Effects of Intracellular Superoxide Removal at Acupoints with TAT-SOD on Obesity

Guo, JK (Guo, Jingke); Chen, Y (Chen, Yue); Yuan, B (Yuan, Bin); Liu, ST (Liu, Shutao); Rao, PF (Rao, Pingfan)

FREE RADICAL BIOLOGY AND MEDICINE


摘 要: TAT-SOD is a recombinant protein of superoxide dismutase fused with TAT peptide. By pure accident, we discovered that topical application of TAT-SOD to acupoints could result in acupuncture-like action. This study aimed to validate the accidental discovery by investigating the effect on simple obesity of the topical application of TAT-SOD to acupoints in comparison with acupuncture. 90 subjects were divided into 3 groups for 12-week treatments. Regular hospital acupuncture treatment was given to Acupuncture Group 3 times a week. TAT-SOD Group were instructed first to locate acupoints and apply 0.1 ml of 5000u SOD/ml TAT-SOD cream in an area of 1 cm(2) to each of the same set of acupoints, which they then conducted at home three times daily. Placebo Group applied the vehicle cream the same manner as TAT-SOD Group. Both TAT-SOD and acupuncture treatments decreased adiposity with overall clinical effective rates of 60.0% and 76.7%, respectively. The placebo group showed no improvement. The results validate that the enzymatic removal of the intracellular superoxide at acupoints could generate acupuncture-like effects, and indicate a possibility of the new method as a simple substitute to acupuncture and an insight of superoxide modulation along meridians for acupuncture mechanism.

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KeyWords Plus: APPETITE SUPPRESSION; PROTEIN; ACUPUNCTURE; DISMUTASE; TRANSDUCTION; METAANALYSIS; CELLS

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Angiogenesis is a fundamental component of cancer growth and metastasis; therefore, inhibition of angiogenesis has become a promising strategy for the discovery and development of cancer chemotherapeutics. Recently, natural products have attracted significant interest as therapeutic agents for cancer since they have relatively fewer side effects as compared to modern chemotherapeutics and have long been used clinically to treat a variety of diseases, including...
cancer. Spica prunellae is an important component in several traditional Chinese medicine (TCM) formulations for cancer treatment. Recently, we reported that S. prunellae inhibits cancer cell growth through the induction of mitochondrion-dependent apoptosis. However, the precise mechanisms of its overall anti-cancer activity remain largely unknown. In the present study, we investigated the anti-angiogenic effects of the ethanol extract of S. prunellae (EESP) in vitro on human umbilical vein endothelial cells (HUVECs) and in vivo using the chick embryo chorioallantoic membrane (CAM) assay. We found that EESP inhibited the proliferation of HUVECs via blockade of cell cycle G1 to S progression. In addition, EESP inhibited the migration and tube formation of HUVECs. Moreover, EESP treatment decreased VEGF-A expression in HT-29 human colon carcinoma cells as well as the expression of VEGF-A and VEGFR-2 in HUVECs. Furthermore, EESP exposure reduced the formation of blood vessels in chick embryos. These results suggest that the inhibition of angiogenesis is one of the mechanisms by which S. prunellae can mediate an anti-cancer effect.

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The in vitro antioxidant activity of ten different parts of lotus (Nelumbo nucifera Gaertn.) was evaluated and compared. Among the ten lotus extracts, the receptacle did not only possessed the highest phenolic, flavonoid and proanthocyanidin contents, but its 2-picrylhydrazyl free (DPPH) and 2, 2'-Azinobis (3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) radical scavenging activities, reducing power as well as total antioxidant activity were also comparable to, if not better than those of the butylated hydroxytoluene (BHT) control (p < 0.05). Compared with the BHT, all ten lotus extracts even exhibited significantly (p < 0.05) higher metal chelating activity. Nevertheless, the hydroxyl radical scavenging ability of all ten lotus extracts was significantly (p < 0.05) lower than that of the ascorbic acid control. In contrast to the metal chelating ability, phenolic compounds in the ten lotus extracts would likely be responsible for their DPPH and ABTS radical scavenging activities.

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Comparing different physical factors on serum TNF-alpha levels, chondrocyte apoptosis,
proanthocyanidin content; antioxidant activity

KeyWords Plus: IN-VITRO; LEAVES; FLAVONOIDS; EXTRACTS; STAMENS; MICE

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Objective: To study the therapeutic effects that different physical factors may have on rabbits with osteoarthritis of the knee.

Methods: A total of 64 rabbits were randomised and organised into eight groups, eight of which were each assigned a different physical factor, in which the rabbits received one type of physical therapy: millimetre waves for 20 min, pulsed electromagnetic fields, millimetre waves for 40 min, ultrasound, low-level laser therapy or ultrashort wave diathermy. The two remaining groups, the normal group and the model group, served as controls. The efficacy of the different treatments were determined by observing the configuration and structure of the cartilaginous tissue by haematoxylin and Eosin staining, measuring the serum tumour necrosis factor-alpha levels by enzyme immunoassay, evaluating the expression levels of caspases-3 and -8 by immunohistochemistry, and calculating the ratio of chondrocytes apoptosis by TdT-mediated dUTP nick end labelling. The values obtained for each assessment of the eight groups were analysed by a One-way ANOVA.

Results: By applying upmentioned physical treatments, the organisational configuration and structure of cartilage cells from the knees of rabbits with osteoarthritis increased. These treatments also decreased serum tumour necrosis factor-alpha levels, reduced the expression of caspase-3 and caspase-8 and reduced chondrocyte apoptosis, resulting in an overall delay in osteoarthritis development.

Conclusion: The application of pulsed electromagnetic fields, millimetre waves for 40 min, ultrasound, or low-level laser therapy had significant effects in improving osteoarthritis; in particular, treatment with pulsed electromagnetic fields or ultrasound yielded the greatest therapeutic effect. (C) 2011 Societe francaise de rhumatologie. Published by Elsevier Masson SAS. All rights reserved.

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作者关键词: OA; TNF-alpha; Chondrocyte apoptosis; Caspase-3; Caspase-8

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We thank Yuqing Wang for the statistical and data analysis. We thank the National Natural Science Fund (No. 30672215) for the financial support.

The supercritical fluid extraction (SFE) of Lepidium apetalum seed oil and its anti-oxidant activity were studied. The SFE process was optimized using response surface methodology (RSM) with a central composite design (CCD). Independent variables, namely operating pressure, temperature, time and flow rate were evaluated. The maximum extraction of Lepidium apetalum seed oil by SFE-CO\(_2\) (about 36.3\%) was obtained when SFE-CO\(_2\) extraction was carried out under the optimal conditions of 30.0 MPa of pressure, 70 degrees C of temperature, 120 min of extraction time and 25.95 L/h of flow rate. GC-MS analysis showed the presence of four fatty acids in Lepidium apetalum seed oil, with a high content (91.0\%) of unsaturated fatty acid. The anti-oxidant activity of the oil was assessed by the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical-scavenging assay and 2,2'-azinobis(3-ethylbenzthiazoline-6-sulphonic acid) diaminonium
salt (ABTS) test. Lepidium apetalum seed oil possessed a notable concentration-dependent antioxidant activity, with IC(50) values of 1.00 and 3.75 mg/mL, respectively.

The authors gratefully acknowledge the financial support by a Key Project of Fujian Province Science-Technology Department (2009YZ0001-1-1) and Fujian Province Science-Technology Plan projects (2010Y2004). At the same time they acknowledge the support of Xiuping Chen of ICMS in the experiments.
Biocalcification of collagen matrices with calcium phosphate and biosilification of diatom frustules with amorphous silica are two discrete processes that have intrigued biologists and materials scientists for decades. Recent advancements in the understanding of the mechanisms involved in these two biomineralisation processes have resulted in the use of biomimetic strategies to replicate these processes separately using polyanionic, polycationic or zwitterionic analogues of extracellular matrix proteins to stabilise amorphous mineral precursor phases. To date, there is a lack of a universal model that enables the subtleties of these two apparently dissimilar biomineralisation processes to be studied together. Here, we utilise the eggshell membrane as a universal model for differential biomimetic calcification and silicification. By manipulating the eggshell membrane to render it permeable to stabilised mineral precursors, it is possible to introduce nanostructured calcium phosphate or silica into eggshell membrane fibre cores or mantles. We provide a model for infiltrating the two compartmental niches of a biopolymer membrane with different intrafibre minerals to obtain materials with potentially improved structure-property relationships. (C) 2011 Elsevier Ltd. All rights reserved.
This work was supported by grant R21 DE019213 from NIDCR (Pl. Franklin Tay) and the PSRP and ESA awards from the Georgia Health Sciences University. We thank R. Smith (Electron Microscopy Core Unit, Georgia Health Sciences University, USA) for performing electron diffractions, F. Chan (Electron Microscopy Unit, The University of Hong Kong, China) for performing STEM-EDX and electron tomography and M. Burnside for secretarial support.

The fruit of Broussonetia papyrifera (L.) L'Herit. ex Vent. is a traditional Chinese medicine with Chinese name Chushizi. It has been commonly used as an important tonic for the treatment of age-related disorders. In this work, the antioxidant properties of the oil were investigated on nitric oxide production in lipopolysaccharide (LPS), activated RAW264.7 cells along with the 1,1-diphenyl-2-picrylhydrazyl (DPPH) and superoxide anion and hydroxyl radical scavenging assays. The chemical composition of the oil was analyzed by Gas chromatography-mass spectrometry (GC-MS). The oil mainly consists of 8,11-octadecadienic acid (79.17%). It possessed DPPH/superoxide anion/hydroxyl free radical scavenging and NO production inhibition activities (IC50 58.00 +/- 0.37 μg/ml). The results indicated that Chushizi oil was a powerful...
antioxidant with versatile free radical-scavenging activity, which may have therapeutic potential in associated with various inflammatory diseases.

The work was supported by the National Natural Science Foundation of China (No. 30870236). We thank Yanjie Wei and Liming Xue for the experiment assistances.
Ethnopharmacological relevance: Plants of the genus Desmodium (Fabaceae), such as Desmodium styracifolium (Osbeck) Merr. and Desmodium gyrans (L.f.) DC., have a long history of medical use in Traditional Chinese Medicine to treat various ailments including rheumatism, pyrexia, dysentery, wounds, cough, malaria, hepatitis, hemoptysis, etc. In the theory of Traditional Chinese Medicine, most species have the effect of relieving internal heat or fever, neutralizing toxins, inhibiting pain, invigorating blood circulation, suppressing cough and alleviating dyspnea.

Materials and methods: A bibliographic investigation was accomplished by analyzing secondary sources including Chinese Herbal Classics, and worldwide accepted scientific databases (Pubmed, Scopus and Web of Science, SciFinder) were scrutinized for the available information on the ethnopharmacological uses in Chinese medicine, phytochemistry, pharmacology and toxicology of Desmodium species.

Results: The genus Desmodium is a large member of the Papilionaceae (Fabaceae) family. It contains about 350 plant species used for both feeding stuffs and herbal medicines, of which only about 30 species have been phytochemically or pharmacologically investigated. Desmodium plant extracts, as well as the active principles, have been experimentally studied for their anti-inflammatory, cytotoxic, antidiabetic, antinephrolithic, antibacterial, and nootropic activities in vitro or in vivo. And so far, a total of 212 compounds have been isolated from 15 Desmodium species and characterized mainly as flavonoids and alkaloids, followed by terpenoids, steroids, phenols, phenylpropanoids, glycosides and a number of volatile oils. The remaining unrevealed species are recorded chiefly in Asia and Africa being used in empirical treatment for various diseases.

Conclusions: Desmodium species have long been used in TCM to treat various ailments. Available scientific references revealed that the traditional medical uses of some important Desmodium species in TCM have been evaluated by modern pharmacological studies. As literature demonstrated, flavonoids and alkaloids are perhaps responsible for most of the activities shown by the plants of this genus. Further studies are still required to reveal the structure-activity relationship of these active constituents. (C) 2011 Elsevier Ireland Ltd. All rights reserved.
Anthraquinone compounds from Morinda officinalis inhibit osteoclastic bone resorption in vitro

Title: Anthraquinone compounds from Morinda officinalis inhibit osteoclastic bone resorption in vitro

Authors: Bao, LL (Bao, Leilei); Qin, LP (Qin, Luping); Liu, L (Liu, Lei); Wu, YB (Wu, Yanbin); Han, T (Han, Ting); Xue, LM (Xue, Liming); Zhang, QY (Zhang, Qiaoyan)


Abstract: The root of Morinda officinalis has been claimed to have a protective effect against bone loss in sciatic neurectomized and ovariectomized osteoporotic rats, and this protective effect is supposed to be attributed to anthraquinone compounds in the plant. In the present study, we investigated the effects of three anthraquinones isolated from M. officinalis, including 1, 3, 8-trihydroxy-2-methoxy-anthraquinone (1), 2-hydroxy-1-methoxy-anthraquinone (2) and rubiadin (3) on bone resorption activity in vitro and the mechanism on osteoclasts derived from rat bone marrow cells. Compound 1, 2 and 3 decreased the formation of bone resorption pits, the number of multinucleated osteoclasts, and the activity of tartrate resistant acid phosphates (TRAP) and cathepsin K in the coculture system of osteoblasts and bone marrow cells in the presence of 1, 25-dihydroxyvitamine D(3) and dexamethasone. They also enhanced the apoptosis of osteoclasts induced from bone marrow cells with M-CSF and RANKL. In addition, Compound 1,2 and 3 improved the ratio of mRNA and protein expression of OPG and RANKL in osteoblasts, interfered with the JNK and NF-kappa B signal pathway, and reduced the expression of calcitonin receptor (CTR) and carbonic anhydrase/II (CA II) in osteoclasts induced from bone marrow cells with M-CSF and RANKL. These findings indicate that the anthraquinone compounds from M.
officinalis are potential inhibitors of bone resorption, and may also serve as evidence to explain the mechanism of the inhibitory effects of some other reported anthraquinones on bone loss. (C) 2011 Elsevier Ireland Ltd. All rights reserved.

This study was supported by the National Natural Science Foundation of China (NO. 90709023).
Title: A (HNMR)-H-1-Based Metabonomics Study of Postmenopausal Osteoporosis and Intervention Effects of Er-Xian Decoction in Ovariectomized Rats

Authors: Xue, LM (Xue, Liming); Wang, Y (Wang, Yin); Liu, L (Liu, Lei); Zhao, L (Zhao, Lu); Han, T (Han, Ting); Zhang, QY (Zhang, Qiaoyan); Qin, LP (Qin, Luping)


Abstract: A metabonomics method using H-1 nuclear magnetic resonance spectroscopy (HNMR-H-1) was applied to obtain a systematic view of the development and progression of postmenopausal osteoporosis. Using partial least squares discriminant analysis (PLS-DA), 26 and 34 characteristic resonances were found respectively in urine and plasma of ovariectomized rats (Variable importance, VIP value >= 1.0), and the significant altered metabolites identified in the plasma and urine were 10 and 9, respectively. Changes in these metabolites were related to the pathways of lipid, energy and amino acid metabolism, some of which involved the oxidative...
system. The described method was also used to analyze the therapeutic effects of Er-Xian Decoction (EXD), a traditional Chinese medicine widely used in the clinical treatment of osteoporosis in China. The results showed that EXD administration could provide satisfactory effects on osteoporosis through partially regulating the perturbed pathways of lipid, energy and amino acid metabolism and improving the anti-oxidative ability.

