kosar babaei,[4]

1. Giulan university faculty of science
3. Higher Education Institute of Rab-Rashid,Tabriz,Iran
4. Tonekabon azad university

Abstract

Introduction

A stem cell is kind of cell that has an unrivaled potency to renew itself indefinitely while preserve the capacity to differentiate into any cell kind in the body. there are usually three types of stem cells: adult stem cells, embryonic stem cells and induced pluripotent stem cells (ipscs). previous studies into the physiology of battle harms reveal that regenerative stem cell treatment can prepare a useful and long-term therapy for traumatic impairs in soldiers as well. ipscs are genetically reprogrammed back to a primary embryonic stem state having a smart endogenous pluripotent signature program essential for preserve the defining attributes: self-renewal and pluripotency. an increase the incidence of significant harms from blasting devices in recent wars has further hard remedy, specify the need for tissue recovery options. this review emphasizes the possible role of stem cells for military medicine.

Methods

We began research using the keywords of stem cell and military medicine in research papers and reviews that found 58 articles from 1957 to 2018. finally, with filters, 5 papers were selected. this study was conducted as a review of the articles on google scholar site, science direct, wiley and pub med.

Results

Kinds of some tissue-specific harms in modern wars and their treatment using ipsc therapy: penetrative ocular harms: retinal neurons do not by itself regenerate, making vision loss an eternal proposition in most specimen, nonetheless, these cells may be reconstructed using ipsc therapy. auditory damage: extreme explosions military can lead to mechanical injury to the ear, generally in the form of sensory hair loss. this kind of injuries can be returned by regeneration with reprogrammed cochlear hair cells derived from ipscs. nervous tissue damage: harms to the central and peripheral nervous systems of the body are dually damaging, as a result in defect of proper physical and psychological function. recent studies have illustrated that mouse ipsc cells can give rise to secondary neurospheres in vitro that produces trilineage neural cells, containing many kinds of neurons. musculoskeletal injury: musculoskeletal damages are one of the most commonly happen injury kinds observed in war veterans. skin injuries: skin is destroyed in almost every combat harm. the research was reported a procedure for differentiating ipscs into dermal fibroblasts that generate type vii collagen and can be used for recessive dystrophic epidermolysis bullosa therapy.

Conclusion

Resent treatments for battle harms is majorly aimed at palliative pain and limiting other tissue injuries from secondary infections. with the development of modern armament, the diversity of aggressive and life-threatening war damages will only expansion, much of which may be benefited by ipsc, mediated cell remedies. cell-based treatment using stem cells is a helpful tissue reconstruction source, which will aid our soldiers to restoration from the severe injuries, even continue their duty for the country after total recovery.

Keywords

Stem cell, military medicine, pluripotent stem cells, cell- and tissue-based therapy.

The use of synthetic biology for developing cancer diagnostic and treatment tools

Zahra Nabizadeh,[1] Ali akbar shaebani,[2,*]

1. Medical Biotechnology Department, Biotechnology Research Center, Semnan University of Medical Sciences
2. Medical Biotechnology Department, Biotechnology Research Center, Semnan University of Medical Sciences

Abstract

Introduction

Synthetic biology is an emerging technology that combines the engineering principles with biology to design and construct new biological devices as well as re-design the natural biological systems for practical aims such as developing diagnostic and treatment tools for detecting and or killing cancer cells by genetically engineered bacteria, t cells and viruses. the natural regulation and detection systems were used by synthetic biology for the rational design of the biological sensors.

Methods

This is a review paper.

Results

In recent years, synthetic biology has played a significant role in applying fundamental biological discoveries for the development of cancer-targeting synthetic receptors, switches, and genetic circuits to manage bacteria and t cell activity against tumors. therefore, synthetic biology approaches can be used to solve many of the important challenges associated with anti-cancer therapies.

Conclusion

In this review article, we survey recent advances in the development of biological diagnostic and therapy systems based on synthetic biology methods. also there is a particular focus on how to use standard biological parts for constructing the biological sensors and the role of these sensors in medical science including early stage detection of cancer biomarkers.

Keywords

Synthetic biology; diagnostic tools; bacterial biosensors

The use of zeta potential and fluorescence spectroscopy to study the interaction between Î±-casein with ace peptide

Samaneh Mohammadian,[1,*] Negin alavi bejestani,[2] Jamshidkhan chamani,[3]

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Department of Biochemistry and Biophysics, faculty of sciences, Mashhad Branch, Islamic Azad

Abstract

Introduction

Caseins are the dominant phosphoproteins of mammalian milk and they can act as micelles that are made of polypeptides known as Î±, Î² and Îº-caseins. Î±-casein contains two tryptophan(trp) while Î² and Îº-caseins have one tryptophan residue. Î±-caseins are the major casein proteins containing 8-10 seryl phosphate groups. mammalian milks contain large quantities of protein -based particles (the casein micelles). they note that the phosphoseryl clusters in Î±-s1 and b-caseins are highly conserved and that despite high rates of mutational change and sequence diversity, many of the mutational also tend to be conservative with hydrophobic residue. ostrich egg white(oew) proteins were hydrolyzed by trypsin to identify inhibitory peptides of angiotensin i-converting enzyme (ace). angiotensin converting enzyme(ace) is an important enzyme in renin-angiotensin system which increases blood pressure by catalyzing the conversion of angiotensin ii is of great importance.

Methods

Î±-casein and kh2po4 were purchased from sigma-aldrich co. (st louis, mo. usa). the ace peptide was extracted from ostrich egg white (oew) proteins. Î±-casein was dissolved in potassium phosphate buffer solution (50 ml, ph= 7.4) at concentration of 1.3*10-2 mm and the injection of ace inhibitory peptide at concentration 0.5 mm done in per 3minutes for 40 times.

Results

To investigate the conformational changes of Î±-casein structure due to binding to ace inhibitory peptide, we used zeta potential spectroscopy. the negative values of zeta potential show the domination of electrostatic interactions. as the diagram shows in fig.1 zeta potential value decrease by increasing the concentration to ace inhibitory peptide. the amounts of zeta potential measurments show that the dominant force in interaction of Î±-casein-peptide is hydrophobic and the polarity of the interaction is low. as the diagrams show in fig. 2.a and fig. 2.b, fluorescence intensity of the protein decreases by increasing the concentration of ace inhibitory peptide. this process is named concenration-dependant quenching. further more, there was a slight blue shift at the maximum wavelenght of Î±-casein (from 340nm to 337nm). after the addition of ace inhibitory peptide, it suggests that the microenviroment of tryptophan residues was changed after the addition of ace inhibitory peptide. this transition occurs when trp and tyr aminoacids transfer to hydrophilic enviroment and it demonstrates the decrement of the polarity of these two chromophores. the occured quenching in fluorescence spectrum of this protein in

presence of ace peptide demonstrates the formation protein-ligand complex. the quenching value in 280nm excitation wavelenght in more than quenching value in 295nm excitation wavelenght because 280nm wavelenght is related to excitation of electrons deployed in electron layers of tyr and trp amino acids, while 295nm wavelenght only caused trp the electronic excitation.

