英国中医药学会

The Association of Traditional Chinese Medicine and Acupuncture UK

TCM Research Updates

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Contents

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DNA Extraction Protocol for Biological Ingredient Analysis of LiuWei DiHuang Wan.

http://www.sciencedirect.com/science/article/pii/S167202291400045X

Genomics Proteomics Bioinformatics 2014; May 13. pii: S1672-0229. By Cheng X.

Abstract： Traditional Chinese medicine (TCM) preparations are widely used for healthcare and clinical practice. So far, the methods commonly used for quality evaluation of TCM preparations mainly focused on chemical ingredients. The biological ingredient analysis of TCM preparations is also important because TCM preparations usually contain both plant and animal ingredients, which often include some mis-identified herbal materials, adulterants or even some biological contaminants. For biological ingredient analysis, the efficiency of DNA extraction is an important factor which might affect the accuracy and reliability of identification. The component complexity in TCM preparations is high, and the DNA might be destroyed or degraded in different degrees after a series of processing procedures. Therefore, it is necessary to establish an effective protocol for DNA extraction from TCM preparations. In this study, we chose a classical TCM preparation, Liuwei Dihuang Wan (LDW), as an example to develop a TCM-specific DNA extraction method. An optimized CTAB method (TCM-CTAB) and three commonly-used extraction kits were tested for extraction of DNA from LDW samples. Experimental results indicated that DNA with the highest purity and concentration was obtained by using TCM-CTAB. To further evaluate the different extraction methods, amplification of the second internal transcribed spacer (ITS2) and the chloroplast genome trnL intron was carried out. The results have shown that PCR amplification was successful only with templates of DNA extracted by using TCM-CTAB. Moreover, we performed high-throughput 454 sequencing using DNA extracted by TCM-CTAB. Data analysis showed that 3~4 out of 6 prescribed species were detected from LDW samples, while up to 5 contaminating species were detected, suggesting TCM-CTAB method could facilitate follow-up DNA-based examination of TCM preparations.

Anticancer Activities of Polyynes from the Root Bark of *Oplopanax horridus* and Their Acetylated Derivatives

http://www.mdpi.com/1420-3049/19/5/6142

Molecules **2014**, *19*(5), 6142-6162. By Wei-Hua Huang

Abstract: Six polyynes **OH-1~6**, some of which are occur naturally in acetylated form, had been isolated and identified from the root bark of*Oplopanax horridus* (Devil's Club), a natural dietary supplement and medicinal plant in North America. During the evaluation of the polyynes' potential anticancer activities, sixteen more acetylated derivatives **OHR-1~16** have synthesized and their anti-proliferation activity on MCF-7, MDA-MB-231, A549, HepG2 and LO2 cells assayed to elucidate their structure-activity relationships. The results showed that **OH-1** ((3*S*, 8*S*)-falcarindiol) had the most potent anticancer activity, with IC_{50} values of 15.3, 23.5, 7.7 and 4.7 μM on MCF-7, A549, HepG2 and MDA-MB-231 cells, respectively. For the primary structure-activity relationship, the anticancer activities of polyynes become weaker if their hydroxyl groups are acetylated, the terminal double bonds transformed into single bonds or they contain one more methylene group in the main skeleton chain.

Si-jun-zi decoction treatment promotes the restoration of intestinal function after obstruction by regulating intestinal homeostasis.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4020469/
Evidence-Based Complementary and Alternative Medicine. 2014; 928579 Apr. 28 . By Yu X

Abstract : Intestinal obstruction is a common disease requiring abdominal surgery with significant morbidity and mortality. Currently, an effective medical treatment for obstruction, other than surgical resection or decompression, does not exist. Si-Jun-Zi Decoction is a famous Chinese medicine used to replenish qi and invigorate the functions of the spleen. Modern pharmacological studies show that this prescription can improve gastrointestinal function and strengthen immune function. In this study, we investigated the effects of a famous Chinese herbal formula, Si-Jun-Zi Decoction, on the restoration of intestinal function after the relief of obstruction in a rabbit model. We found that Si-Jun-Zi Decoction could reduce intestinal mucosal injury while promoting the recovery of the small intestine. Further, Si-Jun-Zi Decoction could regulate the intestinal immune system. Our results suggest that Si-Jun-Zi Decoction promotes the restoration of intestinal function after obstruction by regulating intestinal homeostasis. Our observations indicate that Si-Jun-Zi Decoction is potentially a therapeutic drug for intestinal obstruction.