The work was supported by the National Natural Science Foundation of China (81073115, 81173191) and the Key Program for Basic Research of Shanghai (09JC1417600).
第 12 条，共 86 条
标题：Xiongshao Capsule ((sic)) Promotes Angiogenesis of HUVEC via Enhancing Cell Proliferation and Up-regulating the Expression of bFGF and VEGF
作者：Lin, JM (Lin Jiu-mao); Zhao, JY (Zhao Jin-yan); Zhuang, QC (Zhuang Qun-chuan); Hong, ZF (Hong Zhen-feng); Peng, J (Peng Jun)
在 Web of Science 中的被引频次：0
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摘要：Objective: To evaluate the angiogenic effect of the Xiongshao capsule ((sic)., XSC) in human umbilical vein endothelial cells (HUVEC), and to investigate the possible molecular mechanisms mediating its biological effect. Methods: Serum pharmacology was applied in this study, in which different doses of XSC were administrated to rats orally and then XSC-containing serum (XSC-S) was collected for the following in vitro experiments. The viability of HUVEC was determined by the 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. Cell density was observed via phase-contrast microscopy. Fluorescence-activated cell sorting analysis with propidium iodide staining was performed to determine cell cycle phase. Cell migration was determined by wound-healing method. Capillary tube formation by HUVEC was examined using ECMatrix gel-based assay. Vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF) expression levels were measured by reverse transcription polymerase chain reaction (RT-PCR) and enzyme-linked immunosorbant assay (ELISA) analyses. Results: XSC-S dose-dependently stimulated proliferation of HUVEC by promoting the cell cycle G1 to S progression. In addition, XSC-S treatment dramatically increased the migration and capillary tube formation of HUVEC in a dose-dependent manner. Moreover, XSC-S enhanced the expression of VEGF and bFGF at both mRNA and protein levels. Conclusion: XSC can promote several features of angiogenesis in endothelial cells through up-regulating the expression of bFGF and VEGF, suggesting that XSC may be a potential novel therapeutic agent for the treatment of ischemic heart diseases.
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文献类型: Article
作者关键词: Xiongshao capsule; Chinese medicine; angiogenesis; serum pharmacology
KeyWords Plus: FIBROBLAST-GROWTH-FACTOR; MEDICINE
地址: [Lin Jiu-mao; Zhao Jin-yan; Zhuang Qun-chuan; Hong Zhen-feng; Peng Jun] Fujian Univ Tradit Chinese Med, Fujian Acad Integrat Med, Fuzhou 350108, Peoples R China
Objective. To investigate echocardiographic abnormalities in a cohort of Chinese patients with systemic lupus erythematosus (SLE).

Methods. Eighty-five SLE patients who were hospitalized at our institution from January 2008 to June 2009 were included. Their clinical manifestations, electrocardiogram, chest x-ray, CT scan, and echocardiographic data were analyzed in relation to age, disease duration, and SLE disease activity index (SLEDAI).

Results. Echocardiography showed abnormalities in 53 patients (62.35%), involving valves in 56.5% (n = 48), pericardium in 25.9%, left and right ventricle enlargement in 17.65% and 1.18%, respectively, and auricle in 10.59% and 1.18% of the patients, respectively. The left ventricle showed decreased compliance in 10.29%, impaired relaxation in 14.12%, and abnormal wall motion in 42.35% of the patients. Interventricular septum thickness, left ventricular posterior wall thickness, and isovolumic relaxation time were positively correlated with age (r = 0.42, 0.33, and...
0.39, respectively, \( p < 0.01 \) for all variables), and disease duration (\( r = 0.22, 0.21, \) and 0.32, respectively; \( p < 0.05 \)). Left atrial and ventricular size were correlated with age (\( r = 0.32 \) and 0.41, \( p > 0.01 \)) and SLEDAI (\( p < 0.05 \)).

Conclusions. Cardiac, especially valvular abnormalities are common in SLE patients and increase with age and disease duration and activity. Inclusion of echocardiography in the clinical evaluation of SLE patients could help identify an important subset of patients with cardiac abnormalities. (C) 2011 Wiley Periodicals, Inc. J Clin Ultrasound 39:519-526, 2011; Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/jcu.20863

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作者关键词: systemic lupus erythematosus; cardiac involvement; echocardiography; retrospective analysis

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The purpose of this study was to investigate the in vivo vascularization and bone formation activity of tissue-engineered bone constructed using bone marrow mesenchymal stem cells (MSCs) transfected with vascular endothelial growth factor (VEGF). The expression of VEGF165 in rat bone marrow MSCs was confirmed using RT-PCR and immunohistochemistry. The MSCs were cultured together with nano-hydroxyapatite/collagen (NHAC) to form tissue-engineered bone. Untransfected MSCs were used as controls. The mice were sacrificed, and the bone xenografts were analyzed using immunohistochemistry and quantified for the degree of vascularization and new bone formation. Based on our results, expression of the VEGF165 gene was detected using RT-PCR and immunohistochemistry following transfection and 4 weeks of selection. The co-cultured NHAC- and VEGF-transfected MSCs had significantly higher alkaline phosphatase (AP) activity compared to the controls (P<0.05). In the mice that received the tissue-engineered bone xenografts, clumps of cartilage cells, irregular bone-like tissue and microvessels were observed. The growth of these structures progressed with time. In the control mice, however, only small amounts of bone-like and fibrotic tissue were observed. The differences between the control and experimental groups were statistically significant (P<0.05). In conclusion, VEGF165-transfected bone marrow MSCs promotes vascularization of tissue-engineered bone and ectopic osteogenesis.
Inhibition of tumor angiogenesis has become an attractive target of anticancer chemotherapy. However, drug resistance and cytotoxicity against non-tumor associated endothelial cells limit the long-term use and the therapeutic effectiveness of angiogenesis inhibitors, thus increasing the necessity for the development of multi-target agents with minimal side effects. Traditional Chinese medicine (TCM) formulas, which have relatively fewer side effects and have been used clinically to treat various types of diseases, including cancer, for thousands of years, are considered to be multicomponent and multi-target agents exerting their therapeutic function in a more holistic way. Hedyotis Diffusa (EEHDW) has long been used as an important component in several TCM formulas to treat various types of cancer. Although recently we reported that EEHDW promotes cancer cell apoptosis via activation of the mitochondrial-dependent pathway, the precise mechanism of its tumoricidal activity still remains to be clarified. In the present study, we investigated the angiogenic effects of the ethanol extract of EEHDW. Cell cycle analysis was performed using flow cytometry. Cell viability was analyzed using MTT assay. We found that EEHDW inhibited angiogenesis in vivo in chick embryo chorioallantoic membrane (CAM). In addition, we observed that EEHDW dose- and time-dependently inhibited the proliferation of human umbilical vein endothelial cells (HUVEC) by blocking the cell cycle G1 to S progression. Moreover, EEHDW inhibited the migration and tube formation of HUVECs. Furthermore, EEHDW treatment down-regulated the mRNA and protein expression levels of VEGF-A in HT-29 human colon carcinoma cells and HUVECs. Our findings suggest that inhibiting tumor angiogenesis is one of the mechanisms by which EEHDW is
involved in cancer therapy.

KeyWords Plus: ENDOTHELIAL GROWTH-FACTOR; THERAPEUTIC IMPLICATIONS; FACTOR EXPRESSION; NATURAL-PRODUCTS; CANCER; METASTASIS; CARCINOMA; VEGF; MECHANISMS; PROGNOSIS

This study was sponsored by the Natural Science Foundation of Fujian Province of China (2010J01195), the Research Foundation of Education Bureau of Fujian Province of China (JA10162), the Developmental Fund of Chen Keji Integrative Medicine (CKJ 2010019) and the National Natural Science Foundation of China (81073097).
The aim of this research was to construct a lentiviral shRNA vectors targeting phospholipase D2 (PLD2) gene, thus providing information for further study of the biological functions of PLD2 and clinical treatments of leukemia. Specific siRNA targets with short hairpin frame were designed using the siDESIGN software and synthesized according to cDNA sequence of PLD2 (GenBank accession number: NM_002663). DNA oligo was cloned into lentiviral expression vector, and then polymerase chain reaction (PCR) and sequencing analyses were conducted to verify the structures. The verified vectors were co-transfected into 293FT cells that could produce lentiviral. shRNA lentiviruses from the selected constructs were propagated and harvested with a virus packaging system, and the virus titer were determined by flow cytometry. After the lentiviral packing with PLD2-shRNA2 transfecting 293FT cells, using fluorescence microscope, we found the lentiviral interference vectors, which have GFP report genes expression accompanied with the host genes in 293FT cells. The optimal interfering target was then selected, while the titer of lentiviral packing PLD2-shRNA was 3.47 x 10(4) TU/ml and the virus was successfully packaged. PCR and sequencing analyses revealed that lentiviral shRNA vectors of three targeting PLD2 gene were successfully constructed.
Molecular Research on a Hypotensive Herb Formula and PPAR alpha Activation

Chen, MM (Chen, Mei-mei); Lai, XM (Lai, Xin-mei); Li, C (Li, Chi); Yang, XM (Yang, Xue-mei)

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Surflex-dock method was explored to study interactions between Qingxuanjiangya decoction (QXJYD in abbreviation, a famous hypotensive herb formula from Traditional Chinese Medicine prescription) and Peroxisome proliferators activated receptor-alpha (PPAR alpha) for detecting its pharmacological effects as well as to screen out PPAR alpha agonists. First, 28 compounds with values of PPAR alpha EC(50) from reported were introduced as a test set to evaluate the docking accuracy according to the good validation between experimental values and surflex-dock scores (correlation coefficient R = 0.866, RMSD = 1.169 angstrom, similarity = 0.804). And then, 739 molecules from QXJYD were docked to PPAR alpha by the validated way. The result showed 200 compounds from QXJYD had activity with PPAR alpha and discovered that a flavones compound (morralbanone, extracted from folium mori) with an excellent docking score might be considered as a guide to design a new scaffold of PPAR alpha agonists in the further study.
The authors thanks American Tripos Company for offering us Sybylx1.1 program. This work is supported in part by Foundation of Science & Technology Project of Fujian (2009Y0030 and 2009J05074), by Fujian Provincial Health Department Special Project (YA-204 and wzzsj0901 and wz-zsj0902), by Fujian Provincial Department of Education project (JA09130).

The title is: Solid-phase extraction-field-amplified sample injection coupled with CE-ESI-MS for online pre-concentration and quantitative analysis of brain-gut peptides.
In order to improve the sensitivity of CE-ESI-MS for the analysis of brain-gut peptides, a solid-phase extraction combined with field-amplified sample injection was used for the pre-concentration of the brain-gut peptides. Compared with the conventional pressure injection method, the sensitivity in the detection of brain-gut peptides was improved more than 100-fold. The possible factors affecting sample stacking, such as the sample matrix, the composition and the length of the water column, the types and the volumes of eluent, have been investigated in detail. Under the optimum conditions, the detectable concentration of brain-gut peptides was found to be as low as 0.02 μM. A linear response concentration for the detection was developed in the range of 0.08-25 μmol/L. A real sample of human cerebrospinal fluids, which was spiked with brain-gut peptides, was also examined in order to evaluate the reliability of the proposed approach. The recovery of the method was in a range from 69.2 to 85.4%. The method was found to be reliable, accurate and potentially applicable for clinical drug analysis.
Effect of Silver Colloid Concentration on Electroporation for Intracellular Surface Enhanced Raman Scattering

Yu, Y (Yu Yun); Lin, JQ (Lin Ju-Qiang); Huang, H (Huang Hao); Chen, YP (Chen Yan-Ping); Feng, SY (Feng Shang-Yuan); Su, Y (Su Ying); Chen, JS (Chen Jie-Si); Chen, R (Chen Rong)

This project was financially supported by NSFC (20928005), the Key Natural Sciences Foundation of Fujian Province, China (D0520001, 2010Y0032, 2009J01172), Fujian Province Key Foundation of Chinese Medicine (wzzg0901), the Key Foundation of Education Department of Fujian Province, China (JK2009016).

The effect of silver colloid concentration was explored for fastest delivery of silver nanoparticles into living C666 cells (a human nasopharyngeal carcinoma cell line) for intracellular surface enhanced raman scattering (SERS) by Electroporation. SERS spectra, the integrated SERS intensity and the reproducibility of spectrum were compared in 6 electroporation experiments of the same electric pulse parameters but different concentration of silver colloid. The silver
nanoparticle concentration is best under the condition of 500 μl electroporation buffer containing 50 μl silver colloid using 875 V/cm, 1 ms rectangular electric pulses for electroporation twice. Increasing the concentration of silver nanoparticle could improve the SERS intensity while decrease the reproducibility of the spectrum. Moreover, the observed SERS bands of living C666 cell were tentatively assigned. This work is promising for the practical application of SERS technology, such as real time detection and analysis of the biochemical substance in living cells.

KeyWords Plus: LIVE CELLS; SPECTROSCOPY; NANOPARTICLES; TISSUES

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Calcyclin-binding protein or Siah-1-interacting protein (CacyBP/SIP), a component of the ubiquitin-mediated proteolysis, could participate in beta-catenin degradation, which was found to be related to the malignant phenotypes of pancreatic cancer previously. However, the role of CacyBP/SIP itself in pancreatic cancer has not been investigated. In the present study, CacyBP/SIP expression was assayed and manipulated to reveal the potential mechanism in pancreatic cancer carcinogenesis. Here, we show that CacyBP/SIP is over-expressed in pancreatic cancer cells. Down-regulation of CacyBP/SIP by small interference RNA (siRNA) severely suppresses the proliferation and tumorigenesis in pancreatic cancer. G1/S transition arrest induced by inhibition of CacyBP/SIP is at least partly mediated by down-regulation of Cyclin E and CDK2 as well as up-regulation of p27 and Rb. Collectively, CacyBP/SIP as an enhancer of pancreatic cancer malignance might develop into another possible therapeutic target. (C) 2011 Wiley-Liss, Inc.
Title: Effects of Herba Epimedii and Fructus Ligustri lucidi on the Transcription Factors in Hypothalamus of Aged Rats

Objective: To comparatively analyze the difference in the expression of 54 transcription factors in the hypothalamus using protein chips following the medication of Chinese drugs for Shen (sic)-tonification, Herba Epimedii, and Fructus Ligustri lucidi (FL) to aged rats.

Methods: Wistar rats, aged 15 months of SPF grade, were randomized into three groups, three males and three females in each group. They were medicated with Herba Epimedii decoction (HED, 0.14
g/kg), Fructus Ligustri lucidi decoction (FLD, 0.12 g/kg), and distilled water, respectively, twice a day for 15 days. The rats were sacrificed at the morning of the 16th day 1 h after medication, and their hypothalamus was taken and made into homogenate under an ice-bath for detecting the expression of transcription factors with chip technique. Results: The expressions of signal transduction and transcription activation factor-6 (Stat-6) and androgen receptor (AR) were up-regulated, and those of pre-B transcription factor1 (Pbx-1), stat-1 and AP-2 were down-regulated in both HED and FLD treated groups, but these changes occurred mainly in female rats in the former while mainly in males in the latter. Conclusions: Chinese drugs for Shen-tonification could impact the expression of transcription factors in the hypothalamus of aged rats, dominantly on the neuro-endocrine factors responsible for the growth and development. The effects of drugs for tonifying Shen-yang and for tonifying Shen-yin are different, which is probably one of the pharmacological mechanisms of the Shen-tonifying drugs.

Language: English

KeyWords Plus: EXPRESSION; PBX1; CELLS

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Objective: Many studies have shown that vegetarian diet has beneficial effects on the prevention of cardiovascular diseases. However, the effect of vegetarian diet on carotid intima-media thickness (IMT), as well as the association between IMT and duration of vegetarian diet, are still unclear. The present study aims to investigate the influence of duration of vegetarian diet on cardiovascular risk factors, and more importantly on IMT among Chinese vegetarians.

Methods: One hundred and seventy-one Chinese male vegetarians were screened for metabolic profile, cardiovascular risk and carotid IMT. They were compared with 129 age-matched omnivores recruited from a community-based health project. The effects of confounding factors were adjusted by stepwise logistic regression analysis.