Conclusion

In this article we investigated the interaction between Î±-casein and ace peptide at standard conditions by using fluorescence and zeta potential spectroscopy. according to the anti oxidant effects of ace inhibitory peptide and its ability of blood pressure decrement, this peptide can also be used due to treatment of cancer and cardiovasculare deseases. as casein protein is an important phosphoprotein with anti cancer effects and it has many application in food-processing industries, the possibility of interaction between ace inhibitory peptide with Î±-casein protein was evaluated. the results fluorescence spectroscopy studies show that the presence of ace inhibitory peptide causes the quenching of emission of protein fluorophores. a little blue shift shows that the environment of around of fluorophores has been more polar and these yield transitions are caused by the formation of ligand-protein complex. the results of zeta potential spectroscopy measurments have shown that the main forces in that interaction are hydrophobic forces and the electrostatic forces are increased by the changes of the amounts of concentration.

Keywords

Î±-casein, (ace) peptide; fluorescence quenching, zeta potentional

Therapeutic effect of hydatid cyst liquid on melanoma tumor growth in mouse model

Seyedeh maryam Sharafi,[1,*] Hossein yousofi darani,[2]

1. Environment Research Center, Research Institute for Primordial Prevention of NonCommunicable disease, Isfahan University of Medical Sciences, Isfahan, Iran
2. Department of Parasitology and Mycology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Introduction

Hydatid cyst is the larval stage of echinococcus granulosus which develops in various human and livestock animals tissues. this hydatid cyst composed of several layers. previous investigations have shown that the prevalence of hydatid cyst in cancer patients is significantly lower than in healthy individuals. in animal models preventive effect of the hydatid cyst antigens in reduction of tumor growth has been shown. due to the effect of live protosculex and hydatid cyst antigens on reducing the growth of cancer cells in culture medium, in this study therapeutic effect of hydatid cyst liquid on the growth of melanoma tumor in mice (c57 black) has been investigated.

Methods

In this experimental study, the population studies were c57 black mice. six groups of mice were injected with 106 melanoma cells in their chest site subcutaneously. then the mice were injected with hydatid cyst fluid either with or without albendazole. from the second week, the tumor size was measured using a calipers and tumor area was calculated and the mean tumor area compared with those of control groups using one-way anova test.

Results

The mean tumor area, in groups which injected with hydatid cyst fluid (case groups), was less than the mean tumor area in the control groups and this difference was statistically significant

Conclusion

This study showed that hydatid cyst fluid may have therapeutic effect on melanoma cancer growth.

Keywords

Melanoma; hydatid cyst fluid; c57 black mouse

Three-dimensional endoscopic ultrasound for rectal cancer staging

Zeynab Yaberi mohammad,[1,*] Amir hasanvand,[2]

1. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2. Department of Radiologic Technology, Faculty of Paramedicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Abstract

Introduction

Three-dimensional (3d) endoscopic ultrasound (eus) image reconstruction may improve the accuracy of eus and help decrease errors in staging. potential advantages of 3d reconstruction in eus include better spatial assessment of the location of tumors and their relationships with adjacent organs and blood vessels.

Methods

Publications were retrieved by a systematic search of multiple bibliographic databases, including medline, embase, scopus, cochrane library, web of science, biomed central, science direct, and google scholar. the language of search was restricted to english.

Results

Kim et al. have published significant work on the efficacy of 3d endorectal ultrasonography in rectal cancer. they studied 33 patients using both 3d and conventional eus for staging of rectal cancer. the accuracy of 3d eus was 90.9% for t2 and 84.8% for t3 tumors, whereas that of conventional eus was 84.8 and 75.8%, respectively. lymph node metastasis was accurately predicted by 3d eus in 28 patients (84.8%) and by conventional eus in 22 patients (66.7%) eus. 3d eus has shown greater accuracy then 2d eus or ct for evaluation in rectal cancer staging and lymph node metastasis. 2d eus, 3d eus, and ct scan were used to evaluate 86 consecutive rectal cancer patients undergoing curative surgery. the accuracy in t-staging was 78% for 3d eus, 69% for 2d eus, and 57% for ct ($p < 0.001$â€“0.002), whereas the accuracy in evaluating lymph node metastases was 65, 56, and 53%, respectively ($p < 0.001$â€“0.006). examiner errors were the most frequent cause of misinterpretation, occurring in 47% of 2d eus examinations and 65% of 3d eus examinations. giovannini et al. studied a software program for staging of rectal cancer by 3d eus that can be used with electronic radial or linear rectal probes in 35 patients. in 6 of 15 patients classified as having t3n0 lesions, 3d eus revealed malignant lymph nodes â€“ a finding that was confirmed surgically in 5 of these 6 patients.

Conclusion

3d eus also made it possible to precisely assess the degree of infiltration of the mesorectum in all patients, demonstrating complete invasion of the mesorectum in 8. these findings were confirmed in all cases by surgery. 2d eus for t- and n-staging was accurate in 25 of 35 rectal tumors (71.4%), while 3d eus was accurate in 31 of 35 (88.6%). tis technology has not been utilized on a widespread basis to date.

Keywords

Endoscopic ultrasound, three-dimensional, rectal cancer.

Tobacco smoking in relation to religiosity and parental support among iranian female students

Sima Afrashteh,[1,*] Haleh ghaem,[2] Abbas abbasi-ghahramanloo,[3]

1. Msc of Epidemiology, Bushehr University of Medical Sciences, Bushehr, Iran
2. Research Center for Health Sciences, Institute of Health, Department of Epidemiology, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran
3. Department of Epidemiology, Faculty of Health, Iran University of Medical Sciences, Tehran, Iran

Abstract

Introduction

Tobacco smoking is one of the greatest public health problems around the world, especially in female college students. the aim of this study was to determine the prevalence of cigarette and hookah smoking and related factors in a sample of female students in bushehr university in 2016

Methods

This cross-sectional study was conducted in 2016. the randomly selected sample consisted of 573 female university students. data were collected in a survey. a self-administered questionnaire was used to measure cigarette and hookah smoking, sexual behavior, alcohol and illicit drug use, religious belief, and parental support.

