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Contents

Daesiho-Tang Is an Effective Herbal Formulation in Attenuation of Obesity in Mice through Alteration of Gene Expression and Modulation of Intestinal Microbiota.

https://www.ncbi.nlm.nih.gov/pubmed/27812119
PLoS One. 2016 Nov 3;11(11):e0165483. doi: 10.1371/journal.pone.0165483.
By Hussain A, Yadav MK, Bose S, Wang JH, Lim D, Song YK, et al.,

Abstract

BACKGROUND:

Obesity has become a major global health challenge due to its increasing prevalence, and the associated health risk. It is the main cause of various metabolic diseases including diabetes, hypertension, cardiovascular disease, stroke and certain forms of cancer.

METHODS AND RESULTS:

In the present study we evaluated the anti-obesity property of Daesiho-tang (DSHT), an herbal medicine, using high fat diet (HFD)-induced obese mice as a model. Our results showed that DSHT ameliorated body weight gain, decreased total body fat, regulated expression of leptin and adiponectin genes of adipose tissue and exerted an anti-diabetic effect by attenuating fasting glucose level and serum insulin level in HFD-fed animals. In addition, DSHT-treatment significantly reduced total cholesterol (TC), triglycerides (TG) and increased high density lipoprotein-cholesterol (HDL), glutamic pyruvic transaminase (GPT) and glutamic oxaloacetic transaminase (GOT) levels in serum and reduced deposition of fat droplets in liver. DSHT treatment resulted in significantly increased relative abundance of bacteria including Bacteroidetes, Bacteroidetes/Firmicutes ratio, Akkermansia Bifidobacterium., Lactobacillus, and decreased the level of Firmicutes. Using RT2 profiler PCR array, 39 (46%) genes were found to be differentially expressed in HFD-fed mice compared to normal control. However, normal gene expressions were restored in 36 (92%) genes of HFD-fed mice, when co-exposed to DSHT.

CONCLUSION/MAJOR FINDINGS:

The results of this study demonstrated that DSHT is an effective herbalformulation in attenuation of obesity in HFD-fed mice through alteration of gene expressions and modulation of intestinal microbiota.

A Chinese Herbal Decoction, Shaoyao-Gancao Tang, Exerts Analgesic Effect by Down-Regulating the TRPV1 Channel in a Rat Model of Arthritic Pain.

https://www.ncbi.nlm.nih.gov/pubmed/27785943
Am J Chin Med. 2016;44(7):1363-1378. Epub 2016 Oct 27.
By Sui F, Zhou HY, Meng J, Du XL, Sui YP, Zhou ZK, et al.,

Abstract

Shaoyao-Gancao Tang (SGT) is one of the most frequently used compound formulas in the treatment of pain-related diseases in the medical practice of traditional Chinese medicine (TCM). To investigate the anti-inflammatory and antinociceptive effects, as well as to uncover the molecular mechanism of SGT, the rat pain model of arthritis was experimentally induced by single unilateral injection of rats' left hind paw with Freund's complete adjuvant (FCA). SGT was orally administered to the rats daily at three doses individually for a period of 16 days post-model induction. Swollen degrees and pain thresholds of the rats in different groups were measured for evaluation of the anti-inflammatory and anti-nociceptive effects of SGT. Furthermore, the mRNA and protein expression levels of transient receptor potential ion channel protein vanilloid receptor 1 (TRPV1) channel as well as its calcium-mediating function in the isolated DRG neurons were further detected to provide indexes for exploration of the molecular mechanisms mediating anti-arthritic activities of SGT. As a result, FCA injection induced significant allodynia, inflammation and edema, accompanied by a significant increase in both expression and calcium-mediating function of the TRPV1 channel. Pharmacologically, oral administration of SGT at a high or middle dose demonstrated a significant relief from the above-mentioned pathological conditions in a dose-dependent manner. Simultaneously the mRNA and protein expressional levels of TRPV1 channel, as well as its calcium-mediating function, were down-regulated greatly. These findings suggest that SGT possesses a significant analgesic and anti-inflammatory effect on arthritis rats; its therapeutic activities might be achieved through reversing the elevated expression and function of TRPV1 channel evoked by FCA.