Results: Compared to the omnivores, the vegetarians had lower BMI, weight, systolic blood pressure and diastolic blood pressure. Also, the levels of triglyceride, total cholesterol, HDL-Cholesterol, LDL-Cholesterol, ApoA1, ApoB, uric acid, albumin and γ-glutamyltransferase were significantly reduced in vegetarians. Omnivores had significantly higher fasting blood glucose than that of vegetarians. However, there were no differences in fasting insulin, C-reactive protein and HOMA-IR between the two groups. IMT was thinner in the vegetarian group than in the omnivore group (0.59 +/- 0.16 vs. 0.63 +/- 0.10 cm, P < 0.05). The vegetarians were divided according to duration of vegetarian diet (< 6 years, 6 to <= 11 years, > 11 years), those in tertile 1 (< 6 years) and tertile 2 (6 to <= 11 years) had shown thinner IMT as compared to the omnivores, and tertile 3 had shown no reduction.

Conclusion: A decrease in multiple cardiovascular risk factors such as BMI, blood pressure and lipid profile was associated with vegetarian diet. Moreover, taking a low-calorie, low-protein, or vegetarian diet might have great beneficial effects on IMT through improved lipid profile, and the beneficial effects appeared to be correlated with the duration of vegetarian diet.
KeyWords Plus: CARDIOVASCULAR RISK PROFILE; C-REACTIVE PROTEIN; NUTRITION TRANSITION; METABOLIC SYNDROME; MORTALITY; DISEASE MARKERS; ATHEROSCLEROSIS; INFLAMMATION; OMNIVORES

[Yang, Shu-Yu; Zhang, Hui-Jie; Sun, Su-Yun; Wang, Li-Ying; Yan, Bing; Liu, Chang-Qin; Zhang, Wei; Li, Xue-Jun] Xiamen Univ, Affiliated Hosp 1, Dept Diabet, Xiamen Diabet Inst, Xiamen 361003, Peoples R China

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We are grateful to the consideration and cooperation of all the participants of the study. The authors would like to acknowledge Prof. Xiao-Ying Li from Rui-jin Hospital Affiliated to Shanghai Jiaotong University, for his advices in the present project. This study is supported by the grants from the Natural Science Foundation of China (NO. 81000320), the Natural Science Foundation of Fujian Province and Xiamen (NO. 2009D016 and 3502Z20104026) and the Youth Foundation of Fujian Provincial Health Department (NO.2010-2-86).

第 23 条, 共 86 条

标题: Synthesis and photobiological study of a novel chlorin photosensitizer BCPD-18MA for photodynamic therapy
作者: Zhang, JL (Zhang, Jialiang); Deng, L (Deng, Li); Yao, JZ (Yao, Jianzhong); Gu, P (Gu, Peng); Yang, F (Yang, Feng); Wang, XX (Wang, Xiuxin); Liu, W (Liu, Wei); Zhang, YY (Zhang,
This paper reports synthesis and photobiological properties of a novel chlorin photosensitizer BCPD-18MA. Cytotoxicity, cellular uptake, subcellular location, biodistribution, photodynamic therapy (PDT) efficiency, cell apoptosis as well as histological analysis of the liposomal-delivered BCPD-18MA (L-BCPD-18MA) was studied using mammary adenocarcinoma MDA-MB-231 cells and Lewis lung carcinoma (LLC) implanted in C57BL/6 mice as experimental models. The results showed that L-BCPD-18 was incorporated rapidly into MDA-MB-231 cells and localized partially in mitochondria. L-BCPD-18 induced cell apoptosis by PDT. In addition, biodistribution of L-BCPD-18MA in LLC-bearing mice demonstrated a fast clearance rate of the drug and good skin-related tumor selectivity. Finally, entrapment of BCPD-18 into liposomes resulted in a dramatic impairment of dark toxicity and a notable improvement of PDT antitumor efficacy in vitro. Compared with liposomal-delivered BPDMA (L-BPDMA), L-BCPD-18MA exhibited low dark toxicity and high PDT efficiency on MDA-MB-231 cells. The photodynamic efficacy of L-BCPD-18MA on LLC-bearing mice is comparable to that of L-BPDMA, implying that L-BCPD-18MA is a potential antitumor candidate for PDT. (C) 2011 Elsevier Ltd. All rights reserved.
This research was supported by the Nation Natural Science Foundation of China (Grant No. 30371737) and the National Science & Technology Major Project 'Major New Drug Creation Program' Foundation of China (Grant No. 2009ZXJ09003-028).

Synthesis and Biological Activities of Novel Danshensu Amide Derivatives as Anti-Myocardial Ischemia Agents

A series of novel danshensu amide derivatives were synthesized, and the protective effects of all the compounds on rat myocardial cell lines H9C2 by hypoxia were investigated. The results showed that all the seven compounds could significantly increased cell viability compared with hypoxia group. Among these compounds, 3-(3,4-dimethoxyphenyl)-2-hydroxy-N-propylpropanamide (6) exhibited good activities, with cell viability reached 94.2% compared to the normal. The novel danshensu amide derivatives, possessing an additional lipophilic alkyl chain showed a good lipophilicity.

KeyWords Plus: SALVIA-MILTIORRHIZA; AQUEOUS EXTRACT; DYSFUNCTION;
Scientific research at Fujian Academy of Integrative Medicine: Current status and future directions

This study was supported by the Science and Technology Commission of Shanghai special purpose for modernization of traditional Chinese medicine in 2008 (No. 08DZ1970802) and National Basic Research Program of China (No. 2006CB504100 and 2009CB521907).
To investigate the cellular effects of Pien Tze Huang (c parts per thousand double dagger a "c (TM) Euro)-induced apoptosis in human colon cancer HT-29 cells is associated with regulation of the Bcl-2 family and activation of caspase 3.

Lin, JM (Lin Jiu-mao); Wei, LH (Wei Li-hui); Chen, YQ (Chen You-quin); Liu, XX (Liu Xian-xiang); Hong, ZF (Hong Zhen-feng); Sferra, TJ (Sferra, Thomas J.); Peng, J (Peng Jun)


To investigate the cellular effects of Pien Tze Huang (c parts per thousand double dagger a "c (TM) Euro, PZH) in the HT-29 human colon carcinoma cell line. The viability of HT-29 cells was determined by MTT assay. A fluorescence-activated cell sorting (FACS) analysis with annexin-V/propidium iodide (PI) and JC-1 staining were performed to determine cell apoptosis and the loss of mitochondrial membrane potential, respectively.
Activation of caspase 3 was evaluated by a colorimetric assay. The mRNA expression levels of Bcl-2 and Bax were measured by reverse transcription polymerase chain reaction (RT-PCR). PZH, in a dose- and timedependent manner, reduced viability and induced apoptosis of HT-29 cells. Moreover, PZH treatment resulted in the collapse of the mitochondrial membrane potential, activation of caspase 3, and an increase in the Bax/Bcl-2 ratio. PZH inhibits the growth of HT-29 cells by inducing cancer cell apoptosis via regulation of the Bcl-2 family and activation of caspase 3, which may, in part, explain its anticancer activity.
Fuzheng Yiliu Granule (ae parts per thousand ae aeSc pound similar to currency signe cent uc(2)') inhibits the growth of hepatocellular cancer by regulating immune function and inducing apoptosis in vivo and in vitro.

H22 tumor-bearing ICR mice were treated with FYG [3.6 g/(kg center dot d)] for 5 days. Tumor volume and tumor weight, percentages of CD3(+), CD4(+), CD8(+), and natural killer (NK) cells in peripheral blood, tumor apoptosis and serum levels of interleukin-2 (IL-2), and tumor necrosis factor-alpha (TNF-alpha) were evaluated. FYG-containing serum was prepared from SD rats treated for 7 days [high dose 3.6 g/(kg center dot d); middle dose 1.8 g/(kg center dot d); low dose 0.9 g/(kg center dot d)]. Cell cycle, cell viability, and apoptosis were evaluated after HepG2 cell line was cultured in FYG-containing serum for 48 h. The levels of IL-2 and TNF-alpha in FYG-containing serum were also determined.

FYG produced a potent antitumor effect (P < 0.01) and induced marked apoptosis of the tumor tissue (P < 0.05). Mice treated with FYG had higher percentages of CD3(+) and CD4(+) (P < 0.05), and more NK cells (P < 0.01) in the peripheral blood than those in the animals treated with normal saline. Mice receiving FYG had the highest serum levels of IL-2 and TNF-alpha (P < 0.01). High-dose FYG-containing serum significantly decreased HepG2 cell viability, inhibited cell proliferation (P < 0.05), and induced apoptosis (P < 0.01). In addition, the levels of IL-2 and TNF-alpha of high-dose-containing serum were higher than the blank serum (P < 0.01).

FYG could inhibit HCC growth by regulating immune function and inducing apoptosis of tumor cells in vivo and in vitro.
Potential synergistic and multitarget effect of herbal pair Chuanxiong Rhizome-Paeonia Albifora Pall on osteoarthritis disease: A computational pharmacology approach

Ye, HZ (Ye Hong-zhi); Zheng, CS (Zheng Chun-song); Xu, XJ (Xu Xiao-jie); Wu, MX (Wu Ming-xia); Liu, XX (Liu Xian-xiang)

Supported by CHEN Ke-ji Integrative Medicine Development Fund (No. CKJ2010020); International Science Joint Project of the Ministry of Science and Technology of the People's Republic of China (No. 2008DFA32200); Project of Department of Education of Fujian Province (No. JA09136)
Albifora Pall (HP CXR-PAP) on the treatment for osteoarthritis (OA).

Chemical space was used to discuss the similarities and differences between the molecule sets of HP CXR-PAP and drugs. Docking protocol was used to study the interaction between HP CXR-PAP and OA target enzymes. The similarities and differences of HP CXR-PAP and drugs in target spaces were elucidated by network features.

The plots between the molecule sets of HP CXR-PAP and drugs in chemical space had the majority in the same region, and compounds from HP CXR-PAP covered a much larger additional region of space than drug molecules, which denoted the diverse structural properties in the molecule set of HP CXR-PAP. The molecules in HP CXR-PAP had the properties of promiscuous drugs and combination drug, and both HP CXR-PAP ligand-target interaction network and drug ligand-target interaction network were similar in the interaction profiles and network features, which revealed the effects of multicomponent and multitarget.

The clue of potential synergism was obtained in curing OA disease by Chinese medicine, which revealed the advantages of Chinese medicine for targeting osteoarthritis disease.

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文献类型: Article

作者关键词: herbal pair Chuanxiong Rhizome-Paeonia Albifora Pall; chemical space; virtual screening; target space; computational pharmacology; osteoarthritis

KeyWords Plus: TOUGU XIAOTONG GRANULE; INFLAMMATION; NETWORKS

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标题: Millimeter wave treatment inhibits the mitochondrion-dependent apoptosis pathway in chondrocytes
作者: Wu, GW (Wu, Guangwen); Sferra, T (Sferra, Thomas); Chen, XZ (Chen, Xuzheng); Chen, YQ (Chen, Youqin); Wu, MX (Wu, Mingxia); Xu, HF (Xu, Huifeng); Peng, J (Peng, Jun); Liu, XX (Liu, Xianxiang)
在 Web of Science 中的被引频次: 1
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摘要: Millimeter wave (MW) is an electromagnetic wave with a wavelength between 1 and 10 mm and a frequency of 30-300 GHz that causes multiple biological effects, both locally and globally. MW has been widely used in clinical medicine. Although our previous work demonstrated that MW is capable of inhibiting sodium nitroprussiate (SNP)-induced apoptosis in chondrocytes, the precise mechanism of the anti-apoptotic activity remains to be elucidated. The purpose of this study was to investigate the effects of MW in SNP-induced apoptotic chondrocytes. Sprague Dawley rat chondrocytes were isolated and cultured, and the cells were counted. Cell viability was evaluated using MTT assay. Cells were then treated with SNP and MW, and flow cytometry was used to detect apoptosis. Our results showed that MW treatment inhibited a SNP-induced mitochondrion-dependent pathway of apoptosis. MW treatment inhibited the loss of plasma membrane asymmetry (externalization of phosphatidylserine), collapse of mitochondrial membrane potential, and activation of caspase-9 and caspase-3. Taken together, the results indicate that MW inhibits the mitochondrion-dependent pathway of apoptosis in chondrocytes and this may, in part, explain its clinical effect in the treatment of osteoarthritis.
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语种: English
文献类型: Article
作者关键词: chondrocyte; millimeter wave; apoptosis; mitochondria
KeyWords Plus: NO-INDUCED APOPTOSIS; CYTOCHROME-C; GENE-EXPRESSION; RELEASE; MEMBRANE; DEATH; CELLS; BCL-2; BAX; OLIGOMERIZATION
Quercetin-mediated apoptosis via activation of the mitochondrial-dependent pathway in MG-63 osteosarcoma cells

Liang, WN (Liang, Wenna); Li, XH (Li, Xihai); Li, CD (Li, Candong); Liao, LM (Liao, Lianming); Gao, BZ (Gao, Bizheng); Gan, HJ (Gan, Huijuan); Yang, ZY (Yang, Zhaoyang); Liao, LH (Liao, Linghong); Chen, XZ (Chen, Xuzheng)

This work was supported by the Developmental Fund of Chen Keji Integrative Medicine (CKJ2010023) and 2008 Fujian Province Small Creations and Projects (no.1).
human cancer cell lines, including the human osteosarcoma cell line, MG-63. However, its effects on osteosarcoma cell apoptosis are still undefined. The present study was undertaken to examine the effect of quercetin on cell viability, apoptosis and mitochondrial membrane potential, and to determine the molecular mechanism of quercetin-induced apoptosis by investigating the expression of Bcl-2 family proteins (Bcl-2, Bax), cytochrome C, caspase-9 and caspase-3 in MG-63 cells. We found that quercetin suppressed the viability of MG-63 cells in a dose- and time-dependent manner. Furthermore, we observed that quercetin induced the loss of mitochondrial membrane potential, upregulated the expression of the proapoptotic proteins, Bax and cytochrome C, and activated caspase-9 and caspase-3, and downregulated the expression of antiapoptotic protein, Bcl-2. These data suggest that quercetin may induce apoptosis via the mitochondrial-dependent pathway in MG-63 cells.

This study was supported by the National Natural Science Foundation of China (Grant no. 30772697).
A review of chemistry and bioactivities of a medicinal spice: Foeniculum vulgare

He, WP (He, Weiping); Huang, BK (Huang, Baokang)

JOURNAL OF MEDICINAL PLANTS RESEARCH

卷: 5 期: 16 页: 3595-3600 出版年: AUG 18 2011

摘 要: Foeniculum vulgare Mill. with common name fennel, is a very popular spice as well as an important traditional Chinese medicine. The plant is native to Southern Europe and Mediterranean region. It has two important subspecies of Capillaceum and Pipertilum. It mainly contains essential oil, fatty acids and phenolic compounds, etc. The most intense odor compounds of fennel are trans-anethole, estragole and fenchone. Fennel has many biological activities due to its volatile and nonvolatile compounds, and it has been used in traditional Chinese medicine for treating various conditions, particularly rheumatism, cold pain and stomach disorder. It is also used as a spice for its aromatic fruit. This review covers progresses on the chemistry, pharmacology and nutraceutical value of fennel, and aims to lay the foundation for further study and utilization of fennel.