Results

The lifetime, last-year and last-month prevalence of tobacco smoking was 20.6, 14.3 and 7% respectively. after adjusting for other factors, alcohol use in the last year(or = 6.38), cigarette smoking among friends(or = 3.65) and lifetime illicit drug use (or = 8.51) were risk factors but score of religious beliefs (or = 0.97) was a protective factor of tobacco use in student.

Conclusion

Our results showed that the prevalence of tobacco smoking among female students is high. the findings of this research can be used for planning and evaluating interventions by considering risk and protective factors.

Keywords

Tobacco, parental support, religiosity, iran

Topical herbal remedies for insomnia in iranian traditional medicine

Asie Shojaii,[1,*] Elham haghjoo,[2]

1. Iran university of medical sciences

Abstract

Introduction

Insomnia is one of the most prevalent sleep disorders which affect the quality of life. due to high prevalence of this disease and the side effects of sedative drugs, people tend to use herbal remedies. there are some oral or topical prescriptions in persian medicine texts for treatment of insomnia.the aim of this study was to investigate topical treatments for insomnia in persian medicine (pm) and comparing them with current therapies in modern medicine.

Methods

In this study, pm text books including the canon of medicine,teb-e-akbari, kholasat- al-hekmah, makhzan-al-advieh, exir-e azam, al-aghraz al-tibbia val mabahess al-alaiia, sharh-ol-asbab val alamat, tohfa-al-momen and qarabadin-e-kabirwere searched to investigate effective topical therapies for treating insomnia. also, relevant studies on these topical remedies were searched at databases such as pub med, google scholar, scopus and science direct from the beginning till june 2018 and the results were presented as tables

Results

There are some single herbs or herbal preparations which have been recommended in pm for treatment of insomnia in topical dosage form such as ointment, lotion, nasal drop, oil and etc. the most important herbs used in these topical dosage forms were lettuce, violet, almond, pumpkin and water lily.some of these herbal therapy included lettuce and violet have been studied in clinical trial for insomnia.

Conclusion

Findings of the present study showed that according to pm texts, there are some effective topical herbal remedies which can be used in treatment of insomnia with less adverse effects.

Keywords

Insomnia, topical, traditional medicine, herbal remedies, herbal preparation

Transgenerational influence of parental morphine exposure on pain perception of the male and female offspring

Hamid Ahmadian moghadam,[1,*] Mitra-sadat sadat-shirazi,[2] Zahra kheiri,[3] Ardeshir akbarabadi,[4] Heidar toolee,[5] Mohammad-reza zarrindast ,[6]

1. Department of Genetics, Iranian National Center for Addiction Studies, Tehran University of Medical Sciences
2. Department of Genetics, Iranian National Center for Addiction Studies, Tehran University of Medical Sciences
3. Department of Genetics, Iranian National Center for Addiction Studies, Tehran University of Medical Sciences
4. Department of Veterinary Medicine, Garmsar Branch, Islamic Azad University
5. Department of Anatomy, School of Medicine, Tehran University of Medical Sciences
6. Department of Genetics, Iranian National Center for Addiction Studies, Tehran University of Medical Sciences

Abstract

Introduction

The social differences in drug use and consumption patterns vary from different time periods and between countries suggesting a large environmental component. several evidence showed that drug addiction has strong genetic component and it has link to environmental variables. the studies suggest that addiction has predicted heritability in range of 30 to 70 percent furthermore, the effect of parental drug-exposure before gestation on behavioral state of offspring has been little studied. the main objective of the study is to measure the influence of parental morphine exposure on pain perception of the male and female offspring.

Methods

Adult male and female wistar rats received morphine for 21 consecutive days. moreover, the offspring of animals with different parental morphine-exposure were divided into four distinct groups including offspring of healthy parents (ctl), offspring of morphine-abstinent female and healthy male rats (mma), offspring of morphine-abstinent male and healthy female rats (pma) and offspring of morphine-abstinent male and female rats (bma). pain perception were quantified in the offspring. the acute and persistent pain were quantified thought formalin test. visceral pain were induced through writhing test by injection of acetic acid and acute thermal pain was induced by hot plate test.

Results

The results revealed that the male offspring with mma, pma and bma parents, the total time of writhing and total number of writhing significantly were reduced. the results showed that tolerance for perception of acute pain in male offspring with pma, mma and bma parents significantly reduced. results showed male offspring in control group had higher tolerance for perception of acute pain in comparison with

females. moreover, the lowest perception of persistent pain was observed in male offspring with bma parents. the results revealed that there is no significant difference between offspring for acute thermal pain.

Conclusion

Results revealed the equal role of each parent in epigenetic inheritance of pain perception. however, variance analysis signified the important role of maternal epigenetic inheritance.

Keywords

Transgenerational influence, morphine exposure, pain perception, offspring

Treating multiple schlerosis by diet: fact or fraud?

Somaye Sadeghi,[1,*] Parastoo ehsani,[2]

1. pasteur institute of iran

Abstract

Introduction

Multiple sclerosis (ms) is a multifactorial, inflammatory, and neurodegenerative disease of the central nervous system. in addition to the genetic, epigenetic and immunological components, various other factors e.g. unhealthy dietary habits play a role in the ms pathogenesis. diet could affect ms in one of two ways: dietary components that prevent or control the progression of the disease and those that help to manage and reduce symptoms. since nutritional status and dietary habits in ms patients have not been extensively reported, the aim of this review is to elucidate the role of an accurate nutritional counseling in ms to move toward a multidisciplinary management of the disease. this review evaluates published studies examining diets and nutritional supplements for the impact on prevention and treatment of multiple sclerosis (ms).

Methods

In this simple overview to collect information, articles that contain one of the terms: diet, multiple sclerosis, neurodegenerative disease and treatment from 2010 to 2018 at science direct, scopus, pubmed and google scholar were searched and reviewed. so, through an extensive search of relevant literature, this review reports the most significant evidence regarding nutrition as a possible co-factor influencing the inflammatory cascade by acting on both its molecular pathways and gut microbiota.

