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TCM Research Updates

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Contents

Active phytochemicals from Chinese herbs as therapeutic agents for the heart

http://www.ncbi.nlm.nih.gov/pubmed/22632138

May 2012, by Ho JW

Naturally occurring plant alkaloids, in particular those identified from herbal medicines, are finding therapeutic use. Heart diseases can be well managed with specific formulations of herbal medicines. The combined action of multiple constituents of herbal medicines works with therapeutic benefits in humans. The established formulations of Traditional Chinese medicines show efficacy in treatment of diseases. However, individual herbal principles seldom show pharmacological activity. Nevertheless, some of the active alkaloids and terpenoids from medicinal herbs have been identified. The pharmacological activities of these herbal compounds have been studied. These active constituents of herbal medicine are also used in nutrient supplements, but the modes of action of the active component remain sketchy. The present review describes the recent development of those active principles from herbal medicines as cardiovascular agents. The study will provide insights into herbal medicines for drug development for the treatment of cardiovascular disease.

Xiaoyaosan Decoction, a Traditional Chinese Medicine, Inhibits Oxidative-Stress-Induced Hippocampus Neuron Apoptosis In Vitro

http://www.hindawi.com/journals/ecam/2012/489254

Evidence-Based Complementary and Alternative Medicine Volume 2012, by Zhen-Zhi Meng

Xiaoyaosan (XYS) decoction is a famous prescription for the treatment of mental disorders in China. In this experiment, we explored the way in which XYS decoction-reverse hippocampus neuron apoptosis in vitro. We used XYS decoction-containing serum to treat oxidative-stress-induced hippocampus neuron apoptosis and used immunofluorescence to determine the concentration of free calcium, mitochondrial membrane potential, and apoptotic rate of neuron. Results showed that 3-hour oxidative stress decrease mitochondrial membrane potential, increase the concentration of free calcium and apoptotic rate of neuron via triggering pathological changes of nucleus such as karyorrhexis, karyopyknosis. Low, medium, high dose of XYS-decoction-containing serum could reverse these phenomenon, and the effect of low-dose XYS-decoction-containing serum was significant in improving mitochondrial membrane potential and apoptotic rate of neuron. These findings suggest that XYS decoction may be helpful in reducing oxidative-stress-induced hippocampus neuron apoptosis.

The neuronal system plays a leading role in reaction to stress. Chronic stress has close relationship with depression. Hippocampus is the target for the stress hormone and the hippocampus neuron may be the material basis to trigger depression. The structure and function of hippocampus neuron will be damaged by chronic stress not by acute stress.

Traditional Chinese medicine (TCM) has an active effect on chronic disease and psychiatry. XYS decoction created in *Song* Dynasty (960-1127 AD) contains Radix Angelicae Sinensis, Poria, Radix Paeoniae Alba, Radix Glycyrrhizae, Radix Bupleuri, Rhizoma Atractylodis Macrocephalae, Herba Menthae, and Rhizoma Zingiberis Recens. The chemical constituent of XYS includes peoniflorin, saikoside, ferulic acid, atractylol, glycyrrhetate, curcumin, and menthone [1]. XYS decoction has been mainly used to treat liver stagnation and spleen deficiency syndrome (LSSDS) and mental disorders in TCM clinic. The function of XYS decoction is to soothe the liver, improve the circulation of qi, relieve depression, strengthen the spleen, and nourish blood. It is a safe and useful prescription in clinical. Our previous studies showed that XYS decoction on the treatment of patients with LSSDS may be through enhancing plasma β-EP and decreasing E and DA release [2], and the therapeutic antidepression actions are due to protection of brain neurotrophin factor [3].

The objective of this study was to observe the effect of different doses of XYS decoction on the hippocampus neuron via oxidative-stress-induced hippocampus neuron apoptosis. Chinese composite recipe aims at multitarget in human body and includes many different materials and chemical compositions. After Chinese composite recipe is taken, metabolism will happen in stomach, intestine, and liver and the effect of Chinese composite recipe will play a role [4]. Therefore, to reproduce the features of XYS after metabolism in digestive system, we prepared XYS-containing serum. We hope that this experiment can provide experimental evidence about XYS decoction's function in reversing hippocampus neuron apoptosis in rats induced by oxidative stress.