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KeyWords Plus: ESSENTIAL OIL COMPOSITION; STORED-PRODUCT INSECTS; ACARICIDAL ACTIVITY; TYROPHAGUS-PUTRESCENTIAE; ANTIOXIDANT ACTIVITIES; CHEMICAL-COMPOSITION; LARVICIDAL ACTIVITY; VOLATILE OIL; SEED OILS; FENNEL
Tetramethylpyrazine (TMP) promotes chondrocyte proliferation via pushing the progression of cell cycle

Authors: Li, XH (Li, Xihai); Peng, J (Peng, Jun); Xu, YF (Xu, Yanfang); Wu, MX (Wu, Mingxia); Ye, HZ (Ye, Hongzhi); Zheng, CS (Zheng, Chunsong); Wu, GW (Wu, Guangwen); Xu, HF (Xu, Huifeng); Chen, XZ (Chen, Xuzheng); Liu, XX (Liu, Xianxiang)

Title: Tetramethylpyrazine (TMP) is the major bioactive constituent of Rhizoma Chuanxiong which has long been used as an important component in several Chinese medicine formulations for the clinical treatment of osteoarthritis. However, the molecular mechanism of the therapeutic effect of TMP remains unclear. In the present study, we investigated the cellular effects of TMP in cultured primary chondrocytes. Chondrocytes isolated from the knee articular cartilage of SD rats were cultured and identified using toluidine blue staining. The second generation of chondrocytes was treated with or without TMP. We found that TMP treatment could promote chondrocyte proliferation via pushing the progression of cell cycle. Furthermore, using RT-PCR and Western blotting analyses we observed that the mRNA and protein levels of Cyclin D1 and CDK4 were significantly enhanced after TMP treatment, whereas those of p21 were significantly decreased. Our study suggests that promoting the proliferation of chondrocytes is one of the mechanisms by which TMP treats osteoarthritis.

Keywords: Tetramethylpyrazine; chondrocyte; osteoarthritis; cell cycle

KeyWords Plus: MESENCHYMAL STEM-CELLS; CHONDROGENIC DIFFERENTIATION; ARTICULAR CHONDROCYTES; ENDOTHELIAL-CELLS; MODULATION; EXPRESSION; DEGRADATION; TRANSITION; CARTILAGE; DAMAGE

Address: [Li, Xihai; Peng, Jun; Ye, Hongzhi; Zheng, Chunsong; Wu, Guangwen; Xu, Huifeng; Chen, Xuzheng; Liu, Xianxiang] Fujian Univ Tradit Chinese Med, Acad Integrat Med, Fuzhou 350108, Peoples R China

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This work was supported by the Project supported by the Major Project Foundation of Fujian Provincial Administration of Science and Technology (No. 2009Y0029), the National Natural Science Foundation of China (No. 81072826).

Volatile components of fruits of Ligustrum lucidum Ait. stimulate proliferation and differentiation of rat calvarial osteoblasts

The fruits of Ligustrum lucidum Ait., (FLL), which contain rich volatile components, are commonly used as tonic for kidney and liver in the traditional Chinese medicine prescriptions. This study aimed to investigate the effects of volatile components of FLL on the proliferation and differentiation of rat calvarial osteoblasts by the MTT method and measuring the activity of alkaline phosphatase (ALP). Results showed that volatile components (1 to 100 μg/mL) of FLL significantly (p<0.01) stimulated the proliferation and increased the ALP activity of rat calvarial osteoblasts which indicated that volatile components of FLL played an important role in osteoblastic bone formation just as non-volatile components in FLL. Such finding accredited the FLL as a potential candidate that might be useful in bone engineering and in treating bone defects.
including osteoporosis. The volatile components were analyzed by GC-MS. A total of 67 compounds were identified and the main components included (Z,Z)-9,12-octadecadienoic acid (33.47%), n-hexadecanoic acid (15.02%), (E)-9-octadecenoic acid (9.03%), alpha-cadinol (6.51%), 4-hexyl-2,5-dihydro-2,5-dioxo-3-furanacetic acid (4.93%) and (E)-8-octadecenoic acid methyl ester (2.69%).

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语种: English
文献类型: Article
作者关键词: Ligustrum lucidum; volatile components; rat calvarial osteoblasts
KeyWords Plus: POLYUNSATURATED FATTY-ACIDS; OVARIECTOMIZED RATS; IN-VITRO; BONE; OSTEOPOROSIS; EXTRACT; SUPPLEMENTATION; OSTEOCLASTS; EXPRESSION; OILS
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Development (Grant No. 5), Fund of Department of Education Fujian Province (Grant No. JA10181), Open Fund of Fujian Key Laboratory of Integrative Medicine on Geriatrics (Fujian University of TCM) (Grant No. 2008J1004-42) as well as Research supported by the Natural Science Foundation of Fujian province (No. 2011J01214).

Title: Determination of Fulvestrant in Rat Plasma by LC-MS-MS: Application to a Pharmacokinetic Study

Authors: Liu, ZY (Liu, Zhongyang); Gu, GZ (Gu, Guangzhi); Xia, HM (Xia, Huimin); Liu, Q (Liu, Qiang); Pang, ZQ (Pang, Zhiqing); Jiang, XG (Jiang, Xinguo); Chen, J (Chen, Jun)


Abstract: A reversed-phase liquid chromatography coupled to tandem mass spectrometry (LC-MS-MS) method was developed and validated for the determination of fulvestrant in rat plasma. Sample preparation involved a liquid-liquid extraction using 1.0 mL of n-hexane-isopropanol (90:10, v/v) to extract the analyte from 0.1 mL of rat plasma. The analytes were separated on a phenyl-based column using the mobile phase consisting of methanol/water containing 5 mM ammonium acetate at the flow rate of 0.3 mL min(-1). The analytes were monitored by tandem mass spectrometry under electrospray negative ionization mode. Linear calibration curves were generated over the fulvestrant concentration ranges of 0.05-10.0 ng mL(-1) in rat plasma. The accuracy and within-and between-day precisions were within the generally accepted criteria for bioanalytical methods (<15%). This developed and validated assay method was successfully employed to characterize the plasma concentration-time profile of fulvestrant after its intramuscular administration in rats at a dose of 10 mg kg(-1).

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Address: TIERGARTENSTRASSE 17, D-69121 HEIDELBERG, GERMANY
Analysis of thrombin-antithrombin complex contents in plasma and hematoma fluid of hypertensive intracerebral hemorrhage patients after clot removal

**Background and purpose:** Animal experiments indicate that the cerebral thrombin is associated with secondary brain damage after intracerebral hemorrhage (ICH). This study was aimed to investigate the concentrations of thrombin-antithrombin complex (TAT) in hematoma fluid and plasma of the patients with ICH after surgery and analyze the correlation between TAT complex levels and severity of ICH.

**Methods:** Sixty patients with ICH were enrolled. Craniotomy for removal of intracranial blood clot was performed within 24 h after ICH. Hematoma fluid and plasma were collected on postoperative days 1, 2, and 4. The plasma obtained from healthy subjects and cerebrospinal fluid from patients without cerebrovascular diseases served as controls, respectively. Enzyme-linked immunosorbent assay was used to determine the concentrations of TAT complex in the patients and controls.

**Results:** TAT complex concentrations in both postoperative plasma and hematoma fluid of patients...
with ICH were significantly higher than those of the controls (P < 0.01). In patients with ICH, hematoma fluid had a higher TAT complex level than plasma (P < 0.01). The preoperative hemorrhage volume and postoperative TAT complex levels in plasma and hematoma fluid correlated positively with National Institutes of Health stroke scale and negatively with Glasgow coma score (P < 0.01).

Conclusion: This study indicates that TAT complex levels of plasma and hematoma fluid correlate positively with the severity of ICH. Determination of the plasma TAT complex concentration is helpful for the evaluation of the severity of post-ICH brain injury.
This work was supported by the Scientific Research Fund of Fujian Provincial Department of Health (No. WZY0622) and Fujian Provincial Natural Science Fund (No. 2006J0106). We thank Shanghai Institute of Immunology (China) for providing research equipment and Dr. Tom Lonsdale (Australia), and Dr. Jie Liu for their assistance during the drafting of the manuscript.

Lipoprotein-associated phospholipase A2 gene V279F polymorphisms and coronary heart disease: a meta-analysis

Authors: Zheng, GH (Zheng, Guo-Hua); Chen, HY (Chen, Hai-Ying); Xiong, SQ (Xiong, Shang-Quan); Chu, JF (Chu, Jian-Feng)

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Abstract: Lipoprotein-associated phospholipase A2 (LP-PLA2) may play an important role in the pathophysiology of coronary heart disease (CHD). The polymorphism of LP-PLA2 gene caused LP-PLA2 enzyme activity depressing or lost. But there is not a definite conclusion for the association between the LP-PLA2 gene polymorphism and CHD risk. To assess the relationship between LP-PLA2 gene V279F polymorphism and CHD, a comprehensive Meta-analysis was performed. All the case-control studies evaluating the association between the LP-PLA2 gene V279F polymorphism and CHD risk were identified. Seven case-control studies involving 3,614 patients with CHD and 4,334 controls were included. The crude odds ratios (ORs) of meta-analysis under the different gene model were not significant. But in the stratified analysis by study size, ethnicity, cases definition, and source of controls under the additive model, the association was evident in ethnicity for Japanese group (OR = 1.38, 95% CI = 1.22-1.56), cases definition for MI (OR = 1.22, 95% CI = 1.01-1.49), source of controls for the based-hospital (OR = 1.42, 95% CI = 1.24-1.59). These data suggested that the V279F polymorphism in LP-PLA2 gene may contribute to CHD development. But there is necessary that more well-designed large studies are required for the validation of this association.

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Language: English

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Keywords: Lipoprotein-associated phospholipase A2 (LP-PLA2); Coronary heart disease; Genetic polymorphism; Meta-analysis

Activating-factor-acetylhydrolase; Artery-disease; Risk-factor; Cardiovascular Health; Myocardial-infarction; PAF-acetylhydrolase; Ludwigshafen Risk; Missense Mutation; Atherosclerosis; Inflammation

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Scutellaria barbata D. Don is a medicinal herb that has long been clinically used in China to treat various types of cancer. Extracts of S. barbata D. Don have been shown to inhibit the growth of many cancer cells. Previously, we reported that S. barbata D. Don promotes cancer cell apoptosis via activation of the mitochondrion-dependent pathway. To further elucidate the precise mechanism of its tumorcidal activity, we investigated the effects of ethanol extract of S. barbata D. Don (EESB) on tumor angiogenesis. We found that EESB inhibited angiogenesis in vivo in chick embryo chorioallantoic membrane (CAM). In addition, we observed that EESB dose and
time-dependently inhibited the proliferation of human umbilical vein endothelial cells (HUVEC) via blocking the cell cycle G1 to S progression. Moreover, EESB inhibited the migration and tube formation of HUVECs. Furthermore, EESB treatment down-regulated the mRNA and protein expression levels of VEGF-A in both HT-29 human colon carcinoma cells and HUVECs. Our findings suggest that inhibiting tumor angiogenesis is one of the mechanisms by which S. barbata D. Don treats cancer.

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第38条，共86条

标题: Oleanolic acid inhibits hypertrophic scarring in the rabbit ear model

作者: Wei, YJ (Wei, Y. -J.); Yan, XQ (Yan, X. -Q.); Ma, L (Ma, L.); Wu, JG (Wu, J. -G.); Zhang, H (Zhang, H.); Qin, LP (Qin, L. -P.)


摘要: Background. Hypertrophic scarring, a common proliferative disorder of dermal fibroblasts, results from an overproduction of collagen and excessive deposition of extracellular matrix. Although treatment with surgical excision or steroid hormones can modify the symptoms, numerous treatment-related complications have been described.

Aim. To investigate the effects of oleanolic acid (OA), a naturally occurring triterpenoid, on hypertrophic scarring in a rabbit ear model.

Methods. A rabbit ear model of hypertrophic scarring was used, with wounds produced with a biopsy punch. Oleanolic acid (2.5%, 5% and 10%) was applied once daily to the scars for 22 days. On postoperative day 28, the scars were excised, and the tissue used for histological examination and assays of the levels of collagens I and III matrix metalloproteinase (MMP)-1 and transforming growth factor (TGF)-beta(1). The scar elevation index (SEI) was also determined.

Results. Treatment with different concentrations of oleanolic acid (OA) for 22 days significantly inhibited hypertrophic scarring in rabbit ear tissue. Levels of TGF-beta(1), collagen I and collagen III were significantly decreased and levels of MMP-1 significantly increased in the scar tissue. SEI was also significantly reduced. Histological findings showed significant amelioration of the scar tissue.

Conclusions. OA suppresses hypertrophic scarring in the rabbit ear model and may be an effective cure for human hypertrophic scarring.

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KeyWords Plus: POLYGONUM-CUSPIDATUM; EXPRESSION; POLYDATIN; SCARS; LIFE

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BMP2 promotes chondrocyte proliferation via the Wnt/beta-catenin signaling pathway

This work was supported by a grant from the Key Programs for Basic Research of Shanghai Committee of Science and Technology (Grant no. 08JC1405700).

Abstract: Bone morphogenetic protein 2 (BMP2), a member of the transforming growth factor-beta (TGF-beta) superfamily, plays a key role in the induction of the differentiation of mesenchymal cells into chondrocytes to form cartilage tissue. However, it is not clear whether BMP2 regulates the proliferation of chondrocytes. In the present study, the effect of BMP2 on the proliferation of chondrocytes and its underlying mechanism was investigated. Chondrocytes isolated from the knee of SD rats were cultured and identified using toluidine blue staining. The second generation chondrocytes were collected and stimulated with or without BMP2 for 48 h. Cell viability was analyzed using the MTT assay. mRNA and protein expression levels of beta-catenin, GSK-3 beta, Dvl1 and Cyclin D1 were detected using real-time RT-PCR and Western blotting, respectively. The cell cycle distribution of the chondrocytes was analyzed by flow cytometry. BMP2 stimulation was found to significantly increase cell viability. In addition, following BMP2
treatment, beta-catenin, Cyclin D1 and Dvl1 expression was significantly increased, whereas GSK-3 beta expression was significantly decreased. Moreover, the percentage proportion of chondrocytes in the G0/G1 phase was significantly decreased, whereas that in the S phase was significantly increased. The results indicate that BMP2 promotes chondrocyte proliferation via the Wnt/beta-catenin signaling pathway.

This study was supported by a grant from the Keji Chen Development Foundation for Integrated Traditional and Western Medicine (no. CKJ2008003) and the 2008 Fujian Province Small Creations and Projects (no. 1).
Asthma is a chronic inflammatory disorder of airways that affects approximately 300 million adults and children worldwide. Most therapy currently uses bronchodilators and corticosteroids. Systemic side effects from chronic use of these drugs are concern. Chinese medicine (CM) has a long history of human use in China and other Asian countries and well received by the patients. But as one component of Western integrative medicine (WIM), it is required that CM use is supported by scientific evidence. On the other hand, there are also suggestions that Western standardized medicine should consider personalized practice. In recent years there have been an increasing studies to narrow the gap between CM, the personalized medicine and Western medicine, evidence based medicine. This communication reviews several CM studies published in the English language in details by reviewing the effects and mechanisms of actions on asthma from clinic and experimental studies.

Chinese herbal medicines exhibit broad actions on multiple asthma pathologic mechanisms. These mechanisms may involve antiinflammatory and immunomodulatory effects, inhibiting airway remodeling and normalization of hypothalamus, pituitary and adrenal (HPA)-axis disturbances. However, the mechanisms of actions of Chinese herbal medicines for asthma are not fully understood. More controlled clinical studies are warranted and some anti-asthma CM may be proved to be effective when used as monotherapy or complementary asthma therapies.
This work was partially supported by NIH/NCCAM center grants # P01 AT002647-01 01 "Center for Chinese Herbal Therapy (CHT) for Asthma" to Dr. LI Xiu-min. We thank Drs. Hugh Sampson, Ming Chun Wen, Kayer Kattan, Juan Wisnivesky, Tengfei Zhang, Kamal Srivastava, Sangita Patil, Nan Yan, Joseph Goldfarb, Sylvan Wallenstein and Brian Schofield for their critical contribution to ASHMI studies.

第 41 条，共 86 条

标题: Mesenchymal-stem-cell-based experimental and clinical trials: current status and open questions

作者: Wang, J (Wang, Jin); Liao, LM (Liao, Lianming); Tan, JM (Tan, Jianming)


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摘要: Introduction: Mesenchymal stem cells (MSCs) possess remarkable self-renewal ability and are able to differentiate into various cell lineages. MSCs can also enhance tissue repair and angiogenesis through a paracrine mechanism. It has been recognized that these cells hold great promise for tissue regeneration and treatment of immune-related diseases.