Yi Ai Fang, a traditional Chinese herbal formula, impacts the vasculogenic mimicry formation of human colorectal cancer through HIF-1α and epithelial mesenchymal transition.

https://www.ncbi.nlm.nih.gov/pubmed/27806701
BMC Complement Altern Med. 2016 Nov 2;16(1):428.
By Hou F, Li W, Shi Q, Li H, Liu S, Zong S, et al.,

Abstract

BACKGROUND:

Yi Ai Fang (YAF), a traditional Chinese medicine (TCM) formula, has been identified to have anticancer activity in our previously studies. The present study aimed to explore the potential mechanism of YAF suppression of VM on colorectal cancer (CRC) in vitro and in vivo.

METHODS:

Cell viability was measured by CCK-8 assay. HIF-1α, E-cd(E-cadherin), Claudin-4, and VIM (Vimentin) expressions level in vitro were evaluated by Western blot or RT-PCR. In addition, Human CRC HCT-116 cells were implanted in BALB/c nude mice; mice with xenografted tumors were randomly administrated vehicle (control), 8, 16, or 32 mg/mL YAF, or 1 mg/mL fluorouracil (5-FU). HIF-1α, E-cd, Claudin-4, and VIM expression in these tumors were determined by IHC.

RESULTS:

YAF effectively inhibited the growth and the formation of vasculogenic mimicry (VM) of CRC cells in a dose-dependent trend. YAF restrained the formation of vasculogenic mimicry(VM) through HIF-1α/EMT pathway in CRC. YAF suppressed VM was triggered by activation of E-cd and Claudin-4,which are characteristics of endothelial cells,and inhibition of HIF-1α and VIM in vitro. In vivo data showed that YAF remarkably inhibited growth of the xenografted tumors. The YAF-treated tumor samples were analyzed by IHC for levels of HIF-1α/EMT related proteins HIF-1α, E-cd, Claudin-4, and VIM. The results indicated that YAF significantly enhanced expression of E-cd and Claudin-4,but decreased expression of HIF-1α, VIM in a dose-dependent manner.

CONCLUSIONS:

In conclusion, this study provided the first direct evidence that YAF inhibited the formation of VM in human CRC, suggesting that YAF may be considered as a useful target for cancer therapy.

Pharmacological Effects of Active Components of Chinese Herbal Medicine in the Treatment of Alzheimer's Disease: A Review.

https://www.ncbi.nlm.nih.gov/pubmed/27848250
Am J Chin Med. 2016 Nov 16:1-17. [Epub ahead of print]
By Wang ZY, Liu JG, Li H, Yang HM.

Abstract

Alzheimer's disease (AD), the most common neurodegenerative disorder associated with dementia, not only severely decreases the quality of life for its victims, but also brings a heavy economic burden to the family and society. Unfortunately, few chemical drugs designed for clinical applications have reached the expected preventive or therapeutic effect so far, and combined with their significant side-effects, there is therefore an urgent need for new strategies to be developed for AD treatment. Traditional Chinese Medicine has accumulated many experiences in the treatment of dementia during thousands of years of practice; modern pharmacological studies have confirmed the therapeutic effects of many active components derived from Chinese herbalmedicines (CHM). Ginsenoside Rg1, extracted from Radix Ginseng, exerts a [Formula: see text]-secretase inhibitor effect so as to decrease A[Formula: see text] aggregation. It can also inhibit the apoptosis of neuron cells. Tanshinone IIA, extracted from Radix Salviae miltiorrhizae, and baicalin, extracted from Radix Scutellariae[Formula: see text] can inhibit the oxidative stress injury in neuronal cells. Icariin, extracted from Epimedium brevicornum, can decrease A[Formula: see text] levels and the hyperphosphorylation of tau protein, and can also inhibit oxidative stress and apoptosis. Huperzine A, extracted from Huperzia serrata, exerts a cholinesterase inhibitor effect. Evodiamine, extracted from Fructus Evodiae, and curcumin, extracted from Rhizoma Curcumae Longae, exert anti-inflammatory actions. Curcumin can act on A[Formula: see text] and tau too. Due to the advantages of multi-target effects and fewer side effects, Chinese medicine is more appropriate for long-term use. In this present review, the pharmacological effects of commonly used active components derived from Chinese herbal medicines in the treatment of AD are discussed.

Antitussive, anti-pyretic and toxicological evaluation of Ma-Xing-Gan-Shi-Tang in rodents.

https://www.ncbi.nlm.nih.gov/pubmed/27832784
BMC Complement Altern Med. 2016 Nov 10;16(1):456.
By Lin YC, Chang CW, Wu CR.