Results

This review summarizes current knowledge about the effect of different dietary approaches (diets low in saturated fat and dietary supplements such as fish oil, lipoic acid, omega-3 polyunsaturated fatty acids, seeds oils, high fiber diet, vitamin d, etc.) on neurological signs, patientâ€™s well-being, physical and inflammatory status. besides arresting ms, a low-fat vegetarian diet promotes weight loss in the obese, relieves constipation, and cuts the food bill by 40 percent. in fact, this type of diet is in line with recommendations made by other health organizations (including the american cancer society, the american heart association, and the surgeon generalâ€™s office) that urge americans to eat less fat and meat, while adding more whole grains, vegetables, and fruits. what increases inflammation are hypercaloric diets, characterized by high salt, animal fat, red meat, sugar-sweetened drinks, fried food, low fiber, and lack of physical exercise. exercise and low-calorie diets based on the assumption of vegetables, fruit, legumes, fish, prebiotics, and probiotics act on nuclear receptors and enzymes that upregulate oxidative metabolism, downregulate the synthesis of proinflammatory molecules, and restore or maintain a healthy symbiotic gut microbiota. recommendations to achieve optimal health include: â€¢ eat plenty of vegetables, legumes and fruits â€¢ eat plenty of cereals, preferably wholegrain â€¢ include

lean meat, fish, poultry and/or alternatives â€¢ include milk, yoghurt, cheeses and/ or alternatives. reduced fat versions should be chosen where possible. â€¢ drink plenty of water and take care to: ïƒ¼ limit saturated fat and moderate total fat intake ïƒ¼ choose foods low in salt ïƒ¼ consume only moderate amounts of sugars and foods containing added sugars.

Conclusion

This work collects recent findings on nutrients of great interest among ms patients and physicians. in fact, all the existing scientific evidence points to diet as the most helpful approach. future research should explore the importance of diet for those who have had ms for a longer period of time. we can expect that a nutritional intervention with anti-inflammatory food and dietary supplements can alleviate possible side effects of immune-modulatory drugs and the symptoms of this disease, thus favor patient wellness.

Keywords

Diet, multiple sclerosis, neurodegenerative disease, treatment.

Treatment methods for middle east respiratory syndrome

Romina Bahrami ,[1,*] Danial hashemi,[2]

1. shahid beheshti university
2. shahid beheshti university

Abstract

Introduction

Middle east respiratory syndrome is a kind of respiratory disease that is caused by a coronavirus, observed for the first time in saudi arabia in 2012. 26 countries have been reported so far by world health organization (who) to suffer from this virus, which has resulted in 40% mortality. mers is a virus with various clinical symptoms. it is spherical with a diameter of about 125 nanometers. the most important feature of this virus is that it has spike glycoproteins with lengths of 20 nanometers. the name of the virus has been taken from its solar appearance due to the presence of the spikes. four types have been identified so far for the virus, namely alpha, beta, gamma, and delta, and mers is of type beta. phylogenetically, the virus belongs to the same material as the sars virus, and they both contain ssrna. ssrna can perform molecular reconstruction again, which leads to anti-genetic shifts and mutation. this research has been conducted to review the achievement of the latest available methods of treatment in this regard.

Methods

In this study, 22 papers in english from 2016 and later available at the nature research journal, science direct, mbio, and plot databases have been used, where a large number of pharmaceutical agents have been examined, and several inhibitory effect agents in cell culture have been indicated. among the agents tested in the laboratory, interferon cyclosporine a, ribavirin, lopinavir, and immunoglobulin can be mentioned. no clinical information supports these agents at present. a combination of interferon a and b and ribavirin is effective on decrease in virus reproduction and in host response, and improves the clinical symptoms as a consequence.

Results

It is not exactly clear how this virus is transferred from animals to man, but scientists have regarded camels as the major source for the virus having discovered antibodies against the mers coronavirus in them. studies demonstrate that man-to-man transfer of the virus requires close contact, and occurs most often at medical centers. the risk of catching the disease increases at hospitals. the probability of catching mers reaches its highest amounts in activities requiring direct contact with the patients. based on the studies published by world health organization, the disease is most often transferred through contact with infected respiratory droplets. therefore, improving health practices and taking strict measures in medical centers can be useful as a key strategy for prevention of the disease from spreading. treatment is provided mainly supportively, and has not been fully effective given the mortality rate. nevertheless, new vaccines are subjected to research and development, some of which find their ways into human experiments. for

instance, a vaccine has been obtained based on the large surface protein s using recombinant nanoparticles, which is under investigation. another treatment that is being studied involves application of a convalescentâ€™s antibody to the patientâ€™s body. this treatment reduces the severity of the disease, but has rejected full protection against it.

Conclusion

Researchers are constantly trying to produce a medication effective on this disease, but no achievement has been made so far. there is a prospect in this regard of further research for achieving proper treatment and preventive strategies and conducting accurate virological studies.

Keywords

Treatment,middle east respiratory syndrome,interferon a and b ,ribavirin

Treatment of parkinsons disease with stem cells

Asma Marzanbakhsh,[1,*] Hamidreza raeespour,[2]

1. Gene pajoohane Ebnesina genetic research Laboratory, keshavarz Boulvevard, Tehran, Iran
2. Gene pajoohane Ebnesina genetic research Laboratory, keshavarz Boulvevard, Tehran, Iran

Abstract

Introduction

parkinsons disease(pd) causes problems in motor function and cell death. the second most common illness after alzheimers disease. it has not yet been determined that mutations in a number of specific genes, such as sinineol (snca), and repetitions of leucine-rich kinase 2, play a role in increasing pds sensitivity. significant signs of pd as a result of dopamineric in the motor system (da), degeneration of the neural cells is an underlying mechanism, but the lysis of the cell is still unknown, the oxidative stress of the protein increases and aggravates many problems. the mitochondrial function affects the pathogenesis of pd. no therapies for pd have yet been found. treatments such as l 3,4-dihydroxyphenylalanine (l-dopa) and dopamine agonists have been shown to affect motor impairment. these treatments prevent certain pd symptoms and disease progression, and protect da cells and nerve cells during pd progression. the referral of immature neurons da has been studied in pd patients since the late 1980s. studies have shown that adscs can cure brain damage from a variety of neurological and neurological diseases and can reduce the symptoms of brain disease directly by the cell, and the replacement is indirectly transmitted by the transfer of certain specific factors. adscs play the role of neuroprotection and neuronal decline. apoptosis. the diffraction factors released by adscs reduce the proteins accumulation in patients with alzheimers disease. different pd treatments are available today, including a levodopa drug and deep brain stimulation. 3-4 patients respond to levodopa, and are useful but in some cases minimized.