Areas covered: This review aims at discussing the mechanisms of MSC-mediated immunomodulation and tissue repair and the related clinical trials, with special emphasis on factors that influence the efficiency of MSC-based therapy, including the source of MSCs, cell passage, cell dose, timing and route of administration.

Expert opinion: MSCs may facilitate tissue repair through cell replacement and/or improving the microenvironment by releasing growth factors. Some of these factors also mediate the immunomodulatory effects of MSCs. It is important to establish global guidelines, protocols and standards for production and clinical trials of MSCs, so that MSCs can become a therapeutic agent with a reliable efficacy and good safety.

入藏号: WOS:000291223100006
Mechanisms of inhibition of elemene on human lens epithelial cell proliferation in vitro

This study was supported by the Major Program of Natural Science Foundation of Fujian Province (2009Y4001 and 2008J1006), the Fujian Provincial Natural Science Fund (No. 2006J0106) and the Developmental Fund of Chen Keji Integrative Medicine (No:CKJ2010021).
AIM: To study the effects of elemene (Ele) on proliferation and cell cycle of human lens epithelial cells 63 (HLE-B3) and the mechanisms of its signal transduction.

METHODS: Recombinant human basic fibroblast growth factor (rhbFGF) was used to induce proliferation of HLE-B3 cells, which were incubated with 80mg/L Ele for 24 hours. The inhibitory effects of Ele on the proliferation of HLE-B3 cells were evaluated by MU method. The effect of Ele on HLE-B3 cell cycle was analyzed by flow cytometry (FCM). The expressions of protein kinase A (PKA) and protein kinase G (PKG) of HLE-B3 were also analyzed by FCM.

RESULTS: Ele altered the cell cycle of HLE-B3 and effectively inhibited HLE-B3 cell proliferation induced by rhbFGF. Ele up-regulated PKA and down-regulated the expression of PKG in HLE-B3 cell.

CONCLUSION: Ele inhibits HLE-B3 proliferation, making it an attractive potential agent in regimens to treat after-cataracts.

KeyWords Plus: BETA-ELEMENE; APOPTOSIS
Objective: To study the mechanism of action of Tougu Xiaotong Capsule (TGXTC) ex vivo in suppressing chondrocyte (CD) apoptosis induced by sodium nitroprussiate (SNP).

Methods: Thirty New Zealand rabbits, 2 months old, were randomized by lottery into five groups, six in each: the blank group treated with saline, the positive control group treated with Zhuanggu Guanjie Pill (70 mg/kg), and the three experimental groups, EGA, EGB, and EGC, treated with low dose (35 mg/kg), moderate dose (70 mg/kg), and high dose (140 mg/kg) of TGXTC, respectively. All treatments were administered via gastrogavage twice a day for 3 days. Arterial blood was collected from the abdominal aorta and drug or drug metabolites-containing serum was prepared. CDs obtained from knee joints of 16 four-week-old New Zealand rabbits were cultured to the third passage and confirmed by toluidine blue staining. SNP of various final concentrations (0, 0.5, 1.0, and 2.0 mmol/L) was used to induce CD apoptosis, and the dosage-effect relationship of SNP in inducing CD apoptosis was determined. Serum samples from the blank, control, and three dosages of TGXTC-treated rabbits were tested in the CD culture in the presence of SNP. Cell apoptosis was determined by Hoechst 33342 staining, viability of CDs was quantified by MTT, CD apoptosis rate was determined by annexin V-FITC/PI staining, levels of p53 and Bcl-2 mRNA expression in CDs were determined with RT-PCR, and contents of caspase-3 and caspase-9 proteins were determined by colorimetry. Results: CD apoptosis was induced by SNP at all concentrations tested and in a dose-dependent manner. The SNP concentration of 1 mmol/L and treatment duration of 24 h appeared to be optimal and were selected for the study. Serum samples from the positive control rabbits and from the two higher doses of TGXTC-treated rabbits showed reduction of SNP-induced CD apoptosis, decrease in p53 mRNA expression, inhibition of catalytic activities of caspase-3 and caspase-9, and increase in Bcl-2 mRNA expression when compared with the serum from the blank group (P<0.05). Conclusion: TGXTC-containing sera antagonized SNP-induced CD apoptosis and the molecular basis for the action was associated with up-regulation of Bcl-2, down-regulation of p53 expression, and inhibition of caspase-3 and...
caspase-9 catalytic activities.

Keyword Plus: COMPUTATIONAL PHARMACOLOGY; OSTEOARTHRITIS; GRANULE

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Title: (S)-Benzyl 3-(4-hydroxyphenyl)-2-(tritylamino)propanoate

Author: Chen, MM (Chen, Meimei); Lai, XM (Lai, Xinmei); Zhou, CG (Zhou, Changen); Yang, XM (Yang, Xuemei)
The title compound, C(35)H(31)NO(3), was obtained by the reaction of (S)-benzyl 2-amino-3-(4-hydroxyphenyl)propanoate and (chloromethanetriyl)tribenzene. The enantiomer has been assigned by reference to an unchanging chiral centre in the synthetic procedure. In the crystal, molecules are linked into chains running along the a axis by intermolecular O-H...O hydrogen bonds.

We gratefully acknowledge financial support by the Fujian Provincial Department of Education project (JA09130) and the Fujian Provincial Health Department Special Project (wzzsj0901).
The crude extract of Acanthopanax senticosus (AS) has been used extensively in Russia, China, Korea and Japan as an adaptogenic agent to fight against stress and fatigue. However, whether the liposoluble fraction possesses antifatigue activity or not is still unclear. A liposoluble fraction was administered orally to mice for 9 days. The swimming time to exhaustion was longer in the treatment groups (22.2 +/- 3.3, 25.5 +/- 4.8 min) than in the control group (13.7 +/- 1.2 min, p < 0.05). The plasma TG (triglyceride) and BUN (blood urea nitrogen) levels in the high dose (500 mg/kg) groups were decreased significantly compared with the control group. Plasma lactate dehydrogenase (LDH) was lower in the treatment groups than in the control group. Chemical analysis from GC/MS revealed that the main components of the liposoluble fraction of AS were saturated fatty acid (12.98%), unsaturated fatty acid (33.13%), unsaturated alcohol (27.46%) and diolefin (15.76%). In conclusion, the liposoluble fraction enhanced the forced swimming capacity of mice by decreasing muscle damage, effectively preventing the increase in BUN concentration and increasing fat utilization. It is proposed that the antioxidant effect may be one of the antifatigue mechanisms of the liposoluble fraction of AS. Copyright (C) 2010 John Wiley & Sons, Ltd.
Chemical constituents from Salacia amplifolia

The present phytochemical investigation on Salacia amplifolia led to the isolations of 13 triterpenes, including quinonemethides, friedelanes, oleananes and ursanes triterpenes, three simple phenolics, one polyol and one chromanone. All of them were isolated from this plant for the first time. The presences of quinonemethide triterpenoids might be employed as the common characteristic constituents of both Hippocrateaceae and Celastraceae families. (C) 2011 Elsevier Ltd. All rights reserved.

KeyWords Plus: TRITERPENOID CONSTITUENTS; TRIPTERYGIIUM-WILFORDII; ASSIGNMENTS; TERPENOIDS; INHIBITORS

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Scutellaria barbata D. Don induces apoptosis of human colon carcinoma cell through activation of the mitochondrion-dependent pathway

This work was supported by the Program of Shanghai Science and Technology Commission (08DZ1971503).

Scutellaria barbata D. Don has long been used in China for the clinical treatment of various cancers including colorectal cancer. However, the precise mechanisms of its tumorcidal activity remain unclear. In the present study, we investigated the cellular effects of the ethanol extract of S. barbata D. Don (EESB) in the HT-29 human colon carcinoma cell line. We found that EESB inhibited the growth of HT-29 cells as demonstrated EESB-induced cell morphological changes and reduced cell viability in dose-and time-dependent manners. Furthermore, we observed that EESB treatment resulted in DNA fragmentation, loss of plasma membrane asymmetry, collapse of mitochondrial membrane potential, activation of caspase-9 and caspase-3, and increase of the ratio of pro-apoptotic Bax to anti-apoptotic Bcl-2. These results suggest that promotion of cancer cell apoptosis through activation of the mitochondrion-dependent pathway is one of the mechanisms by which S. barbata D. Don can be effective in the treatment of cancer.
作者关键词: Scutellaria barbata D. Don; apoptosis; colorectal cancer; HT-29 cells; herbal medicine; mitochondria

KeyWords Plus: CHANNEL-FORMING ACTIVITY; CYTOCHROME-C; COLORECTAL-CANCER; DRUG-RESISTANCE; LEUKEMIA-CELLS; BCL-2; BAX; RELEASE; FAMILY; CHEMOPREVENTION

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Eleutheroside E (EE), a principal component of Eleutherococcus senticosus, has been reported to have anti-inflammatory and protective effects in ischemia heart etc. However, whether it can mitigate behavioral alterations induced by sleep deprivation, has not yet been elucidated. Numerous studies have demonstrated that memory deficits induced by sleep deprivation in experimental animals can be used as a model of behavioral alterations. The present study investigated the effect of EE, on cognitive performances and biochemical parameters of sleep-deprived mice. Animals were repeatedly treated with saline, 10 or 50 mg/kg EE and sleep-deprived for 72 h by the multiple platform method. Briefly, groups of 5-6 mice were placed in water tanks (45 x 34 x 17 cm), containing 12 platforms (3 cm in diameter) each, surrounded by water up to 1 cm beneath the surface or kept in their home cage. After sleep deprivation, mice showed significant behavioral impairment as evident by reduced latency entering into a dark chamber, locomotion and correctly rate in Y maze, and increased monoamines in hippocampus. However, repeated treatment with EE restored these behavioral and biochemical alterations in mice. In conclusion, the beneficial effect of EE may provide an effective and powerful strategy to alleviate behavioral alterations induced by sleep deprivation. (C) 2011 Elsevier B.V. All rights reserved.
Developments in Microfluidics-based Immunoassays

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Abstract: Microfluidics-based immunoassays have become an increasing research field in recent years owing to their advantages of miniaturization, high throughput, fast detection and low consumption. Detection is an important part in microfluidics-based immunoassays. Recent advances in the studies of micro-systems and detection methods, including electrochemical detection, fluorescence spectrometry, ultraviolet-visible spectrometry, chemiluminescence and bioluminescence, surface-enhanced Raman scattering, fiber-optic sensor, surface plasmon resonance, thermal lens microscopy, colorimetry and other new detection methods applied in microfluidics-based immunoassays, were summarized and reviewed in this paper. The prospects of the detection methods for microfluidics-based immunoassays were presented.

KeyWords Plus: ENHANCED RAMAN-SCATTERING; ENZYME-IMMUNOASSAY; RAPID DETECTION; CHIP; MICROCHIP; SYSTEM; SURFACE; REACTOR; IMMUNOSENSOR;
PROTEOLYSIS

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标题: The use of sodium trimetaphosphate as a biomimetic analog of matrix phosphoproteins for remineralization of artificial caries-like dentin

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摘要: Objectives. This study examined the use of sodium trimetaphosphate (STMP) as a biomimetic analog of matrix phosphoproteins for remineralization of artificial carious-affected dentin.
Methods. Artificial carious lesions with lesion depths of 300 +/- 30 microns were created by pH-cycling. 2.5% hydrolyzed STMP was applied to the artificial carious lesions to phosphorylate the partially-demineralized collagen matrix. Half of the STMP-treated specimens were bonded with One-Step. The adhesive and non-adhesive infiltrated specimens were remineralized in a Portland cement-simulated body fluid system containing polyacrylic acid (PAA) to stabilize amorphous calcium phosphate as nanoprecursors. Micro-computed tomography (micro-CT) and transmission electron microscopy (TEM) were used to evaluate the results of remineralization after a 4-month period.
Results. In absence of PAA and STMP as biomimetic analogs (control groups), there was no remineralization irrespective of whether the lesions were infiltrated with adhesive. For the STMP-treated experimental groups immersed in PAA-containing simulated body fluid, specimens without adhesive infiltration were more heavily remineralized than those infiltrated with adhesive. Statistical analysis of the 4-month micro-CT data revealed significant differences in the lesion depth, relative mineral content along the lesion surface and changes in Delta Z between the non-adhesive and adhesive experimental groups (p < 0.05 for all the three parameters). TEM examination indicated that collagen degradation occurred in both the non-adhesive and adhesive control and experimental groups after 4 months of remineralization.

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Ethnopharmacological relevance: Angelica sinensis polysaccharide is an important bioactive component of Angelica sinensis (Oliv.) Diels that has been used in traditional Chinese medicine for treating gynecological disorders and anemia.

Aim of the study: Previous study indicated that Angelica sinensis polysaccharide (ASP) may promote plasma iron levels by suppressing the expression of hepcidin, a negative regulator of body iron metabolism, in the liver. The present study aims to clarify the inhibitory effect of ASP on hepcidin expression as well as the involved mechanisms.

Materials and Methods: ASP (1 g/kg) or vehicle (normal saline) was intragastrically administrated to rats everyday for 14d. Intraperitoneal injections of recombinant human erythropoietin (rhEPO, 2000 U/kg) were given to positive control group. Erythropoietin and hepcidin levels in serum at different time points were determined by enzyme-linked immunosorbent assay. Western blot was used to investigate the expression of 6 pertinent signal proteins in liver.

Results: ASP significantly reduced hepcidin expression by inhibiting the expression of signal transducer and activator of transcription 3/5 (STAT3/5) and mothers against decapentaplegic protein 4 (SMAD4) in liver and stimulating the secretion of erythropoietin, which further down-regulated hepcidin by repressing CCAAT/enhancer-binding protein a (C/EBP alpha). SMAD4, and the phosphorylation process of STAT3/5.

Conclusions: ASP can suppress the expression of hepcidin in normal rats, and may be used in the treatments of hepcidin-induced diseases. (C) 2011 Elsevier Ireland Ltd. All rights reserved.
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Abstract: Pseudostellaria heterophylla (Miq.) Pax is one of the most widespread herbal and healthcare products in China. Extensive clinical use has shown that it has functions which "strengthens qi and generates saliva, moistens the lung and relieves cough". The ethyl acetate fraction extracted from the roots of the plant Pseudostellaria heterophylla exhibited a dose-dependent antitussive effect between 100 to 500 mg/kg. At a dose of 400 mg/kg, the ethyl acetate fraction treatment markedly prolonged the cough latent period and reduced the number of coughs in a guinea pig model induced by citric acid. Fall lung airway resistance, rise in dynamic lung compliance, decreased serum levels of IL-8, GM-CSF, TNF-alpha, and ET-1 in rat model of stable phase chronic obstructive pulmonary disease induced by cigarette smoke exposure were also observed. These results suggest that ethyl acetate fraction has antitussive activity related to its improvement in lung function via attenuation of airway inflammation by adjustment of multi-cytokine levels.
We thank Jianmin Xie from the Zhejiang University School of Medicine for his guidance. The authors are grateful to the Foundation of Social Development, Fujian Provincial Department of Science & Technology (2008Y0047) and the support of preclinical studies of the Traditional Chinese Medicine and Quality Control Engineering Technology Research Center Platform of Fujian Province (2009Y2003).
Aims: This study aims to evaluate whether the preconisation of high-risk human papillomavirus (HR-HPV) genotype and multiple HPV infection is predictive for residual/recurrent disease during the follow-up of high-grade cervical intraepithelial neoplasia (CIN) treated by loop electrosurgical excision procedure (LEEP) with negative margins.

Methods: Two hundred and thirty-six women (mean age 37; range 20-61) with CIN2/3 treated by LEEP conisation with negative margins confirmed by pathology examination of the surgical specimen were included. The cervical cells for HPV genotype testing by the polymerase chain reaction (PCR) were collected before, and 6, 12, 24 months after treatment, respectively. HPV genotype and multiple HPV infection were evaluated as possible predictors of residual/recurrent disease.