Abstract

BACKGROUND:

Ma-Xing-Gan-Shi-Tang (abbreviated as MXGST), an important Chinese herbal prescribed for cough, bronchial inflammation and fever from pneumonia, consists of four medicinal herbs, including Ephedrae herb, Semen Pruni Armeniacae, licorice and Gypsum. These components, especially Ephedrae and Semen Pruni Armeniacae, possess antitussive activities, but they have severe adverse effects.

METHODS:

The pharmacological activities of MXGST extract in clinical use were investigated with citric acid-induced cough, acetylcholine/histamine-induced bronchial contraction and lipopolysaccharide (LPS)-induced fever in rodents. The subacute toxicology of MXGST extract was evaluated after a 28-day repeated oral administration in rats.

RESULTS:

Each gram of MXGST extract contained 60 ± 8 μg of ephedrine, 480 ± 40 μg of glycyrrhizic acid and 440 ± 8 μg of amygdalin according to high performance liquid chromatography and a photodiode array detector. MXGST extract produced pronounced, dose-dependent antitussive effects in guinea pigs and reduced hyperthermic syndrome induced by LPS in rats. MXGST extract blocked the bronchial contraction induced by acetylcholine/histamine. Oral administration of MXGST extract for 28 days did not cause any hematological, biochemical or histological changes in rats.

CONCLUSIONS:

MXGST extract is a safer, more effective Chinese prescription with antitussive and anti-pyretic effects. The antitussive mechanism of MXGST is related to partially relaxing the bronchial smooth muscle by blocking acetylcholinergic and histaminergic receptors.

Neuroprotective effect of a novel Chinese herbal decoction on cultured neurons and cerebral ischemic rats.

https://www.ncbi.nlm.nih.gov/pubmed/27814708
BMC Complement Altern Med. 2016 Nov 4;16(1):437.
By Ip FC, Zhao YM, Chan KW, Cheng EY, Tong EP, Chandrashekar O, et al.,

Abstract

BACKGROUND:

Historically, traditional Chinese medicine has been widely used to treat stroke. Based on the theory of Chinese medicine and the modern pharmacological knowledge of herbal medicines, we have designed a neuroprotective formula called Post-Stroke Rehabilitation (PSR), comprising seven herbs - Astragalus membranaceus (Fisch.) Bunge, Salvia miltiorrhiza Bunge, Paeonia lactiflora Pall., Cassia obtusifolia L., Ligusticum chuanxiong Hort., Angelica sinensis (Oliv.) Diels, and Glycyrrhiza uralensis Fisch. We aim to examine the neuroprotective activity of PSR in vitro and in vivo, and to explore the underlying molecular mechanisms, to better understand its therapeutic effect and to further optimize its efficacy.

METHODS:

PSR extract or vehicle was applied to primary rat neurons to examine their survival effects against N-methyl-D-aspartate (NMDA)-elicited excitotoxicity. Whole-cell patch-clamp recording was conducted to examine the NMDA-induced current in the presence of PSR. ERK- and CREB-activation were revealed by western blot analysis. Furthermore, PSR was tested for CRE promoter activation in neurons transfected with a luciferase reporter. The protective effect of PSR was then studied in the rat middle cerebral artery occlusion (MCAO) model. MCAO rats were either treated with PSR extract or vehicle, and their neurobehavioral deficit and cerebral infarct were evaluated. Statistical differences were analyzed by ANOVA or t-test.

RESULTS:

PSR prominently reduced the death of cultured neurons caused by NMDA excitotoxicity in a dose-dependent manner, indicating its neuroprotective property. Furthermore, PSR significantly reduced NMDA-evoked current reversibly and activated phosphorylation of ERK and CREB with distinct time courses, with the latter's kinetics slower. PSR also triggered CRE-promoter activity as revealed by the increased expression

of luciferase reporter in transfected neurons. PSR effectively reduced cerebral infarct and deficit in neurological behavior in MCAO rats when PSR decoction was administered starting either 6 days before or 6 h after onset of ischemia.

CONCLUSIONS:

PSR is neuroprotective both in vitro and in vivo - it protects cultured neurons against NMDA excitotoxicity, and effectively reduces ischemic injury and neurobehavioral deficit in MCAO rats in both the pre- and post-treatment regimens. The underlying neuroprotective mechanisms may involve inhibition of NMDA receptor current and activation of ERK and CREB. This study provides important preclinical data necessary for the further development of PSR for stroke treatment.