Methods

1- we performed a search in pubmed with the following mesh terms: parkinsons disease, fatty stem cells, n-butylidenephthalide, levodopa, deep-brain, pluripotent stem cells 2- the search was narrowed to original articles published in english. 3- we restrict our research to major journal in the field of stem cell research

Results

We examined the therapeutic effects of bp treatment. adscs in a mptp-based mouse model of pd an analysis of animal animals with different concentrations of bp is important for determining the best treatment. the conditions of the adscs in bp forserially diluted for culture were analyzed 24 or 48 hours later, and stability was then analyzed. adsc sustainability decreases when the concentration of bp / mg / ml is reduced to 24 hours. long-term treatment (48 hours) indicates a further reduction in animals at high and stable concentrations of 40 mg / ml or less. these results indicated that high bp concentrations had a negative effect on cell growth and survival, but bp was used at a concentration of 40 mg / ml or less. we reviewed the possibility of adsc linking. adsc with or without bm 20mg / ml was transferred to the pd

brain. injection on the third day of induction of pd caused impairment in motor skills, balance and coordination in the b6 mouse. stem cell stem cells are mature and easy to use. initially, viral transcription factors enter the cell and lead to increased ipscs treatment for inadequate treatment due to tumorigenicity. these treatments are still performed in humans in the inhuman models of ipscs that are capable of delivering performance to parkinsons damaged areas. ipscs can be a progressive loss of dp neurons compared to the parkins gene model.

Conclusion

Neurological symptoms.in this bp prevention study, the adsc connection improves pds motor symptoms and protects dopamine neurons in the pd model. other treatment options for patients with pd include levodopa and deep- brain stimulation, but for people with diabetes it is not a type of panasonic and only reduces symptoms. stem cell techniques suggest that treatment with neural stem cells has been created and it is hoped to be used as a treatment for pd in the future, because its function is to screen and model the drug and make it a substitute for cell therapy.

Keywords

Parkinsons disease, fatty stem cells, n-butylidenephthalide, levodopa, deep-brain, pluripotent stem

Type-2 diabetic serum effects on the growth and cell survival of cancer cells

Zahra Zahiri,[1] Safoura sameni,[2,*] Seyedeh sara hashemi ,[3]

1. Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran
2. Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran
3. Burn & Wound Healing Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Type 2 diabetes is a metabolic disorder characterized by increased glucose in the blood following an insulin resistance or insulin deficiency. different studies have shown high levels of caspase 3 and bax activity in diabetic patients. the high level of caspase 3 and bax induces apoptosis. in this study, serum levels of caspase 3 and bax were investigated in diabetic patients and their effects on growth and survival of cancer cells were compared to normal cells

Methods

the total number of 150 patients were selected for type 2 diabetes and 150 subjects for the control group. initially, different biochemical elements were evaluated in these individuals. for the first screening, 5 subjects with high blood glucose and the lowest serum level of zinc were enrolled in the diabetic population, and the control subjects with normal blood sugar levels and highest serum zn level were examined for the enzyme caspase 3 and bax levels by elisa. in the second stage of screening, those of diabetic individuals with the highest serum levels of caspase 3 and bax were chosen beside those control samples with the lowest levels of caspase 3 and bax, which the effect of all together were studied on the cell viability through the last step. finally, the cytotoxicity effect of selective serums was studied and compared during 24, 48 and 72 hours on the survival of hdf and fibroblast cells. the results were compared statistically

Results

For both control and type 2 diabetes mellitus groups, fbs and hba1c, triglycerides and cholesterol, hdl, ldl, bun, creatinine, as well as serum levels of zn were studied. in addition to calculating and comparing the mean and standard deviation for all data, this study clearly showed that there was a significant decrease (pâ‰¤0.05) in serum zn level in diabetic subjects compared to control group. in the second screening test, 5 samples were selected from each of the two groups and it was shown that serum levels of caspase 3 and bax (which also have an inverse association with zn level), has significantly increased in diabetes compared to the control group. finally, in the mtt assay, which was performed on two normal and hdf-fibroblast cells, showed that the survival of cancer cells after 24 hours of exposure was significantly declined by the diabetic serum compared to non-diabetic serum (pâ‰¤0.05).

Conclusion

The serum zn level of people with diabetes is lower compared to controls. serum levels of zn has a reverse relationship with caspase 3 and bax. by assessing the survival of fibroblasts and cancer cells, it was shown that after 24 hours of treatment, diabetic serum can significantly decrease the survival of cancer cells compared to normal cells, which is probably due to activity of caspases and other inducers of apoptosis in early hours of action

Keywords

Type 2 diabetes, cancer, caspase-3, bax, zn

Tyrosine kinase inhibitors as a strategy to treat differentiated thyroid cancer

Afarin Aghajari,[1,*] Mohammad amin dehghani ,[2] Fatemeh dehghani ,[3]

1. School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
2. Student Research Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
3. Department of Genetics, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Introduction

Differentiated thyroid cancer (dtc) as a indolent tumor is responsible for 95% of whole thyroid cancers, whose therapeutic strategies are surgery, radioactive iodine, and thyroid-stimulating hormone suppressive therapy. recent available molecular targets, especially tyrosine kinase inhibitors (tkis), sorafenib and lenvatinib, have been approved for iodine refractory dtc with beneficial due to progression-free survival and without efficacy on overall survival.

Methods

Pubmed database was used to search related articles in english with the aid of keywords including dtc, tyrosine kinase inhibitors, clinical trials and cancer therapeutics.

Results

The studies on dtc are ongoing are multiple tkis, multi-targeted or specific. the present study was conducted to introduce reports on targeted therapies in dtc, including the reasons, clinical trials and expert views regarding their applications. according to a phase iii trial (decision) of sorafenib in radioiodine (rai)-refractory thyroid cancer, a median progression-free survival (pfs) was 10.8 months in the sorafenib group compared to in the placebo group (5.8 months). a significant anti-tumor effect was reported for sunitinib, a type of tki, in patients with advanced dtc. the total response rate of patients receiving lenvatinib was 64.8%, in a central phase iii study on 392 patients with progressive radioiodine-refractory thyroid cancer, as four patients had complete response. the lenvatinib arm showed median progression-free survival of 18.3 months compared to 3.6 months in placebo-receiving patients.

Conclusion

Further research is required to evaluate the common complications from tki therapy. there is need for a well-adjusted balance between efficacy and adverse impacts. the first agents with activity in advanced medullary thyroid cancers have been approved by findings capable of altering therapeutic landscape for iodine-refractory dtc.