Results: Residual/recurrent disease was demonstrated by colposcopy-guided biopsy in 62 patients (26.3%) who underwent loop conisation with negative margins. Preoperative infection with either HPV16 (P = 0.007), HPV18 (P = 0.000), HPV33 (P = 0.001) or HPV45 (P = 0.019) was associated with higher rates of residual/recurrent lesions after conisation with negative margins. Preoperative infection with multiple HPV types was associated with the highest rate of residual/recurrent lesions compared with infection with single HPV type and HPV-negative cases (chi(2) = 16.599, P < 0.001).

Conclusions: Results demonstrate that the presence of HPV-16, 18, 33 and 45, as well as multiple HPV types pre-LEEP, is associated with higher rates of residual/recurrent disease after LEEP.
Effects of Laser Irradiation of Acupuncture Points Shenshu on Ovariectomized Rats

Zhang, YS (Zhang, Yi-Shi); Xu, YX (Xu, Yun-Xiang); Chen, CS (Chen, Chang-Shui); Chen, GZ (Chen, Gui-Zhen); Weng, ZX (Weng, Zu-Xing); Yao, Y (Yao, Yao)


Background and Objective: The effect of laser acupuncture on obesity in postmenopausal women remains unknown. The aim of this study was to investigate the effects of this form of treatment using an animal model. Materials and Methods: Seventy-seven female Sprague-Dawley rats were assigned into seven groups: normal control (Normal), sham-operation control (Sham), ovariectomized (OVX) control rats (OVX), OVX rats treated with estrogen (OVX + E), and three groups of ovariectomized rats treated with laser acupuncture (OVX + L). Bilateral ovaries were removed to decrease estrogen levels. After 2 wk, semiconductor laser irradiation was administered to bilateral Shenshu (BL 23) acupoints of rats in the three OVX + L groups at 12, 30, and 60 J/cm(2), respectively. Changes in body weight and pituitary estrogen receptor (ER) mRNA expression were analyzed. Morphological differences in the uterus and pituitary glands were also observed. Results: The OVX group exhibited marked weight gain and a significant decrease in pituitary ER alpha mRNA expression. Semiconductor laser irradiation at 30 J/cm(2) reduced body weight and increased ER alpha expression compared with the control, whereas irradiation at 12 or 60 J/cm(2) presented slightly weaker effects. Significant differences in pituitary ER beta mRNA were not observed due to lack of optical density data. Conclusions: The semiconductor laser irradiation of bilateral Shenshu (BL 23) acupoints can exert beneficial effects on OVX rats through reducing body weight and increasing pituitary ER alpha expression, and 30 J/cm(2) was the most effective dose among those used.
Differences between top-down and bottom-up approaches in mineralizing thick, partially demineralized collagen scaffolds

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Biominerals exhibit complex hierarchical structures derived from bottom-up self-assembly mechanisms. Type I collagen serves as the building block for mineralized tissues such as bone and dentin. In the present study, 250-300 μm thick, partially demineralized collagen scaffolds exhibiting a gradient of demineralization from the base to surface were mineralized using a classical top-down approach and a non-classical bottom-up approach. The top-down approach involved epitaxial growth over seed crystallites. The bottom-up approach utilized biomimetic analogs of matrix proteins to stabilize amorphous calcium phosphate nanoprecursors and template apatite nucleation and growth within the collagen matrix. Micro-computed tomography and transmission electron microscopy were employed to examine mineral uptake and apatite arrangement within the mineralized collagen matrix. The top-down approach could mineralize only the base of the partially demineralized scaffold, where remnant seed crystallites were abundant. Minimal mineralization was observed along the surface of the scaffold; extracellular mineralization was predominantly observed. Conversely, the entire partially demineralized scaffold, including apatite-depleted collagen fibrils, was mineralized by the bottom-up approach, with evidence of both intrafibrillar and extracellular mineralization. Understanding the different mechanisms involved in these two mineralization approaches is pivotal in adopting the optimum strategy for fabricating novel nanostructured materials in bioengineering research. (C) 2010 Acta Materialia Inc. Published by Elsevier Ltd. All rights reserved.
Differential Proteomic Analysis of Temperature-Induced Autolysis in Mycelium of Pleurotus tuber-regium

Huang, BF (Huang, Bifang); Lin, WX (Lin, Wenxiong); Cheung, PCK (Cheung, Peter C. K.); Wu, JZ (Wu, Jinzhong)

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Autolysis is an important physiological process found in fungal cultivation. However, there is hitherto no report on the autolysis of Pleurotus tuber-regium. We have investigated the enzymes secreted by temperature-induced (40 degrees C as treatment versus 10 degrees C as control) autolysis of the mycelium of P. tuber-regium grown in submerged cultivation. A comparison between the intracellular proteins (inside the mycelium) and the extracellular proteins (in the culture medium) of the treatment and control by proteomic analysis involving 2D PAGE and MALDI-TOF-MS was made. Twenty-two up-regulated protein spots were detected and eight proteins were identified. They included proteasome which participates in the ubiquitin-proteasome pathway; beta-1,3-glucanosyltransferase and tubulin which are involved in the renewal and repair process.
of cell wall; protease and endoglucanase which promote the natural degradation of cell wall and cytoplasm; 14-3-3 protein which takes part in cell signal transduction; and two putative proteins presumably relate to the autolysis process. These identified proteins suggest partially the metabolic processes of the autolysis in the P. tuber-regium mycelium.

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摘要: Background: Aging is a highly complex process that affects various tissues and systems in the body. Senescent changes are relatively more prevalent and severe in the postmitotic cells. Mitochondria play an important role in the aging process. Recently, cell cultures have been widely
used as an in vitro model to study aging. The present study was designed to investigate mitochondrial dysfunction associated with aging in a long-term cell culture system.

Material/Methods: Rat hippocampal neurons were maintained in culture in serum-free medium for 30 days in vitro (DIV). The morphology and development of hippocampal neurons was observed by phase contrast microscope. The levels of cellular senescence were evaluated by cytochemical staining of senescence-associated beta-galactosidase (SA-beta-Gal) at DIV 5, 10, 15, 20, 25 and 30. In addition, we investigated the changes in mitochondrial membrane potential (Delta psi m) and intracellular reactive oxygen species (ROS) generation of hippocampal neurons by flow cytometry at different ages.

Results: The proportion of the senescent cells steadily increased with age in neuron cultures. Delta psi m decreased gradually with age in long-term culture, while ROS generation increased.

Conclusions: This study indicates an age-related decrease in mitochondrial function in long-term hippocampal neuronal culture and suggests that DIV 25 neurons could possibly serve as a platform for the future study of anti-aging from the perspective of mitochondrial function.
This work was supported by grants from the National Natural Science Foundation of China (No. 30472248)

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标题: Hepatoprotection in a Rat Model of Acute Liver Damage Through Inhibition of CY2E1 Activity by Total Alkaloids Extracted From Rubus alceifolius Poir

作者: Lin, JM (Lin, Jiumao); Zhao, JY (Zhao, Jinyan); Li, TJ (Li, Tianjiao); Zhou, JH (Zhou, Jianheng); Hu, J (Hu, Juan); Hong, ZF (Hong, Zhenfeng)


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摘要: We aimed to examine the effect of an alkaloid extract of the roots of Rubus alceifolius Poir on liver damage and cytochrome enzymes, and underlying mechanism. Hepatotoxicity was induced in rats by treatment with carbon tetrachloride (CCl(4)). Rats were then treated with the hepatoprotective drug bifendate, or with low, medium, and high doses of an alkaloid extract from the roots of R alceifolius Poir. Both bifendate and alkaloid treatment decreased the increase in liver enzymes and cell damage caused by CCl(4). Carbon tetrachloride treatment alone caused a decrease in total cytochrome P450 content, an increase in CYP2E1 and CYP3A1 messenger RNA (mRNA) levels, and an increase in CYP2E1 and a decrease in CYP3A1 enzymatic activity. Alkaloid treatment brought these concentrations and activities back toward normal. In summary, these results suggest that alkaloids from R alceifolius Poir may act to protect the liver through decreasing CYP2E1 enzymatic activity through decreasing its mRNA.

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Spica Prunellae extract promotes mitochondrion-dependent apoptosis in human colon carcinoma cell line

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Spica Prunellae (Prunella vulgaris fruiting spikes) has long been used as an important
component in formulated prescriptions of Chinese traditional medicine to treat various kinds of
cancer. However, the precise mechanism of the anti-cancer activity of Spica Prunellae remains to
be elucidated. In this report, we investigated the cellular effects of the ethanol extract of Spica
Prunellae (EESP) in the HT-29 human colon carcinoma cell line. We found that EESP inhibited
the growth of HT-29 cells as evidenced by EESP-induced cell morphological changes and reduced
cell viability in dose-and time-dependent manners. Furthermore, we demonstrated that the HT-29
cell growth inhibitory activity of EESP was due to apoptosis, as EESP treatment resulted in the
loss of plasma membrane asymmetry (externalization of phosphatidylserine), collapse of
mitochondrial membrane potential, activation of caspase-9 and caspase-3, and increase in the ratio
of pro-apoptotic Bax to anti-apoptotic Bcl-2. Taken together, these results suggest that Spica
Prunellae inhibits the growth of HT-29 colon cancer cells through mitochondrion-mediated
apoptosis, which may, in part, explain its anti-cancer activity.

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The critical barrier to progress in dentine bonding with the etch-and-rinse technique

Objectives: The lack of durability in resin-dentine bonds led to the use of chlorhexidine as MMP-inhibitor to prevent the degradation of hybrid layers. Biomimetic remineralisation is a concept-proven approach in preventing the degradation of resin-dentine bonds. The purpose of this study is to examine the integrity of aged resin-dentine interfaces created with a nanofiller-containing etch-and-rinse adhesive after the application of these two approaches.

Methods: The more established MMP-inhibition approach was examined using a parallel in vivo and in vitro ageing design to facilitate comparison with the biomimetic remineralisation approach using an in vitro ageing design. Specimens bonded without chlorhexidine exhibited extensive degradation of the hybrid layer after 12 months of in vivo ageing.

Results: Dissolution of nanofillers could be seen within a water-rich zone within the adhesive layer. Although specimens bonded with chlorhexidine exhibited intact hybrid layers, water-rich regions remained in those hybrid layers and degradation of nanofillers occurred within the adhesive layer. Specimens subjected to in vitro biomimetic remineralisation followed by in vitro ageing demonstrated intrafibrillar collagen remineralisation within hybrid layers and deposition of mineral nanocrystals in nanovoids within the adhesive.

Conclusions: The impact was realized by understanding the lack of an inherent mechanism to remove water from resin-dentine interfaces as the critical barrier to progress in bonding with the etch-and-rinse technique. The experimental biomimetic remineralisation strategy offers a creative solution for incorporating a progressive hydration mechanism to achieve this goal, which warrants its translation into a clinically applicable technique. (C) 2011 Elsevier Ltd. All rights reserved.
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作者关键词: Ageing; Biomimetic remineralisation; Chlorhexidine; Degradation; Hybrid layer; Matrix metalloproteinase
KeyWords Plus: MULTIPLE WATER COMPARTMENTS; THERMAL STABILIZATION; IN-VIVO; MATRIX METALLOPROTEINASES; MECHANICAL-PROPERTIES; RESIN HYDROPHILICITY; ARCHAEOLOGICAL BONE; POLYMER COMPOSITES; COLLAGEN MOLECULES; HYBRID LAYERS
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<td>National Institute of Dental and Craniofacial Research</td>
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标题: Patrinia scabiosaefolia extract suppresses proliferation and promotes apoptosis by inhibiting the STAT3 pathway in human multiple myeloma cells
作者: Peng, J (Peng, Jun); Chen, YQ (Chen, Youqin); Lin, JM (Lin, Jiumao); Zhuang, QC (Zhuang, Qunchuan); Xu, W (Xu, Wei); Hong, ZF (Hong, Zhenfeng); Sferra, TJ (Sferra, Thomas J.)
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摘要: Signal transducer and activator of transcription 3 (STAT3) plays an important role in tumor cell survival and proliferation and thus has become a major focus in the development of anti-cancer therapies. Patrinia scabiosaefolia has been used for the treatment of various types of cancer. However, the precise mechanism of the anti-cancer activity of Patrinia scabiosaefolia remains unclear. In this study, we evaluated the effect of the ethanol extract of Patrinia scabiosaefolia (EEPS) on proliferation and apoptosis in human multiple myeloma U266 cells that persistently express phosphorylated STAT3, and investigated the possible molecular mechanisms mediating its biological effects. We found that EEPS inhibited the phosphorylation of STAT3 in U266 cells. Consequently, the inhibitory effect of EEPS on STAT3 activation resulted in the suppression of cell proliferation and the induction of cell apoptosis. Moreover, EEPS treatment inhibited the expression of cyclin D1 (a promoter of cell proliferation) and Bcl-2 (an inhibitor of apoptosis), two important target genes of the STAT3 signaling pathway. Our findings for the first time demonstrate that Patrinia scabiosaefolia inhibits proliferation and promotes the apoptosis of cancer cells via inhibition of the STAT3 pathway, which may in part explain its anti-cancer activity.

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作者关键词: anti-tumor; U266 cells; phytotherapy; signal transducer and activator of transcription 3 pathway; Patrinia scabiosaefolia
Chromatographic Fingerprint and Quantitative Analysis of Seven Bioactive Compounds of Scutellaria barbata

This study was sponsored by the Open Fund of Fujian Key Laboratory of Integrative Medicine on Geriatrics (2008J1004), the Natural Science Foundation of Fujian Province (2010J01195), the National Natural Science Foundation of China (81073097) and the Developmental Fund of Chen Keji Integrative Medicine (CKJ 20100019).

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Scutellaria barbata D. Don is widely used as a folk antitumor and anti-inflammatory agent in Asia. However, a simple and global quality control method for S. barbata was lacking. In this study, six phenolic compounds, including p-coumaric acid, scutellarin, apigenin 5-O-beta-glucopyranoside, luteolin, apigenin and 4’-hydroxywogonin were obtained from S. barbata by phytochemical investigations. The six compounds plus baicalein show cytotoxicities to the nine human cancer cells, K562, MGC-803, HL60, SH-SY5Y, SW1116, SMMC-7221, SW480, HepG2 and KB. Subsequently, a high-performance liquid chromatography with photodiode array detector (HPLC-DAD) was developed for both fingerprint analysis of S. barbata and quantitative determination of the seven anticancer active compounds in S. barbata. The chromatographic separation was accomplished on an Ultimate (TM) XB-C18 column (4.6 x 250 mm, 5 mu m) in 65 min. For fingerprinting, 26 common peaks were found and selected as characteristic peaks to assess the consistency of S. barbata samples. For quantitative analysis, the seven bioactive compounds showed good regression relationship (R(2) > 0.999) within test ranges and the recovery of the method was in the range of 90-105%. In brief, the present study provides the fingerprint analysis and quantitative methods for global and systematical quality control of S. barbata for its anticancer usage.
The authors gratefully acknowledge the financial support of the foundation of National High Technology and Development of China (863 projects: 2007AA02Z4A4), the Fujian Provincial Education Department Foundation (JA07101) the Fujian Provincial Natural Science Foundation (2009J01157), the Fujian Provincial Health Department Foundation (2008-1-20) and Preclinical Study of Traditional Chinese Medicine and Quality Control Engineering Technology Center of Fujian Province of China for help in equipment and technology (2009Y2003).
whether stimulation expansion occurs in somatosensory area I when sensation was provoked in individuals with obvious PSM. The sensation was blocked by mechanical compression, and the sensation was imitated in individuals without PSM. Results revealed a red, high-potential signal in the representative area of the lower limbs in individuals with obvious PSM symptoms when the Gall Bladder Meridian (GBM) sensation passed to the head and face. This representative area was near the middle line of the CSEP topographic map, and a red, high-potential signal, which jumps over the representative area of the upper limbs, also appeared in the representative face area, which was at the external region of the CSEP topographic map. However, in individuals exhibiting no PSM, only a red high-potential signal appeared in the representative lower limb area. When Hegu (LI 4) was stimulated in individuals without PSM, an obvious evoked response appeared only in the representative upper limb area. However, when Hegu was stimulated in individuals exhibiting PSM, the response area was larger in the representative upper limb area and extended to the representative face area. When Guangming (GB 37) was stimulated in PSM individuals, the face representation response disappeared and was confined to a foot representation of the somatosensory area I when PSM was blocked by mechanical pressure. Results suggested that mechanical compression blocked PSM, and corresponding changes were exhibited in the CSEP topographic map. These results provide compelling evidence for the hypothesis that peripheral driver stimulation is the key element in producing PSM.

