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Contents

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Molecular network and chemical fragment-based characteristics of medicinal herbs with cold and hot properties from Chinese medicine

http://www.sciencedirect.com/science/article/pii/S037887411300336X
Journal of Ethnopharmacology. 2013; 148 (3): 770-779. By Fei Liang.

Abstract

Ethnopharmacological relevance
Chinese herbal medicines (HMs) is one of the great herbal systems of the world, which play an important role in current health care system in many countries. In the view of tradition Chinese
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medicine (TCM) theory, Yin-yang and five-elements theory is the central theory, which is used to explain how the world and body work. Under the guidance of such philosophy, TCM considers that HMs have different properties, which are the important factors for prescribing herbal formulae; such prescriptions are based on TCM pattern classification in clinical practice. The cold and hot property are commonly defined for HM property identification; however, the biological activities that are related to the HM property remain a mystery because of a lack of appropriate methods. A bioinformatics approach was applied to identify the distinguishing biological activities of HMs that have these cold and hot properties.

Material and methods

Twenty HMs with typical cold and hot properties (10 cold and 10 hot) were selected based on TCM clinical application records and Chinese pharmacopeia. The active target proteins of each HM were searched in the PubChem database and were analyzed in Ingenuity Pathway Analysis (IPA) platform to find out the HM property-related biological activities. In addition, the main compounds of the HMs were fragmented using a fragment-based approach and were analyzed for the purpose of deciphering the properties.

Results

The main biological networks of HMs with cold and hot properties include cell cycle, cellular growth, proliferation and development, cancer, cytokine signaling, and intracellular and second messenger signaling; 11 specific pathways are presented to be perturbed only by HMs with the hot property, and the 27 specific target protein molecules include PRKACA, PRKCA, PRKCB, PRKCD, PRKCE, PRKCG, PRKD1, TLR4, TLR7, TLR8, TLR9, HTR4, HTR6, HTR7, HTR2A, HTR1B, HTR2B, GNAO1, GNAI1, TNF, IL8, ROCK2, AKT1, MAPK1, RPS6KA1, RPS6KA3 and JAK2, which are involved in the biological network. One specific pathway is detected to be involved in the biological network of HMs with the cold property, the specific molecules are RAN and KPNB1. Cold propertied HMs show intensive toxicity in the heart, liver and kidney compared with hot HMs, which is likely to be correlated with the specific chemical fragments constructions in the HMs with the cold property, such as long chain alkenes, Benzo heterocycle and azotic heterocycle according to the chemical fragment analysis for the HMs.

Conclusions

Inflammation and immunity regulation are more related to HMs with the hot property, and cold propertied HMs possess the tendency to impact cell growth, proliferation and development. Integrative bioinformatics analysis and chemical structure analysis are a promising methods for identifying the biological activity of HM properties.

Understanding channel tropism in traditional Chinese medicine in the context of systems biology

http://link.springer.com/article/10.1007/s11684-013-0273-3

Frontiers of Medicine. 2013; 7(3): 277-279. By Ping Liu

Abstract

Channel tropism is investigated and developed through long-term clinical practice. In recent years, the development of channel tropism theory has attracted increasing attention. This study analyzed channel tropism theory and the problems associated with it. Results showed that this theory and systems biology have a similar holistic viewpoint. Systems biology could provide novel insights and platform in the study of channel tropism. Some problems in channel tropism theory, including pharmacology and action mechanism, were investigated.

Chinese Herbal Medicine for Osteoporosis: A Systematic Review of Randomized Controlled Trails

http://www.hindawi.com/journals/ecam/2013/356260
Evidence-Based Complementary and Alternative Medicine. Volume 2013 Article ID 356260, 11 pages

/by Zhi Qian Wang

Background. Osteoporosis is a major health problem for the elderly population. Chinese herb may be beneficial to osteoporosis due to its capability. Objectives. This study was designed to evaluate the effectiveness of Chinese medicine treatment on the patients with osteoporosis. Search Methods. Randomized controlled trials were retrieved from different 9 databases. Results. This meta analysis included 12 RCTs involving 1816 patients to compare Chinese herbs with placebo or standard anti-osteoporotic therapy in the treatment of bone loss. The pooled data showed that the percent change of increased BMD in the spine is higher with Chinese herb compared to placebo (lumber spine: WMD = 0.07, 95% CI: 0.01–0.04). In the femoral, Chinese herb showed significantly higher increments of BMD compared to placebo (femoral neck: WMD = 0.06, 95% CI: −0.02–0.13). Compared to the other standard anti-osteoporotic drugs, Chinese herbs also show advantage in BMD change (lumber spine: WMD = 0.03, 95% CI: −0.01–0.08; femoral: WMD = 0.01, 95% CI: −0.01–0.02). Conclusions. Our results demonstrated that Chinese herb significantly increased lumbar spine BMD as compared to the placebo or other standard anti-osteoporotic drugs.