Keywords

Dtc, tyrosine kinase inhibitors, clinical trials, cancer therapeutics.

Urinary tract infection

Fatemeh Ezzatabadipoor,[1,*] Dorna dehghani,[2] Elahe shakiba,[3] Naima jame bozogi,[4]

1. estahban university
2. esahban university
3. estahban university
4. dr.soroori laboratory

Abstract

Introduction

Urinary tract infection is one of the most common infections, mainly due to the presence and growth of microorganisms in the urinary tract. the antibiotic resistance pattern of this infection varies in different areas. the aim of the present study is to identify the bacterial etiology causing infection and susceptibility pattern as well as antibiotic resistance in patients referred to valiasr hospital in kazeroon and dr. soroori laboratory in darab.

Methods

In this study, during the period of 8 months (since 23 sep 2017 until 21 may 2018), urine samples were collected among 5414 and 1192 referred individuals of suspected urinary tract infections in valiasr hospital of kazeroon and dr. soroori laboratory in darab, respectively. antibiotic susceptibility test was performed by laboratory standard method after isolation and determining infection etiology.

Results

Among 5414 samples in kazeroon, the results of urine culture of 2670 individuals were positive; 64 men and 2606 women. among 1192 samples in darab, the urine culture of 721 individuals was positive; 8 men and 721 women. the most common isolated bacteria were escherichia coli and epidermidis in darab and saprophyticus in kazeroon. based on antibiogram results in kazeroon most susceptibility was norfloxacin and most resistance were gentamicin.and kotrimoksazol , according to antibiogram results in darab, most susceptibility belonged to ciprofloxacin and cefixim and most resistance belonged to gentamicin and vancomycin.

Conclusion

Considering the obtained findings gentamicin , had the most resistance and norfloxacin and ciprofloxacin had the most susceptibility. therefore, gentamicin is not a suitable medicine for treatment.

Keywords

Urinary infection, antibiogram, gentamicin, resistance,susceptibility

Use of potential therapeutic agents to protect bone health in prostate cancer

Mahdokht Forouzan moheb,[1,*] Mohammad hasan karimi,[2] Faranak jamshidian,[3] Seyed yusef seydena,[4] Nafise taromi,[5]

1. department of biology, faculty of basic sciences, north tehran branch, islamic azad university, tehran, iran
2. department of biology, faculty of basic sciences, tonekabon branch, islamic azad university, mazandaran, iran
3. department of biology, faculty of basic sciences, east tehran branch (ghiamdasht), islamic azad university, tehran, iran
4. department of biology, faculty of basic sciences, north tehran branch, islamic azad university, tehran, iran
5. iran university of medical sience

Abstract

Introduction

Patients with prostate cancer are at risk of impaired bone health. prostate cancer has a propensity to metastasize to bone, after which patients are at risk of skeletal-related events. these complications are associated with increased mortality, substantial pain, and reduced quality of life. patients are also at risk of bone loss due to androgen deprivation therapy, which can be compounded in elderly patients with reduced bone density. it is essential, therefore, that aspects of bone health and therapies able to prevent the occurrence of skeletal-related events are considered throughout the clinical course of prostate cancer.

Methods

We reviewed the literature regarding the molecular mechanisms underpinning bone lesion formation, the modes of action of therapies that prevent skeletal-related events, and the efficacy and safety of these therapies in patients with hormone-sensitive or castration-resistant prostate cancer.

Results

Therapies such as denosumab (a rankl inhibitor) and zoledronic acid (a bisphosphonate) were indicated for prevention of skeletal-related events. radium-223 dichloride also has proven efficacy in delaying symptomatic skeletal-related events, as well as in improving overall survival through effects on bone metastases. before development of bone metastases, low-dose denosumab may also be used for treatment of androgen deprivation therapy-associated bone loss. denosumab may also have the potential to delay bone metastases development in patients with castration-resistant prostate cancer, although this is not currently an approved indication. the safety profile of therapies to prevent skeletal-related events should be considered. this review consolidates the available evidence on use of denosumab and bisphosphonates in prostate cancer, differentiated by hormone-sensitive and castration-resistant disease.

Conclusion

There is convincing evidence to support the use of denosumab and bisphosphonates to maintain bone health in patients with prostate cancer. clinicians should be mindful of the adverse event risk profile of these therapies.

Keywords

prostate cancer, bone, denosumab

Use of probiotics for cure of irritable bowel syndrome

Morteza Rabiee lalehdashti,[1,*] Hanieh roudabadi tanha,[2] Amir arasteh,[3] Maedeh yousefizad chobari,[4]

1. Islamic Azad University
2. Islamic Azad University
3. Islamic Azad University
4. Islamic Azad University

Abstract

Introduction

Irritable bowel syndrome (ibs) is a disorder in the intestinal normal function. ibs is the most commonly reported disorder of the intestinal function. ibs occurs at all ages but most reports indicate that adults are involved. almost one in five people in the world are involved and it is more common in women. clinical symptoms) its first symptoms are most commonly seen in adults. symptoms can be structurally created but in the form of digestive diseases such as inflammatory bowel disease. symptoms may appear and disappear after a while. the severity of the symptoms varies from mild to severe. common symptoms include abdominal pain-excessive bloating-changes in bowel habits and changes in bowel movement which do not have any cause. it is possible to obtain a definitive diagnosis by taking a patient health biography and also the rome criteria. ibs diagnosis) after the researchers efforts the diagnostic criteria of rome criteria for the definitive diagnosis of ibs has been introduced. pain or abdominal discomfort for at least three days per month which lasts for three months and also before the diagnosis six months from the onset of pain. abdominal pain should be accompanied by at least two following symptoms: 1- improve pain by the bowel movement 2- start symptoms with a change in bowel movement 3-start symptoms with change in stool form according to the rome criteria abdominal pain or discomfort is the clinical condition of the ibs diagnosis. the pain may be mild or severe. generally the symptoms of the ibs should be improved by stool expelling or start with changes in the stool form and pattern. the most common symptom of the ibs is changing in bowel habit which can include diarrhea and constipation. the pattern of ibs is divided into three groups: predominant diarrhea ibs (ibs-d)-predominant constipation ibs (ibs-c) and mixed ibs (ibs-m). intestinal microbial flora: the human gastrointestinal tract contains a large number of beneficial bacteria called microbial flora which imbalances due to various factors such as age-stress-diet-drugs and various disease and thus the number of pathogenic bacteria increases. consequently they cause a variety of digestive disorders-excessive immune system stimulation and so on. probiotics-live microorganisms: probiotics are beneficial gastrointestinal bacteria that help prevent and treat gastrointestinal diseases. probiotic bacteria are divided into two groups of lactobacillus and bifidobacterium. clinical studies have proven to be effective in the treatment of ibs. treatment of ibs with probiotics and their mechanism of action: probiotics especially lactic acid bacteria are one of the best options for treating ibs. in fact lactic acid bacteria aggravate the pathogen life condition by converting glucose to lactic acid and creating an acidic environment. one of the best treatments is the use of lactocare (synbiotic) one of the best products of the lactic acid group which protects the gastrointestinal system by helping to restore the natural flora of the digestive system and also boosts the immune system. it is

recommended that one or two 500mg capsules be taken daily after a meal as prescribed by the doctor. lactocare was also registered as the (gras) agent by fda.