The research result suggested that XYS decoction can regulate oxidative-stress-induced hippocampus neurons in mitochondrial membrane potential, concentration of free calcium and apoptotic rate of neuron. Low-dose XYS decoction seems better than medium-, high-dose XYS decoction in regulating mitochondrial membrane potential and apoptotic rate of neuron. These findings suggest that XYS decoction may decrease oxidative-stress-induced hippocampus neuron apoptosis and may help to elucidate its therapeutic antidepression actions are due to protection of hippocampus neurons and would provide scientific evidence for using this formula in clinic.

Protective Effects of Two Constituents of Chinese herbs on Spinal Motor Neurons from Embryonic Rats with Hypoxia Injury

http://www.ajol.info/index.php/ajtcam/article/view/73148
African Journal of Traditional, Complementary and Alternative Medicines ,2012. by *J-F Chen*

Neuroprotective agents are becoming significant tools in the repair of central nervous system injuries. In this study, we determined whether ginkgolides (Gin，extract of GinkgoBiloba) and *Acanthopanax senticosus* saponins (ASS ， flavonoids extracted from Acanthopanax herbal preparations) have protective effects on rat spinal cords exposed to anoxia and we explored the mechanisms that underlie the protective effects. Spinal motor neurons (SMNs) from rat spinal cords were obtained and divided into five groups with 10 wells in each group. In control group, SMNs suffered no injury under normal oxygen; in hypoxia- inducible (HI) group, SMNs suffered injury from hypoxia; in Gin group, 37.5μg/ml Gin were used before 24 hrs of hypoxia; in ASS group, 50μg/ml ASS were used before 24 hrs of hypoxia;in glial cell-lined derived neurotrophic factor (GDNF) group, 0.1μg/ml GDNF were used before 24 hrs of hypoxia. Changes in morphology, neuron viability, and lactate dehydrogenase (LDH) release were observed. In addition, the expression of HIF-1α induced by hypoxia was measured. The neuronal viability in the Gin, ASS, and GDNF pretreated groups was higher than that in the HI group ($P<0.05$). The viability in the Gin group was better than that in the ASS group ($P<0.05$), but there was no significant difference between the ASS and GDNF groups ($P>0.05$). The quantity of LDH released in the three pretreated groups was lower than that in the HI group ($P<0.05$). The expression of HIF-1α in the HI group was greater than that in the control group ($P<0.05$), and the expression in the three pretreated groups was greater than that in the HI and the control groups ($P<0.05$). Our results indicate that Gin and ASS which was not as effective as Gin, but its effects were similar to those of GNDF could all enhance the viability of SMNs and have protective effects on hypoxic neurons.

Effects of a Chinese medical herbs complex on cellular immunity and toxicity-related conditions of breast cancer patients

http://ukpmc.ac.uk/abstract/MED/21864416/reload=0;jsessionid=noNt3gq3GqbOzlIxWHJo.0
The British Journal of Nutrition 2012, 107(5):712-718, by Zhuang SR.

Rose Geranium (Pelargonium graveolens, Geraniaceae) has anti-cancer and anti-inflammatory properties, and promotes wound healing. Similarly, Ganoderma tsugae (Ganodermataceae), Codonopsis pilosula (Campanulaceae) and Angelica sinensis (Apiaceae) are traditional Chinese herbs associated with immunomodulatory functions. In the present study, a randomised, double-blind, placebo-controlled study was conducted to examine whether the Chinese medicinal herb complex, RG-CMH, which represents a mixture of rose geranium and extracts of G. tsugae, C. pilosula and A. sinensis, can improve the immune cell count of cancer patients receiving chemotherapy and/or radiotherapy to prevent leucopenia and immune impairment that usually occurs during cancer therapy. A total of fifty-eight breast cancer patients who received chemotherapy or radiotherapy were enrolled. Immune cell levels in patient serum were determined before, and following, 6 weeks of cancer treatment for patients receiving either an RG-CMH or a placebo. Administration of RG-CMH was associated with a significant reduction in levels of leucocytes from 31·5 % for the placebo group to 13·4 % for the RG-CMH group. Similarly, levels of neutrophils significantly decreased from 35·6 % for the placebo group to 11·0 % for the RG-CMH group. RG-CMH intervention was also associated with a decrease in levels of T cells, helper T cells, cytotoxic T cells and natural killer cells compared with the placebo group. However, these differences between the two groups were not statistically significant. In conclusion, administration of RG-CMH to patients receiving chemotherapy/radiotherapy may have the capacity to delay, or ease, the reduction in levels of leucocytes and neutrophils that are experienced by patients during cancer treatment.