Quality Control of Danggui Buxue Tang, a Traditional Chinese Medicine Decoction, by (1)H-NMR Metabolic Profiling.

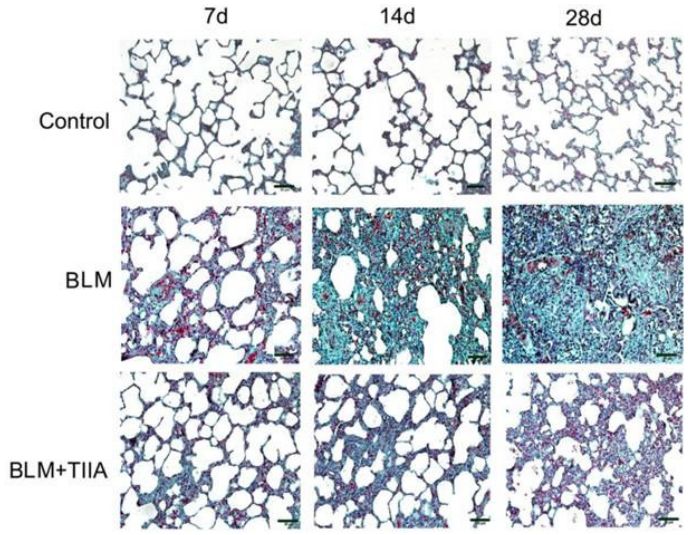
http://www.hindawi.com/journals/ecam/2014/567893/
Evidence-Based Complementary and Alternative Medicine
Volume 2014 (2014), Article ID 567893, 8 pages. By Pui Hei Zhan

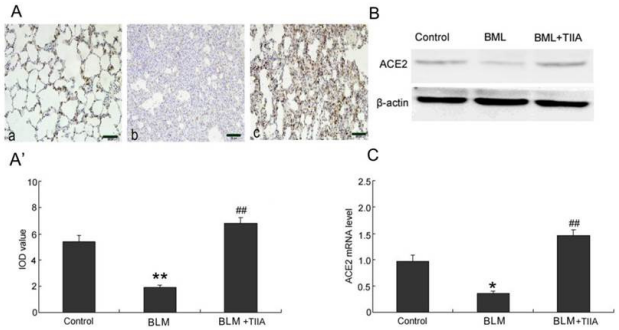
Danggui Buxue Tang (DBT) is one of the simplest traditional Chinese medicine (TCM) decoctions, first described in China in 1247 AD. DBT is composed of 2 herbs, Astragali Radix (AR) and Angelica Sinensis Radix (ASR), boiled together in a 5□:□1 ratio. Clinically, DBT is prescribed to women as a remedy for menopausal symptoms. Here, -NMR metabolic profiling was conducted for DBT and the water extracts of AR or ASR, to evaluate the potential of this chemical profiling method for quality control of the herbal decoction. Principal component analysis (PCA) showed that DBT could be readily distinguished from the water extracts of its constituent herbs by the metabolic profiles. More interestingly, the metabolic profile of DBT was not a simple sum of that of AR and ASR. Asparagine was found at significantly higher concentration in DBT than that in either AR or ASR extract, contributing mainly to the discrimination of DBT sample. In addition, we employed the same method to profile a commercial DBT powder, verifying its authenticity as compared to our prepared DBT. This study is the first to employ -NMR metabolic profiling for the quality control of traditional Chinese medicine decoctions.