Methods

Various experiments were carried out to prove the effect of probiotics in treating the disease from different directions. for example in the first experiment in a 4-week study the effect of lactobacillus plantarum and placebo was compared in 60 patients of ibs. the second experiment known as (cork experiment) was conducted in ireland that measured the effect of bifidobacterium on inflammation.

Results

According to the results of the tests it can be seen that in the first experiment the group treated with lactobacillus plantarum significantly decreased vomiting. in the cork experiment it was also found that probiotics could alter inflammatory cytokines. other studies also found that probiotics have no side effects and are usable for all ages. also a review study found that taking one to six months of probiotics was effective in reducing ibs symptoms.

Conclusion

We conclude that ibs is a highly prevalent complicated disease. the role of microbial flora has also been proven. the goal of treatment is to restore the microbial flora to normal. however more research is needed for ibs.

Keywords

Irritable bowel syndrome, probiotics, intestinal disorders, lactocare, rome criteria

Using multiplex rt- pcr technique to detect six different respiratory viruses in clinical specimens from patients attending boo-ali and emam ali hospital with acute respiratory infection symptoms

Narges Arbabi,[1,*] Maliheh metanat,[2] Mostafa heydari,[3]

1. Infectious Diseases and Tropical Medicine Research Center, Resistant Tuberculosis Institute, Zahedan University of Medical Sciences, Zahedan, Iran.
2. Infectious Diseases and Tropical Medicine Research Center, Resistant Tuberculosis Institute, Zahedan University of Medical Sciences, Zahedan, Iran
3. Infectious Diseases and Tropical Medicine Research Center, Resistant Tuberculosis Institute, Zahedan University of Medical Sciences, Zahedan, Iran

Abstract

Introduction

Respiratory viruses are one of the major causes of acute respiratory infection syndromes (aris) and one of the main causes of hospitalization and mortality among different age groups world widely. children at younger ages experiencing three to eight episodes of acute respiratory infections (ari) yearly. in a given study we tried to screen the occurrence of some of the new emerging respiratory viruses including respiratory syncytial virus type a and b (rsv-a and rsv-b), human parainfluenza virus type 1, 2, and 3(hpiv-1, hpiv-2 and hpiv-3) and human metapneumovirus (hmpv) among patients with ari symptoms.

Methods

We conduct a cross-sectional study from 2013 to 2015 during which we screened an around 244 clinical samples, belonging to patients with ari symptoms. the samples were collected from two different hospitals in zahedan district (booali and emam ali hospital) and sent to dept. of infectious diseases and tropical medicine research center for further analysis. patients who entered in this study have presented a multiple symptoms of respiratory infection symptoms including fever, sore throat, dyspnea, rhinorrhea, chills, cough, etc. 150 to 200 Âµl of each sample was used for rna extraction and multiplex rt-pcr was followed the extraction as per standardized protocol developed elsewhere. 11 finally the pcr product were loaded on 2% agarose gel contained ethidium bromide and results observed under gel documentation apparatus.

Results

This study perhaps was the first of its kind in zahedan city. clinical specimens form 244 patients with acute respiratory symptoms were used in this study. over all 19 samples were detected to be positive in both the groups. hpiv-3 by 12 incidences was the most frequently detected virus followed by rsv-a and rsv-b by 4 and 3 incidences.

Conclusion

Our results shows that in the first group (adult and elder ages) there might be other etiological agents responsible for acute respiratory symptoms rather than viruses discussed in this study. at the same time, in the second group (children), our result shows that unlike the public assumption, there are other respiratory viruses rather than influenza virus, responsible for most of the respiratory illnesses in seasons like spring and summer.

Keywords

Parainfluenza virus type 1, 2, and 3, respiratory syncytial virus type a and b, human metapneumoviru

Virotherapy , a new way of cancer treatment

Negar Ahmadian,[1,*] Foad ramasi,[2]

1. shahid beheshti university of tehran
2. shahid beheshti university of tehran

Abstract

Introduction

Cancer, such a harmful disease which annually drags lots of people to death, is defined as growth, multiplication and disorders in cell cycle and sometimes is caused by metastasis. both genetics and environment are involved with cancer and tumor has different receptors compared with normal cells. different therapies have been tested for cancer, such as anti-angiogenesis, gene therapy and most prevalent are chemotherapy and radiotherapy. chemotherapy not only eliminates tumors, but also disrupts the function of normal cells and has lots of side effects specially in metastatic cancers. therefore, new methods should be taken. viruses have strategies that enable them using the host cells in the way they can replicate, express their proteins, and finally yielding to disorders in host cells and apoptosis. according to these, 15 percent of cancers are related to viruses. virus therapy started in 1950 and in this case for eliminating tumor cells, we depend on the natural ability of viruses in polluting cells, multiplication and finally lysing host tumor cells.

Methods

In 1800 scientists indicated that their patients with cancer interestingly got better after getting polluted with virus infections. some years later, they injected different species of viruses to patients that results in some led to recovery and in some yielded to death. in order to decrease pathogenicity of viruses, they made genetically engineered viruses, for instance t-vec engineered to reduce the incidence of herpes. scientists also made these agents stronger against cancer by adding an immune system motive protein to viruses. in 2005, after some evidence of shrinking the size of the tumors by these agents, chinese scientists approved an adenovirus called h-101 that was able to destroy the tissue of head and neck tumors. afterwards, amgen institute which works in biotechnology fields in california, declared that genetically engineered virus t-vec not only can shrink the size of tumors in patients being afflicted with malignant melanoma but also is able to increase the life span of patients about 4.4 months more. generally, one way among numerous ways for using viruses as anti-cancer agents, is eliminating an important gene in host cells that virus highly needs it to survive in normal cells, such as eliminating thymidine-kinase that is responsible for the metabolism of nucleic acid that leads to dependence of viruses like hsv to cancer cells which they express thymidine-kinase in higher rates, so viruses attack to these cells for growth.