KeyWords Plus: STIMULATION; REPRESENTATION; CORTEX

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标题: Intrafibrillar Collagen Mineralization Produced by Biomimetic Hierarchical Nanoapatite Assembly
作者: Liu, Y (Liu, Yan); Li, N (Li, Nan); Qi, YP (Qi, Yi-pin); Dai, L (Dai, Lin); Bryan, TE (Bryan, Thomas E.); Mao, J (Mao, Jing); Pashley, DH (Pashley, David H.); Tay, FR (Tay, Franklin R.)
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Title: Anticolchicine Cytotoxicity Enhanced by Dan Gua-Fang (sic), A Chinese Herb Prescription in ECV304 in Mediums

Authors: Heng, XP (Heng Xian-pei); Chen, KJ (Chen Ke-ji); Hong, ZF (Hong Zhen-feng); He, WD (He Wei-dong); Chu, KD (Chu Ke-dan); Chen, WL (Chen Wen-lie); Zheng, HX (Zheng Hai-xia); Yang, LQ (Yang Liu-qing); Chen, L (Chen Ling); Guo, F (Guo Fang)

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Abstract: Objective: To study the effect of anticolchicine cytotoxicity of Dan Gua-Fang (sic), a Chinese herbal compound prescription on endothelial cells of vein (ECV304) cultivated in mediums of different glucose concentrations as well as the proliferation of those cells in the same conditions, in order to reveal the value of Dan Gua-Fang in preventing and treating endothelial damage caused by hyperglycemia in diabetes mellitus. Methods: The research was designed as three stages. The growing state and morphological changes were observed when ECV304 were cultivated in the culture mediums, which have different glucose concentrations with or without Dan Gua-Fang and at the same time with or without colchicine. Results: (1) Dan Gua-Fang at all concentrations reduced the floating cell population of ECV304 cultivated in hyperglycemia
mediums. (2) Dan Gua-Fang at all concentrations and hyperglycemia both had a function of promoting "pseudopod-like" structure formation in cultivated ECV304, but the function was not superimposed in mediums containing both hyperglycemia and Dan Gua-Fang. (3) Colchicine reduced and even vanished the "pseudopod-like" structure of the endotheliocyte apparently cultivated in mediums of hyperglycemia or with Dan Gua-Fang. The "pseudopod-like" structure of the endotheliocyte emerged quickly in Dan Gua-Fang groups after colchicine was removed, but it was not the case in hyperglycemia only without Dan Gua-Fang groups. (4) Dan Gua-Fang reduced the mortality of cells cultivated in mediums containing colchicine. The cell revived to its normal state fast after colchicine was removed. Conclusion: Dan Gua-Fang has the functions of promoting the formation of cytoskeleton and fighting against colchicine cytotoxicity.

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KeyWords Plus: ENDOTHELIAL-CELLS; HYPERGLYCEMIA
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Hierarchical and non-hierarchical mineralisation of collagen

Biomineralisation of collagen involves functional motifs incorporated in extracellular matrix protein molecules to accomplish the objectives of stabilising amorphous calcium phosphate into nanoprecursors and directing the nucleation and growth of apatite within collagen fibrils. Here we report the use of small inorganic polyphosphate molecules to template hierarchical intrafibrillar apatite assembly in reconstituted collagen in the presence of polyacrylic acid to sequester calcium and phosphate into transient amorphous nanophases. The use of polyphosphate without a sequestration analogue resulted only in randomly-oriented extrafibrillar precipitations along the fibrillar surface. Conversely, the use of polyacrylic acid without a templating analogue resulted only in non-hierarchical intrafibrillar mineralisation with continuous apatite strands instead of discrete crystallites. The ability of using simple non-protein molecules to recapitulate different levels of structural hierarchy in mineralised collagen signifies the ultimate simplicity in Nature's biomineralisation design principles and challenges the need for using more complex recombinant matrix proteins in bioengineering applications. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Biomineralisation; Non-protein molecules; Hierarchical intrafibrillar mineralisation; Crossbanding; Non-hierarchical intrafibrillar mineralisation; Extrafibrillar mineralisation

KeyWords Plus: AMORPHOUS CALCIUM-PHOSPHATE; BIOMINERALIZATION; BONE; PHOSPHORYLATION; PROTEINS; NUCLEATION; CRYSTALS; FIBRILS; DENTIN; HYDROXYAPATITE
Acanthopanax senticosus (Rupr. et Maxim) Harms (Araliaceae), also called Siberian Ginseng, Eleutherococcus senticosus, and Ciwujia in Chinese, is a widely used traditional Chinese herb that could invigorate qi, strengthen the spleen, and nourish kidney in the theory of Traditional Chinese Medicine. With high medicinal value, Acanthopanax senticosus (AS, thereafter) is popularly used as an "adaptogen" like Panax ginseng. In recent decades, a great number of chemical, pharmacological, and clinical studies on AS have been carried out worldwide. Several kinds of chemical compounds have been reported, including triterpenoid saponins, lignans,
coumarins, and flavones, among which, phenolic compounds such as syringin and eleutheroside E, were considered to be the most active components. Considerable pharmacological experiments both in vitro and in vivo have persuasively demonstrated that AS possessed anti-stress, anti-ulcer, anti-irradiation, anticancer, anti-inflammatory and hepatoprotective activities, etc. The present review is an up-to-date and comprehensive analysis of the botany, chemistry, pharmacology, toxicity and clinical trials of AS.
A combined method of high performance liquid chromatograph-electrospray-ionization mass spectrometer (HPLC-ESI-MS/MS) coupled with a photodiode array detector (HPLC-DAD) and principal component analysis (PCA) was applied to the qualitative and quantitative analyses of alkaloids in Cortex Phellodendri (CP) samples, and to the differentiation of two species of CP, Cortex Phellodendri Chinensis (CPC) and Cortex Phellodendri Amurensis (CPA). Twenty-two peaks appeared in the HPLC-MS base peak chromatogram of CP detected by the HPLC-ESI-MS/MS analysis, and the alkaloids were identified according to the MS(n) data, the known MS fragmentation rules and the literature data. Five alkaloids including berberine, palmatine, jatrorrhizine, phellodendrine and magnoflorine were simultaneously determinated by the HPLC-DAD. Berberine was the primary component in all CP samples, and the contents of berberine and palmatine were exploited to be two critical parameters for effective discrimination between the two species of CP. The average content of berberine in CPC (58.75 mg/g) was higher than that in CPA (9.16 mg/g), while the content of palmatine was less, only 0.25 mg/g in CPC and 4.19 mg/g in CPA. With the use of PCA, samples datasets were separated successfully into two different clusters corresponding to the two species, and berberine, palmatine, phellodendrine and magnoflorine contribute most to the above mentioned calssifying. The proposed method proved to be a useful tool in the quality control of Chinese herbal medicines.
Bioactivity-guided fractionation for anti-fatigue property of Acanthopanax senticosus

Huang, LZ (Huang, Lin-Zhang); Huang, BK (Huang, Bao-Kang); Ye, Q (Ye, Qi); Qin, LP (Qin, Lu-Ping)

Materials and methods: Animals were orally administered with the extract of Acanthopanax senticosus. The anti-fatigue effects of the four fractions with different polarities from the 80% ethanol extract, and the different eluates collected from D101 macroporous resin chromatography and eleutheroside E, were examined based on the weight-loaded swimming capacity (physical fatigue) and the change of biochemical parameters in ICR mice. Moreover, the active fraction was later submitted to sleep-deprived mice (mental fatigue).
Results: The results shown that the n-butanol fraction significant extends the swimming time of mice to exhaustion. Furthermore, the 60% ethanol-water eluate, more purified eleutherosides (including eleutheroside E. E(2) and derivatives), were the exactly active constituents. Two compounds were isolated, which were identified as eleutheroside E, E(2).

Conclusions: The eleutherosides possess the potent abilities to alleviate fatigue both in physical and mental fatigue. Eleutheroside E may be responsible for the pharmacological effect of anti-fatigue. Furthermore, the possible mechanisms were reduced the level of TG by increasing fat utilization, delayed the accumulation of blood urea nitrogen (BUN), and increased the LDH to reduce the accumulation of lactic acid in muscle and then protect the muscle tissue. (C) 2010 Elsevier Ireland Ltd. All rights reserved.
This study was to determine the impact of adjunctive Buchang Naoxintong Jiaonang (BNJ) to clopidogrel on volunteers with the CYP2C19*2 gene mutation accompanied with qi deficiency and blood stasis (QDBS) constitution. Eighteen males with QDBS constitution were selected, who were 6 CYP2C19*1/*1, 6 CYP2C19*1/*2, and 6 CYP2C19*2/*2, and signed informed consent. Results showed that the maximal platelet aggregation (Agg(max)) and 5 min aggregation (Agg(late)) with 5-μmol/L ADP in three different CYP2C19*2 genotypes were significantly decreased after any drug therapy compared with corresponding baseline measurements (all values P < .05). But percent inhibitions of Agg(max) and Agg(late) (IPAs) in CYP2C19*2/*2 genotype at 4 hours, 24 hours, 3 days, and 7 days after clopidogrel administration were all the lowest among three CYP2C19*2 genotypes (P < .01), and IPAs in CYP2C19*1/*2 genotype were between CYP2C19*1/*1 and CYP2C19*2/*2. IPAs had no significant difference among three different CYP2C19*2 genotypes after BNJ or adjunctive BNJ. In addition, changes of CD62P, PAC1, and sCD40L were similar to changes of ADP-induced platelet aggregation in three different CYP2C19*2 genotypes. Conclusion was that adjunctive BNJ to clopidogrel can enhance the antiplatelet effect in volunteers with the CYP2C19*2 gene mutation.
This work was supported by the Ministry of Health of the People's Republic of China of Fujian Province Health Education Union Scientific Grants (WKJ 2008-2-59) and Chinese Medical Association of Clinical Medicine Scientific Research Special-Purpose Grants (09010150170).

**Abstract:** In the title compound, C(11)H(11)NO(4)S center dot H(2)O, the five-membered thiazolidine ring is nearly planar, with a maximum deviation of 0.010 (2) angstrom. The dihedral angle between the thiazolidine and benzene rings is 49.16 (9) degrees. Intermolecular O-H center dot center dot center dot O and N-H center dot center dot O hydrogen bonding is present in the crystal structure.

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Ganoderma lucidum Polysaccharides: Immunomodulation and Potential Anti-Tumor Activities

This study was supported by the Science and Technology Commission of Shanghai special purpose for modernization of traditional Chinese medicine in 2008 (No. 08DZ1970802) and the National Basic Research Program of China (No. 2006CB504100 and 2009CB521907).

Abstract: Ganoderma lucidum (G. lucidum), a basidiomycete white rot fungus, has long been prescribed to prevent and treat various human diseases, particularly in China, Japan, and Korea. Several classes of bioactive substances have been isolated and identified from G. lucidum, such as triterpenoids, polysaccharides, nucleosides, sterols, and alkaloids, among others. This paper examines the potential role of G. lucidum polysaccharide (GLPS) in tumor therapy and the possible mechanisms involved. Both in vitro and in vivo studies suggested that the anti-tumor activities of GLPS are mediated by its immunomodulatory, anti-angiogenic, and cytotoxic effects. GLPS affects immune cells and immune-related cells including B lymphocytes, T lymphocytes, dendritic cells, macrophages, and natural killer cells. In addition, recent data also suggest that GLPS suppresses tumorigenesis or inhibits tumor growth through direct cytotoxic effect and
anti-angiogenic actions. However, many questions still need to be answered before both G. lucidum and GLPS can be widely accepted and used as anti-tumor agents.

KeyWords Plus: ANTI-ANGIOGENIC ACTIVITY; DENDRITIC CELLS; T-LYMPHOCYTES; CANCER-IMMUNOTHERAPY; IMMUNE FUNCTIONS; LUNG-CANCER; MACROPHAGES; MECHANISMS; ACTIVATION; EXTRACT

This study was supported by the Macao Science and Technology Development Fund (029/2007/A2) and Research Fund of the University of Macau (UL016A/09-Y2/CMS/WYT01/ICMS).
Corydalis yanhusuo W. T. Wang (YHS) is a traditional Chinese herb widely prescribed for promoting blood circulation, reinforcing vital energy and alleviating pain. Our previous studies showed that an ethanol extract of YHS inhibits metastasis of breast cancer cells in vitro. In the present study, the anti-proliferative effect of the extract was determined by MTT assay and the LDH release was measured with a commercial kit. Intracellular reactive oxygen species (ROS) production and mitochondrial membrane potential (DeltaPsi m) were monitored by CM-H(2)DCF-DA and JC-1 staining, respectively. Cell cycle was analyzed with propidium iodide (PI) staining by flow cytometry and protein expressions were measured by Western blotting. The YHS extract significantly inhibited MCF-7 cell proliferation in a dose-dependent manner. Significant increase of ROS formation and decrease of DeltaPsi m were observed. Furthermore, it induced MCF-7 cell cycle arrest at the G2/M phases. In addition, the p-cdc-2/cdc-2 protein expression ratio was increased while Rb and p21 protein expressions were decreased. The YHS extract inhibited MCF-7 proliferation by inducing G2/M cell cycle arrest, which might be mediated by inducing ROS formation, decreasing DeltaPsi m and regulating cell cycle related protein expressions.
Single-nucleotide polymorphisms and haplotype of CYP2E1 gene associated with systemic lupus erythematosus in Chinese population

Liao, LH (Liao, Ling-hong); Zhang, H (Zhang, Hao); Lai, MP (Lai, Man-Po); Chen, SL (Chen, Shun-Le); Wu, M (Wu, Madeline); Shen, N (Shen, Nan)

Methods: The coding and flanking regions of the CYP2E1 gene were scanned for polymorphisms and tag SNPs were selected. A two-stage case-control study was performed to genotype a total of 876 SLE patients and 680 geographically matched healthy controls (265 cases and 288 controls in stage I and 611 cases and 392 controls in stage II). SLE associations of alleles, genotypes and haplotypes were tested by age and sex adjusted logistic regression. The gene transcription quantitation was carried out for peripheral blood mononuclear cell (PBMC) samples from 120 healthy controls.

Results: Tag SNP rs2480256 was found significantly associated with SLE in both stages of the study. The "A" allele was associated with slightly higher risk (odds ratio (OR) = 1.165, 95% confidence interval (CI) 1.073 to 1.265, P = 2.75E-4) and "A/A" genotype carriers were with even
higher SLE risk (OR = 1.464 95% CI 1.259 to 1.702, P = 7.48E-7). When combined with another tag SNP rs8192772, we identified haplotype "rs8192772-rs2480256/TA" over presented in SLE patients (OR 1.407, 95% CI 1.182 to 1.675, P = 0.0001) and haplotype "TG" over presented in the controls (OR 0.771, 95% CI 0.667 to 0.890, P = 0.0004). The gene transcription quantitation analysis further proved the dominant effect of rs2480256 as the "A/A" genotype showed highest transcription.