Tanshinone IIA Attenuates Bleomycin-Induced Pulmonary Fibrosis via Modulating Angiotensin-Converting Enzyme 2/ Angiotensin-(1-7) Axis in Rats

http://www.medsci.org/v11p0578.htm
Int J Med Sci 2014; 11(6):578-586. By Huajie Wu

Abstract:
Pulmonary fibrosis (PF) is a common complication in those interstitial lung diseases patients, which will result in poor prognosis and short survival. Traditional therapeutic methods such as glucocorticoid and cytotoxic drugs are insufficient for treating PF and may cause severe side effects. Recent studies showed that traditional Chinese herbal abstraction such as Tanshinone IIA (TIIA) was displayed significant anti-PF effects in animal models. However, the exact mechanisms underlying the protective effects of TIIA were not fully understood. Here we further investigated the protective effects of TIIA and its mechanisms underlying. PF models of rat were induced by bleomycin (BLM); TIIA was administered subsequently. The PF changes were identified by histopathological analyses. The results showed that BLM resulted in severe PF and alveolar inflammation; together with significant elevation of transforming growth factor-β 1 (TGF-β1). Angiotensin-converting enzyme 2 (ACE-2) together with angiotensin-(1-7) [ANG-(1-7)] were both greatly reduced after BLM administration. TIIA treatment notably attenuated BLM induced PF and inflammation, decreased expression of TGF-β1 and reversed ACE-2 and ANG-(1-7) production in rat lungs. Thus we may draw the conclusion that TIIA may exert protective effects on BLM induced PF in rats, and the ACE-2/ANG-(1-7) axis may ascribe to those protective effects.





A systems biology-based investigation into the therapeutic effects of Gansui Banxia Tang on reversing the imbalanced network of hepatocellular carcinoma.

http://www.nature.com/srep/2014/140224/srep04154/full/srep04154.html
Sci. Rep. 2014 Feb. 24,4, 4154. By Yanqing Zhang.

Abstract: Several complex molecular events are involved in tumorigenesis of hepatocellular carcinoma (HCC). The interactions of these molecules may constitute the HCC imbalanced network. Gansui Banxia Tang (GSBXT), as a classic Chinese herbal formula, is a popular complementary and alternative medicine modality for treating HCC. In order to investigate the therapeutic effects and the pharmacological mechanisms of GSBXT on reversing HCC imbalanced network, we in the current study developed a comprehensive systems approach of integrating disease-specific and drug-specific networks, and successfully revealed the relationships of the ingredients in GSBXT with their putative targets, and with HCC significant molecules and HCC related pathway systems for the first time. Meanwhile, further experimental validation also demonstrated the preventive effects of GSBXT on tumor growth in mice and its regulatory effects on potential targets.

Determination of bioactive components in Chinese herbal formulae and pharmacokinetics of rhein in rats by UPLC-MS/MS.

http://www.mdpi.com/1420-3049/19/4/4058

Molecules 2014, *19*(4), 4058-4075 . By Mei-Ling Hou

Abstract: Rhein (4,5-dihydroxy-9,10-dioxoanthracene-2-carboxylic acid, cassic acid) is a pharmacological active component found in *Rheum palmatum* L. the major herb of San-Huang-Xie-Xin-Tang (SHXXT), a medicinal herbal product used as a remedy for constipation. Here we have determined multiple bioactive components in SHXXT and investigated the comparative pharmacokinetics of rhein in rats. A sensitive and specific method combining liquid chromatography with electrospray ionization tandem mass spectrometry has been developed and validated to simultaneously quantify six active compounds in the pharmaceutical herbal product SHXXT to further study their pharmacokinetics in rats. Multiple reaction monitoring (MRM) was employed for quantification with switching electrospray ion source polarity between positive and negative modes in a single run. There were no significant matrix effects in the quantitative analysis and the mean recovery for rhein in rat plasma was 91.6% ± 3.4%. The pharmacokinetic data of rhein demonstrate that the herbal formulae or the single herbal extract provide significantly higher absorption rate than the pure compound. This phenomenon suggests that the other herbal ingredients of SHXXT and rhubarb extract significantly enhance the absorption of rhein in rats. In conclusion, the herbal formulae (SHXXT) are more efficient than the single herb (rhubarb) or the pure compound (rhein) in rhein absorption.

Non-aristolochic acid prescribed Chinese herbal medicines and the risk of mortality in patients with chronic kidney disease: results from a population-based follow-up study

http://bmjopen.bmj.com/content/4/2/e004033.long
BMJ Open 2014;4:e004033 . By Chuan Fa Hsieh

Abstract

OBJECTIVES:
To evaluate the relationship between the use of non-aristolochic acid (AA) prescribed Chineseherbal medicines (CHMs) and the risk of mortality in patients with chronic kidney disease (CKD).