Inhibition of ATP-Binding Cassette Transporters by Chinese Herbs and Phytochemicals

http://link.springer.com/chapter/10.1007/978-3-7091-0442-2_7#page-1

Evidence and Rational Based Research on Chinese Drugs 2013, pp 283-331 by Thomas Efferth

Abstract

The gene family of ATP-binding cassette (ABC) transporters is widely distributed over the evolutionary tree of life from bacteria to man. In cancer, several ABC transporters are involved in the transport of anticancer drugs. This leads to the development of resistance to a broad spectrum of anticancer agents, termed multidrug resistance. An attractive strategy to overcome multidrug resistance is to block the transport function of ABC transporters leading to lethal intracellular concentrations of anticancer drugs. Efforts to identify transport inhibitors lead to a huge amount of chemical substances, none of which successfully passed clinical trials in cancer patients because of high toxicity. The search of natural products from traditional Chinese medicine may be more promising because natural products frequently are less toxic than chemically synthesized xenobiotics. Here, we give an overview of ABC transporters involved in multidrug resistance of cancer as well as Chinese herbs and phytochemicals showing inhibitory activity towards ABC transporters.

Effect of Chinese herbs on immunoglobulin A nephropathy: a randomized controlled trial

http://www.sciencedirect.com/science/article/pii/S025462721360093X

Journal of Traditional Chinese Medicine 2013, 33(1): 9-14. By Wei Xia

Objective

The accumulation of extracellular matrix (ECM) is one of the main causes of renal fibrosis. Emerging evidence suggests that the metabolic enzyme of ECM is associated with renal fibrosis. In this study, we applied randomly controlled trial to check the curative effect of Chinese herbs on patients with immunoglobulin A nephropathy (IgAN).

Methods

Twenty-six patients were randomly divided into group A (control group) treated with Western Medicine and group B (treatment group) treated with combination of Traditional Chinese Medicine (TCM) and Western Medicine. Blood and urine tests were done before treatment and after 8-week treatment.

Results

The levels of the main composition of extracellular matrix (MC-ECM), the metabolic enzyme of ECM (ME-ECM) and some cytokines in group B decreased more obviously than those in group A after 8-week treatment. So did the level of 24-hour urine protein. However, Metal matrix protease (MMP)-2 and vascular endothelial growth factor in group B increased more obviously than those in group A after 8-week treatment. No effects on the renal function were found in both groups.

Conclusion

Our study provided important information on using the combination of TCM with Western Medicine to inhibit the progression of renal fibrosis in patients with IgAN.

Chinese herb formulae for treatment of erectile dysfunction: a systematic review of randomised controlled clinical trials

http://onlinelibrary.wiley.com/doi/10.1111/and.12074/abstract?deniedAccessCustomisedMessage=&userIsAuthenticated=false

Andrologia. Article first published online: 20 FEB 2013. By G.Xiong

To assess the beneficial and adverse effects of orally therapies of Chinese herb formulae (CHF) for erectile dysfunction (ED), four electronic databases were searched until 23 June 2012. Randomised clinical trials testing CHF or combined with Western medicine therapy (WMT) against placebo, another different CHF and WMT were included. Study selection, data extraction, assessing of bias risk and data analysis were conducted according to the Cochrane handbook. Twenty-one randomised controlled clinical trials (involving 2253 patients) were included, and the bias risks were not low. Funnel plots of comparing CHF to another CHF on the clinical comprehensive effectiveness were asymmetrical. The compositions of CHF used were greatly complex. The analyses showed that some CHF or combined with WMT had significant effects on cure rate, total clinical effective rates, IIEF-5 scores, erectile quality scores, erection angles of penis and recovery times of erection compared with the controls. Eight trials reported mild adverse drug reactions, mostly involving

gastrointestinal symptoms. It was concluded that some therapies of CHF may be more effective than the controls for treatment of ED. However, because of the generally not low risks of bias, CHF are not recommended for ED. Further research that demonstrates their mechanisms of action and meaningful efficacies must be carried out by rigorously designed, randomised controlled trials.