Conclusions: Our results suggest the involvement of CYP2E1 as a susceptibility gene for SLE in the Chinese population.
We acknowledge the financial support of Grant 2010J05071 from Fujian Provincial Department of Science & Technology, 471 HKUST6117/01M from RGC, Grant CMI03/04.SC03 from HKUST472 and Grant UPHMSGF 06/07.SC01 from Mochtar Riady Institute for 473 nanotechnology.

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标题: Design of a DNA electronic logic gate (INHIBIT gate) with an assaying application for Ag+ and cysteine
作者: Zhu, X (Zhu, Xi); Xu, HF (Xu, Huifeng); Gao, XY (Gao, Xiaoyao); Li, XH (Li, Xianghui); Liu, QD (Liu, Qida); Lin, ZY (Lin, Zhenyu); Qiu, B (Qiu, Bin); Chen, GN (Chen, Guonan)
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摘要: A DNA electronic logic gate (INHIBIT gate) with good selectivity and reversibility is developed based on using Ag+ and Cys as inputs and current signal as output.
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A novel fluorescent sensor for the detection of Hg(2+) in aqueous media was developed. The method takes advantages of the highly selective thymine-Hg(2+)-thymine coordination and...
the sensitive "signal-on" structure-switching molecular beacon.

Key Words Plus: COLORIMETRIC DETECTION; ION Hg2+; GOLD NANOPARTICLES; AQUEOUS-SOLUTION; DNA; SENSOR; MEDIA

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Title: Effect of Aike Mixture (sic) on the Inflammatory Infiltration in Patients with Chronic Prostatitis Type III A
Abstract: Objective: To observe the effect of Aike Mixture ((sic), AKM) on prostatic inflammatory infiltration in patients with chronic prostatitis type III A (III A-CP/CPPS) and evaluate its anti-inflammatory action. Methods: A total of 60 patients with III A-CP/CPPS suitable to operation and differentiated as Chinese medicine Gan (sic)-qi stagnancy syndrome type were selected. They were assigned with the random number table to two groups equally. Before operation, the patients in the treated group were administered with Proscar combined with AKM, but those in the control group treated with Proscar only. Suprapubic transvesical prostatectomy was performed two weeks later, and prostatic pathological examination was conducted. Results: Grading of inflammatory cell infiltration showed that the mean grade in the treated group was 0.78 +/- 0.90 grades, which was significantly lower than that in the control group 1.68 +/- 0.87 grades (P<0.05). However, the two groups were not different in the grades of fibroblast proliferation (1.50 +/- 0.70 grades vs 1.62 +/- 0.87 grades, P>0.05). Conclusion: AKM could suppress the inflammatory cell infiltration, be an effective and safe remedy for the treatment of IIIA-CP/CPPS of Gan-qi stagnancy syndrome type, and worthy for spreading in clinical use.
Clinical Practice Guideline of Traditional Medicine for Primary Osteoporosis

Xie, YM (Xie Yan-ming); Yuwen, Y (Yuwen Ya); Dong, FH (Dong Fu-hui); Sun, SC (Sun Shu-chun); Wang, HM (Wang He-ming); Liu, QS (Liu Qing-si); Hua, ZJ (Hua Zhong-jian); Ma, LX (Ma Liang-xiao); Liao, X (Liao Xing); Xu, GQ (Xu Gui-qin); Zhi, YJ (Zhi Ying-jie); Niu, LF (Niu Lu-fang); Wu, CS (Wu Chang-sheng)

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Objective Graves' disease (GD) is a common autoimmune disorder and genetic and environmental factors contributing to its aetiology. The pro-inflammatory cytokine interleukin-12 (IL-12) is believed to be critically involved in the pathogenesis of GD. This study aims to elucidate the effect of IL-12A gene polymorphisms on GD.

Design and methods A case-control association study of five tag single nucleotide polymorphisms (SNPs) (rs2243115, rs2243123, rs583911, rs568408 and rs2243143) within the IL-12A gene was performed in two independent Chinese cohorts. A pilot cohort conducted in Shanghai consisted of 701 patients and 686 controls and a replicate cohort in Xiamen Island included 378 patients and 312 controls. The five SNPs were genotyped by the SNPstream Genotyping Systems and Taqman PCR method.

Results Polymorphism of rs568408, located at the 3'-UTR region, was found to have a significant association with GD in both the cohorts (P(allele) = 2.96 x 10^-7) and P(alleles) = 0.013 for Shanghai and Xiamen Island cohorts, respectively). Haplotype analysis showed that the haplotype of the five SNPs (TTAAG) was associated with a significant risk of GD in both the cohorts (OR = 2.04 and OR = 1.70 for Shanghai and Xiamen Island cohorts, respectively).

Conclusion Our results have established an association between IL-12A polymorphism and GD susceptibility in the Chinese population.
The present study would not have been possible without the participation of the patients and healthy volunteers. The study was partly supported by the Key Laboratory for Endocrine and Metabolic Diseases of Ministry of Public Health (No. 1994DP131044) and National Natural Science Foundation of China (No. 81070670).
Aim: Clinically electroacupuncture (EA) is proved an effective therapy for vascular dementia (VD), but their mechanisms remain uncertain. The aim of this study was to determine whether EA protects pyramidal cells from apoptosis in hippocampus of a VD rat model by inhibiting the expression of p53 and Noxa. Methods: One month after a VD animal model was established by bilateral occlusion of common carotid arteries, EA treatment was given at Baihui (DU20), Dazhui (DU14), and Shenshu (BL23). The learning and memory ability was assessed by Morris water maze. Neuronal apoptosis in hippocampus was evaluated with hematoxylineosin (HE) staining, and the expression of p53 and Noxa was analyzed by confocal laser scanning microscope with immunofluorescence staining. Results: Expressions of p53 and Noxa in the EA group and sham-operated group were less than in the VD model group (P < 0.01), and the expression of p53 was positively correlated to expression of Noxa in hippocampus of VD rats (r = 0.918, P < 0.01). EA treatment could reduce the amount of apoptotic neurons in hippocampal CA1 area of rats with VD. The average latency in the Morris water maze test was significantly shorter, and escape strategies improved from edge and random searches to more linear swim pathway in the EA group compared with the VD model group (P < 0.01). Conclusions: The increasing expressions of p53 and Noxa play important roles in the pathogenesis of VD. EA improves learning and memory ability and protects pyramidal cells from apoptosis by blocking expression of p53 and Noxa in the hippocampal CA1 region of VD rats. These results suggest a novel mechanism of EA treatment to VD.
This study was supported by fund for Youth Teacher from Fujian Provincial Health Department, No. 2005-2-40.

A new method for separation and determination of amygdalin and its epimer (neoamygdalin) in the epimerization of amygdalin by MEKC is proposed. For the chiral separation of amygdalin and neoamygdalin, a running buffer composed of 80 mM sodium cholate, 5.0% v/v butan-1-ol, 0.5% v/v heptane and 94.5% v/v 30 mM Na(2)B(4)O(7) buffer (pH 9.00) is proposed. Under optimum conditions, the basic separation of amygdalin and neoamygdalin can be achieved within 7 min. The calibration curve for amygdalin showed excellent linearity in the concentration range of 20-1000 µg/mL with a detection limit of 5.0 µg/mL (S/N = 3). The epimerization rate constant of amygdalin in basic microemulsion was first determined by monitoring the concentration changes of amygdalin, and the epimerization rate constant of amygdalin was found to be 2 x 10(-3) min(-1) at 25 degrees C under the above optimum microemulsion conditions.

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Amygdalin; Electrokinetic chromatography; Epimerization rate constant; Microemulsion
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In vitro antioxidant activities of endophytic fungi isolated from the liverwort Scapania verrucosa

We investigated in vitro antioxidant activities of 49 endophytic fungi isolated from the liverwort Scapania verrucosa. Based on morphological and molecular identification, the endophytic fungi isolated were classified into seven genera (Hypocre a, Penicillium, Tolypocladium, Chaetomium, Xylaria, Nemania, and Creosphaeria), all belonging to one family (Xylariaceae). By screening with the 2,2'-azino-di(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) decolorization assay, the ethyl acetate extracts of five endophytic fungi (T7, T21, T24, T32, and T38 strains), which exhibited remarkable Trolox equivalent (TE) antioxidant capacity (ranging from 997.06 to 1248.10 μmol TE/g extract), were selected and their antioxidant capacity was further evaluated by assays for 2,2'-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging, hydroxyl radical scavenging, reducing power, and ferrous ion chelating. The ethyl acetate extracts of two endophytic fungi (T24 and T38) were found to have comparable scavenging abilities on both DPPH-free radicals (93.9 and 88.7%, respectively, at 50 μg/mL) and hydroxyl radicals (97.1 and 89.4%, respectively, at 2 mg/mL) when compared with those of the positive controls (ascorbic acid and butylated hydroxytoluene, respectively). Although their reducing powers were similar to that of butylated hydroxytoluene, as indicated by absorbance (0.35 and 0.30 at 50 μg/mL, respectively), only the T38 strain’s ethyl acetate extract showed ferrous ion chelating ability (92.9% at 1 mg/mL) comparable to that of the EDTA-2Na control. These endophytic fungi in S. verrucosa are a potential novel source of natural antioxidants.
In vitro study of inhibitory millimeter wave treatment effects on the TNF-alpha-induced NF-κB signal transduction pathway

Authors: Li, XH (Li, Xihai); Wu, GW (Wu, Guangwen); Wu, MX (Wu, Mingxia); Chen, WL (Chen, Wenlie); Liu, XX (Liu, Xianxiang)

Abstract: Abnormal activation of the nuclear factor-kappa B (NF-κB) in chondrocytes initiates the transcription of inflammatory mediators, promotes their generation and release, and amplifies initial inflammatory signals. This results in the release of chondral matrix-degrading enzymes and accelerates the degeneration of articular cartilage. As a non-pharmaceutical and non-invasive physical therapy regimen, millimeter wave treatment has been successfully used for the treatment of osteoarthritis. In this study, chondrocytes were derived from the cartilages of knee joints of 4-week-old male Sprague-Dawley rats and were mechanically digested by collagenase type II treatment for further culture in vitro. The third-passage chondrocytes were stained with toluidine
blue and treated with a gradient of tumor necrosis factor-a (TNF-alpha) for various times. Chondrocytic activity was measured by MTT assay, and the apoptotic rate of the chondrocytes was determined with Hoechst 33342 staining to identify effective treatment concentrations and durations and to establish an apoptosis model for the chondrocytes in response to TNF-a. Using this model, the chondrocytes were randomly divided to receive millimeter wave treatment for various times. The apoptotic rate of the chondrocytes was measured by Annexin V-FITC staining and the protein expression levels of RIP, TAK1, I kappa B kinase (IKK)-beta, I beta B-alpha and NF-kappa B, were determined by Western blotting. Chondrocytic structure was examined by transmission electronic microscopy. The apoptotic rates were significantly lower at 4 and 8 h of treatment than at 0 and 2 h. The expression levels of RIP, TAK1, IKK-B and NF-kappa B were also significantly lower at 4 and 8 h than at 0 and 2 h, whereas that of I kappa B-alpha was significantly higher at 4 and 8 h than at 0 and 2 h. Therefore, we can conclude that millimeter wave treatment can inhibit the activation of the TNF-alpha-mediated NF-kappa B signal transduction pathway through the down-regulation of RIP, TAK1, IKK-beta and NF-kappa B, and the up-regulation of I kappa B-alpha, in chondrocytes.

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标题: Experimental study of low-frequency electroacupuncture-induced differentiation of bone marrow mesenchymal stem cells into chondrocytes
作者: Wu, GW (Wu, Guangwen); Peng, J (Peng, Jun); Wu, MX (Wu, Mingxia); Li, YR (Li, Yurong); Huang, YM (Huang, Yunmei); Lin, RH (Lin, Ruhui); Cai, QY (Cai, Qiaoyan); Liu, XX (Liu, Xianxiang)
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摘要: in the present study, we investigated the effect of low-frequency electroacupuncture (EA) on the differentiation of bone mesenchymal stem cells (BMSCs) into chondrocytes and the molecular mechanism involved. We isolated BMSCs from Sprague-Dawley (SD) rat bone marrow. Third-generation SD rat BMSCs (P3 BMSCs) were harvested and characterized by flow cytometry with FITC staining. Data indicated that the positive rates of CD90 and CD45 were 98.22 and 1.91%, respectively, indicating the high purity of the BMSCs. The P3 BMSCs were treated with EA for 15 or 30 min daily for 7 or 14 days. Using optical microscopy and transmission electron microscopy, we found that EA induced morphological changes in the BMSCs, displaying typical morphology of early chondrocytes. In addition, we found that the cytoplasm and extracellular matrices were metachromatically stained by toluidine blue in the treated cells in a dose-dependent manner, indicating that EA treatment resulted in the expression of glycosaminoglycan. Furthermore, upon immunohistocyto-chemical staining and Western blotting, we found that EA treatment significantly and dose-dependently induced expression of chondrocyte-specific matrix protein type II collagen, which may have been mediated by the transcription factor Sox9, as the mRNA expression of Sox9 was found to be significantly increased after EA treatment. Taken together, these results suggest that EA can be employed as a novel non-drug-inducing method for the differentiation of BMSCs into chondrocytes.
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Cognitive Obstacles Against Organ Donation: The Influence of Negative Attitudes, Norms, and Traditional Beliefs on Chinese People's Intention to Donate Organs after Death

Wu, AMS (Wu, Anise M. S.); Lu, LS (Lu, Lu-Sha)


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摘要: In China, the organ supply is severely insufficient to cover all people on the waiting list for donated organs, and numerous patients die awaiting transplant. To achieve a better understanding of cadaveric organ donation in Chinese culture, this study examined 300 Chinese adults, in both

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Fujian Province and Macao, regarding attitudes towards organ donation, subjective norms about organ donation and traditional beliefs about the body and death, examining the influences of these factors on respondents' donation intentions. Multiple hierarchical regression results suggest that more negative attitudes, unfavourable norms and traditional beliefs lead to lower donation intentions. Copyright (C) 2010 John Wiley & Sons, Ltd.
(CNE-1 cell line). There are only six obvious Raman bands (718, 1001, 1123, 1336, 1446, 1660 cm\(^{-1}\)) in the normal Raman spectrum of living CNE-1 cells. However, over twenty SERS Raman bands have been detected in the SERS spectra of IG AuNs-induced cells, among which five bands are of the DNA backbone (673, 1097, 1306, 1336 and 1585 cm\(^{-1}\)). There are four vibrations of the DNA backbone (1026, 1097, 1336 and 1585 cm\(^{-1}\)) in the SERS spectra of living CNE-1 cells induced by the passive uptake gold nanoparticles (PUAuNS), but one more DNA backbone and many nucleus Raman peaks appeared in the IG AuNs-induced SERS spectra. Many Raman peaks in the PUAuNs-induced SERS spectra are stronger than those in the IG AuNs-induced ones. This study has shown that the PUAuNs technique can achieve stronger Raman signals, and that the IG AuNs technique can enable the gold element to access to the nucleus more easily, which could help to obtain more surface-enhanced Raman signals of the intracellular biochemical molecules. Thus, the two techniques can work together to attain the Raman spectral information of the cytoplasm and the nucleus in a better way, which might provide a sensitive method for broad biomedical applications such as intracellular SERS analysis of living cells.
The study was supported by the National Natural Science Foundation of China (Nos 11104030, 61178090, 81101110), the Project of Fujian Province (Nos 2008J0016, 2009J01276, JA11055), the Project of Science Foundation of Ministry of Health and United Fujian Provincial Health and Education Project for Tackling the Key Research (No. WKJ2008-2-046), and the Project of State Key Laboratory of Physical Chemistry of Solid Surface and Fujian Key Lab. of Semiconductors and Applications, Xiamen University. We greatly appreciate all the support of the above organizations and the assistance from Dr. Haishan Zeng and Dr. Zhiwei Huang.