Chinese herbal preparation reduces fragility fractures

http://www.news-medical.net/news/20120627/Chinese-herbal-preparation-reduces-fragility-fractures.aspx June 27, 2012, By Laura Cowen

Herbal Fufang - a multi-herbal preparation used in traditional Chinese medicine -increases bone mineral density and reduces fragility fractures in The Fufang, which contained non-leguminous epimedium-derived phytoestrogen flavonoids, was associated with a more than 40% reduction in fragility fractures compared with placebo in a study of 194 postmenopausal Chinese women.

Lead researcher Wei-Ming Deng (General Hospital of Guangzhou Military Command of PLA) and colleagues explain that Fufangs have been used for centuries in China to treat bone disorders.

postmenopausal women, Chinese researchers report.

Recent clinical trials have suggested that these Fufangs effectively prevent osteoporosis in postmenopausal women, but data on long-term outcomes such as fractures and adverse events are lacking.

To address this, Deng and team conducted a 5-year multicenter follow-up study in which postmenopausal women (aged 47-70 years) were given an oral herbal Fufangdeveloped for prevention of postmenopausal osteoporosis (10 g/day, n=101) or placebo (n=93).

The Fufang contained several herbal compounds including Herbaepimedii, Rehmanniaglutinosa, Dioscoreabatatas, Cornusofficinalis, Cinnamomum cassia, Drynariafortunei, and Morindaofficinalis. Both groups also received daily calcium (600 mg) and vitamin D (400 IU).

The researchers measured bone mineral density (BMD) at the distal radius using single-photon X-ray absorptiometry, and evaluated fracture incidence and potential adverse events at baseline and at 6, 12, 24, 36, 48, and 60 months. They report in the Journal of Bone and Mineral Metabolism thatBMD increased significantly from 0.211 g/cm2 at baseline to 0.284 g/cm2 at the end of the study in the treatment group, whereas it decreased significantly from 0.212 g/cm2 to 0.187 g/cm2 in the control group.

Furthermore, fracture incidence was 4.5% in the treatment group compared with 10.4% in the control group, which equates to a significant 43% reduction in relative fracture risk among the women who received Fufang versus placebo.

There were 21 adverse events reported in each group, most commonly heartburn (n=7) among those receiving Fufang and stomach discomfort (n=7) among those receiving placebo. There were no significant changes from baseline in renal function indices or blood counts in either group.

Deng et all conclude: "In addition to the beneficial effects of oral herbal Fufang on prevention of postmenopausal bone loss, this 5-year multicenter clinical study demonstrated for the first time its potential for reduction in fragility fracture incidence."

Application of Proteomics in Chinese Medicine Research

http://www.encognitive.com/files/Application%20of%20Proteomics%20in%20Chinese%20Medicine%20Research.pdf
American Journal of Chinese Medicine, 2010 by William Chi-Shing Cho

Proteomics technologies can be applied to simultaneously study the function, organization, diversity, and dynamic variety of a cell or a whole tissue. The integrative approach of proteomics is in line with the holistic concept and practices of traditional Chinese medicine (TCM). In this review, the technologies of proteomics, their adoption leverages the depth and breadth of TCM research are introduced. This article presents some examples to illustrate the use of proteomics technologies in the study of pharmacological effects and their action mechanisms relevant to TCM. Proteomics technologies could be used to screen the target molecules of the TCM actions, identify new bioactive components, and elucidate the underlying mechanisms of their effects. With proteomics approaches, it was found that the Siwu decoction could regulate the protein expression of the bone marrow of blood (*Xue*) In this review, the technologies of proteomics, their adoption leverages the depth and breadth of TCM research are introduced. This article deficient mice, including some proteins and enzymes involved in the hemopoiesis system. *Ganoderma lucidum* spores might promote the survival and axon regeneration of injured spinal motor neurons in rats by regulating the expression levels of proteins involved in the energy and tissue regeneration system. *Polygonatum zanlanscianense* Pamp exhibited cytotoxicity towards human myeloblast leukemia HL-60 cells through multiple apoptosisincluding pathways. *Panax ginseng* might be beneficial to patients suffering from diabetes mellitus and its complications by alleviating inflammation. Taken together with a discussion on the challenges and perspectives, this paper provides an overview of the recent developments of proteomics technologies in TCM research, and contends that proteomics will play an important role in the modernization and internationalization of TCM.