DESIGN:

Nationwide population-based follow-up study.

SETTING:

Longitudinal health insurance database sampled from the Taiwan National Health Insurance Research Database.

PARTICIPANTS:

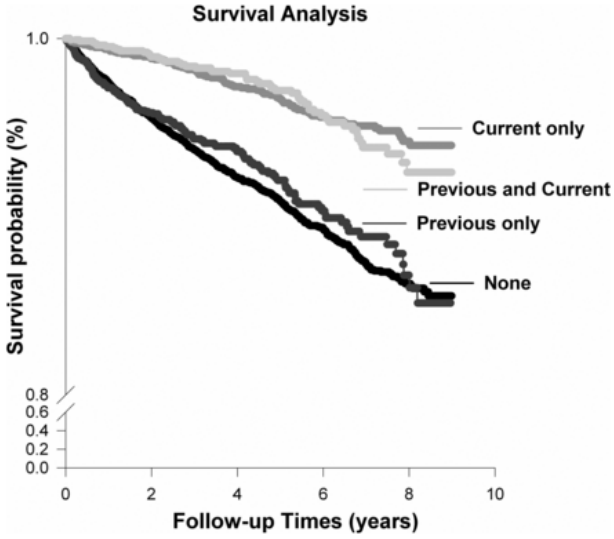
A total of 47 876 patients with CKD were identified. Participants who had ever used AA-containing CHMs, had cancer or HIV prior to the diagnosis of CKD, died within the first month of CKD diagnosis and who were not Taiwanese citizens were excluded. A total of 13 864 participants were eligible for final analysis.

PRIMARY AND SECONDARY OUTCOME MEASURES:

All-cause mortality among patients with CKD between 2000 and 2008.

RESULTS:

After controlling for potential confounders, we found that participants who started to receive non-AA prescribed CHMs after the diagnosis of CKD had a lower risk of mortality as compared with non-users of non-AA prescribed CHMs (adjusted HR (aHR) 0.6; 95% CI 0.4 to 0.7, p<0.001). Moreover, participants who had used non-AA prescribed CHMs prior to and after the diagnosis of CKD also had a lower risk of mortality than non-users (aHR 0.6; 95% CI 0.5 to 0.8, p<0.001). In subgroup analyses, we found that such an inverse association was present only among patients who were not eligible to receive erythropoietin therapy (ie, serum creatinine ≦6 mg/dL and/or haematocrit value ≧28%).



CONCLUSIONS:

Patients who received non-AA prescribed CHMs after the diagnosis of CKD, yet before the start of erythropoietin therapy had a lower risk of mortality than those who did not.

Impact of Chinese Herbal Medicine on American Society and Health Care System: Perspective and Concern.

http://www.hindawi.com/journals/ecam/2014/251891/
Evidence-Based Complementary and Alternative Medicine
Volume 2014 (2014), Article ID 251891, 6 pages. By Winston I Lu

Abstract:
Many Americans, not completely satisfied with traditional western medicine, have turned to alternative and complementary medicine which explains the increasing popularity of the herbal products and the Chinese herbal medicine. The lack of government regulations and the increasing advertisements by the manufactures have created an impression to the common public that the natural herbal remedies are inherently safer and cheaper than conventional medicine. The skyrocketing rise of healthcare cost and the adverse reaction and side effects incurred from the prescribed drugs have both reinforced such an impression. Herbs in the USA and in many European countries have been prepared as capsules, tablets, teas, lozenges, juice extracts, tincture, and ointments. Most of the herbs are administered as a single herb in the USA and Europe. However, the traditional Chinese herbal medicine contains multiple active ingredients from various herbs and is prepared as concoctions by simmering them for hours to produce pharma-therapeutic properties useful for the treatment of a particular disease. Those prepared concoctions are taken gingerly with specific treatment purposes. In the USA and some European counties, herbs are distributed and labeled as dietary supplements and are taken by many individuals for a long period of time creating some medical and dental complex problems among them, especially in terms of anesthesia-surgery complications. This paper provides insight into basic differences in how herbs are prepared before administration to the patients in China versus a single unprepared herb sold in the USA and Europe. Also addressed are the interdisciplinary issues with health professionals, the proper regulations for better quality control of imported herbs, and the proper warning on the labels of the herbs.