Aqueous extract of Bai-Hu-Tang, a classical Chinese herb formula, prevents excessive immune response and liver injury induced by LPS in rabbits

http://www.sciencedirect.com/science/article/pii/S0378874113004613
Journal of Ethnopharmacology. 2013; 149 (1): 321-327. by Shidong Zhang

Abstract
Ethnopharmacological relevance
Bai-Hu-Tang (BHT) was traditionally used to reduce fever heat and promote generation of body fluids.
Aim of the study
To investigate the effect and mechanism of BHT in the prevention of lipopolysaccharide (LPS) fever in manners of immune modulation.
Materials and methods
The model of fever syndrome of Chinese medicine pattern was imitated by LPS injection *i.v.* in rabbits, and BHT was gavaged. The serum levels of tumor necrosis factor-α (TNF-α), interleukin (IL-6, 10) and immunoglobulin (IgG, IgA, and IgM) were determined by enzyme-linked immunosorbent assay (ELISA); alanine aminotransferase (ALT) and aspartate aminotransferase (AST) were tested by biochemical methods. Liver tissue damage was detected by hematoxylin–eosin (H&E) stain. Subpopulation of T cells was detected by Fluorescence Activated Cell Sorter (FACS). Genes expression of Toll-like receptor 4 (TLR4) and lipopolysaccharide binding protein (LBP) in liver tissue were assayed by real-time polymerase chain reaction (RT-PCR).
Result
The results demonstrated that BHT prevented sudden increase of IL-10, TNF-α, ALT and AST, and liver damage induced by LPS. BHT also prevented significant decrease of the percentage of CD^{8+} T cells since LPS injection. At the same time, BHT did not affect the gene expression of TLR4 and serum concentration of three immunoglobulins, which were increased by LPS, but made gene expression of LBP higher.
Conclusion
The results of this study indicated that BHT played an important role in immunity protection and anti-injury through preventing immunoinflammatory damage by LPS. The achievement thereby scientifically provided mechanism of BHT in the prevention of febrile disease, and supported its traditional use.

The *HLJ1*-targeting drug screening identified Chinese herb andrographolide that can suppress tumour growth and invasion in non-small-cell lung cancer

http://carcin.oxfordjournals.org/content/34/5/1069.short
Oxford Journals Carcinogenesis (2013) 34 (5):1069-1080. By Yi-Hua Lai.

HLJ1 is a novel tumour suppressor and is a potential druggable target for non-small-cell lung cancer (NSCLC). In this report, using a promoter-containing enhancer region as the *HLJ1*-targeting drug-screening platform, we identified several herbal compounds from a Chinese herbal bank with the capacity to enhance *HLJ1* promoter activity and suppress tumour growth and invasion of NSCLC. Among the herbal drugs identified, the andrographolide (from *Andrographis paniculata [Burm. f.] Nees.*) most significantly induced HLJ1 expression and suppressed tumorigenesis both *in vitro* and *in vivo*. The andrographolide upregulates HLJ1 via JunB activation, which modulates AP-2α binding at the *MMP-2*promoter and represses the expression of MMP-2. In addition, silencing of HLJ1 partially reverses the inhibition of cancer-cell invasion by andrographolide. Microarray transcriptomic analysis was performed to comprehensively depict the andrographolide-regulated signalling pathways. We showed that andrographolide can affect 939 genes (analysis of variance, false discovery rate < 0.05) that are dominantly involved in the cell cycle, apoptosis and adhesion-related biological signalling, including mitogen-activated protein kinase, focal adhesion and tight junction pathways, indicating the diverse effects of andrographolide on anticancer invasion and proliferation. In conclusion, the *HLJ1*-targeting drug-screening platform is useful for screening of novel anticancer compounds. Using this platform, we identified andrographolide is a promising new anticancer agent that could suppress tumour growth and invasion in NSCLC.

Good luck in the year of horse !