Results

Based on trials, viruses like t-vec attack the tumor and eliminate it by motivating immune system. cancer-therapy with common methods like chemo and radiotherapy, destroys the function of normal cells too, but using oncolytic viruses has some benefits over than those common methods: 1.oncolytic viruses are more allocated like ndv virus that uses sialic acid as its acceptor and alpha viruses show more intention to heparin sulfate. these two chemical materials are more on the cancer cell surface. 2. there is no need of extra injections after once it entered the cells. viruses multiplicate very fast and attack each cell one by one, so this process continues to the point which immune system get activated, but chemical drugs should have been injected regularly. 3. these agents because of their natural ability, impact the metabolic paths of cancer cells specifically, but chemotherapy involves the most biochemistry paths in most of the cells. of course virus therapy has some disadvantages due to its pathogenic aspect, another limitation of it, could be vulnerability of viruses from the immune system of the host, therefore before a virus can destroy cancer cells, defensive functions of the host body like releasing interferons and antibodies, eliminate viruses from the cell. hence, immune responses must be suppressed to the point that virus can harm the tumor cells.

Conclusion

Genetically engineered viruses, especially oncolytic viruses and recombinant, allocated, anti-tumor proteins derived from them, are being studied more in the field of cancer-therapy. even though pathogenicity of viruses prohibits using them as human anti-cancer agents, one way to overcome this issue is understanding the mechanisms that viruses can attack to the tumor cell specifically. oncolytic therapy that is defined as using viruses to treat cancer is an impressive relationship of basic sciences and medical sciences as well.

Keywords

Oncolytic viruses - cancer - chemotherapy - virotherpy

Zinc and copper:risk factors for coronary heart disease

Mahroye Haji abolhasani,[1] Reza hajihosseini,[2] Seyfidin javadian,[3] Shirin valadbeigi,[4] Reza saghiri,[5,*]

1. Department of Biochemistry ,Pasteur Institute of Iran
2. Payam Noor University of Tehran East
3. Department of Biochemistry ,Pasteur Institute of Iran
4. Department of Biochemistry ,Pasteur Institute of Iran
5. Department of Biochemistry ,Pasteur Institute of Iran

Abstract

Introduction

Coronary artery disease is a leading cause of morbidity and mortality in the most of countries. traditional risk factor such as serum cholesterol ,blood pressure and smoking account for only 50% of cad mortality. there is strong evidence that oxidative free radical have a role in the development of degenerative disease including cad. oxidative free radical increase the peroxidation of low density lipoprotein(ldl) thereby increasing its uptake by macrophage with increased foam cell formation and atherosclerosis,thugh other mechanism may exist.lack of trace elements resulting in enhanced levels of oxidative stress of the human body . the aim of the present study was to investigate the association between serum levels of copper and zinc in patients with coronary artery disease and healthy subjects.

Methods

This study included 40 patients having angiographically demostrated cad attending cardiology ward of modaress hospital and 30 healthy subjects. serum was obtained by centrifugation at 3000 rpm for 10 minumtes and stored at -20 Â°c until assayed. serum concentration of zinc and copper were determined by atomic absorption spectrophotometer .

Results

Serum cu mean concentrations were 3.87 mg/l and 1.1 mg/l in patients and healthy subjects respectively. serum zinc mean concentrations were 1.08 mg/l and 1.5 mg/l in patients and healthy group respectively .serum zn mean concentrations in patients (1.08) were lower than those determined for healthy controls(1.5)

Conclusion

Trace elements play an important role in different physiological and metabolic processes. some trace elements have been reported to be risk factors of cad. the results of our study showed that serum levels of zinc in cad patients were lower than healthy subjects whereas serum levels of copper were higher in cad patients levels compared with controls. result in low concentrations of zinc and high concentrations of copper may be considered as a risk factors for cad patients.

Keywords

Coronary artery disease (cad); trace elements ; zinc ;copper ; risk factors

Zno nanoparticles effect on viability and chromosomal stability of spermatogonial stem cells

Maryam Farzaneh,[1] Azam javadi,[2] Saadat mokhtar,[3] Seyede faezeh moraveji,[4] hamid gourabi,[5,*] Fereshteh esfandiari,[6]

1. 2. Department of Developmental Biology, University of Science and Culture, Tehran, Ira
2. 2. Department of Developmental Biology, University of Science and Culture, Tehran, Ira
3. 3. Department of Physics, Shahid Beheshti University, Tehran, Iran
4. 1. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran
5. 4. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
6. 1. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran

Abstract

Introduction

Zinc oxide (zno) nanoparticles (np) are being widely used in various industries, such as in cosmetics, food additives and biomedical applications. therefore, it serves as a part of our daily life. however, there is a serious lack of information about potentioal toxicity of zno nps on livingorganisms. recent studies have shown that administration of nps can easily pass through the blood â€“ testis barriers and affect the male reproductive system; in this system spermatogonial stem cells (sscs) are critical for the process of spermatogenesis and disruptions in sscs function lead to infertility. therefore, the aim of this study to investigate the potential toxicity of zno nps on the sscs.

Methods

In this regard, we synthesized zno np and characterized them by xrd and sem. sscs have been isolated from nmri mice testes and were characterized by immunofleurescence (if) analysis. then, sscs treated with different concentrations of zno nps (10, 20, 30, 40 and 50 Î¼g/ml).the viability of the cells was assessed by pi staining. then, on days 1 and 7 after treatment, the chromosomal aberrations and aneuploidy analysis was assessed by giemsa and g banding method respectively.

Results

Xrd and sem analysis confirmed successful synthesis of zno nps. the results of this study showed that the survival of treated cells with zno np decreased significantly compared to the control group at the concentration of 20 Âµg/ml and other higher concentrations. also, the entry of nps into the cell was confirmed using an electron microscope (tem). moreover,, we observedsignificant increase in chromosomal aberrations seven days after treatment with zno nps ($p < 0.05$). there was no significant difference aneuploidy following the treatment.

Conclusion

Taken together our data demonstrate that zno nps have genotoxicity efects in sscs by inducing chromosomal aberrations. this study indicated that cytotoxicity of zno nps is dose and time dependent.

Keywords

Spermatogonial stem cells, zinc oxide nanoparticles, chromosomal aberrations, aneuploidy.