Peony-Glycyrrhiza Decoction for Antipsychotic-Related Hyperprolactinemia in Women With Schizophrenia: A Randomized Controlled Trial.

https://www.ncbi.nlm.nih.gov/pubmed/27755159
J Clin Psychopharmacol. 2016 Dec;36(6):572-579.
By Man SC, Li XB, Wang HH, Yuan HN, Wang HN, Zhang RG, et al.,

Abstract

OBJECTIVES:

An herbal preparation called peony-glycyrrhiza decoction (PGD) may have the potential in reducing antipsychotic-related hyperprolactinemia (hyperPRL). This double-blind, randomized placebo-controlled study aimed to reevaluate the efficacy of PGD against antipsychotic-related hyperPRL.

METHODS:

Ninety-nine schizophrenic women who were under antipsychotic therapy and had symptomatic hyperPRL were randomly assigned to additional treatment with placebo (n = 50) or PGD (n = 49, 45 g/d) for 16 weeks. The severity of hyperPRL, psychosis, and abnormal involuntary movements was assessed at baseline and weeks 8 and 16 using standard instruments including the Prolactin Related Adverse Event Questionnaire. Blood levels of prolactin (PRL) and related pituitary and sex hormones were measured at the same time points.

RESULTS:

Peony-glycyrrhiza decoction treatment produced a significantly greater reduction of the Prolactin Related Adverse Event Questionnaire score at

weeks 8 and 16 and a greater improvement on abnormal involuntary movements at end point compared with placebo, without altering the severity of psychosis.
The group treated with PGD showed significantly higher proportion of having overall improvement on hyperPRL symptoms ($\chi = 4.010$, $P = 0.045$) and menstrual resumption ($\chi = 4.549$, $P = 0.033$) at week 8 than placebo. Serum PRL levels were similar in the 2 groups.

CONCLUSIONS:

Peony-glycyrrhiza decoction is effective in reducing antipsychotic-related hyperPRL and abnormal involuntary movement symptoms, but no reduction in blood PRL concentrations was observed. The underlying mechanisms of PGD's effects need further investigation (trial registration of NCT01852331 at www.clinicaltrials.gov).

Gastrodin protects against chronic inflammatory pain by inhibiting spinal synaptic potentiation.

https://www.ncbi.nlm.nih.gov/pubmed/27853254
Sci Rep. 2016 Nov 17;6:37251. doi: 10.1038/srep37251.
By Xiao MM, Zhang YQ, Wang WT, Han WJ, Lin Z, Xie RG, et al.,

Abstract

Tissue injury is known to produce inflammation and pain. Synaptic potentiation between peripheral nociceptors and spinal lamina I neurons has been proposed to serve as a trigger for chronic inflammatory pain. Gastrodin is a main bioactive constituent of the traditional Chinese herbal medicine Gastrodia elata Blume, which has been widely used as an analgesic since ancient times. However, its underlying cellular mechanisms have remained elusive. The present study demonstrated for the first time that gastrodin exhibits an analgesic effect at the spinal level on spontaneous pain, mechanical and thermal pain hypersensitivity induced by peripheral inflammation, which is not dependent on opioid receptors and without tolerance. This analgesia by gastrodin is at least in part mediated by depressing spinal synaptic potentiation via blockade of acid-sensing ion channels. Further studies with miniature EPSCs and paired-pulse ratio analysis revealed the presynaptic

origin of the action of gastrodin, which involves a decrease in transmitter release probability. In contrast, neither basal nociception nor basal synaptic transmission was altered. This study revealed a dramatic analgesic action of gastrodin on inflammatory pain and uncovered a novel spinal mechanism that could underlie the analgesia by gastrodin, pointing the way to a new analgesic for treating chronic inflammatory pain.

Ferulic Acid Orchestrates Anti-Oxidative Properties of Danggui Buxue Tang, an Ancient Herbal Decoction: Elucidation by Chemical Knock-Out Approach.

https://www.ncbi.nlm.nih.gov/pubmed/27824860
PLoS One. 2016 Nov 8;11(11):e0165486. doi: 10.1371/journal.pone.0165486.
By Gong AG, Huang VY, Wang HY, Lin HQ, Dong TT, Tsim KW.

Abstract

Ferulic acid, a phenolic acid derived mainly from a Chinese herb Angelica Sinensis Radix (ASR), was reported to reduce the formation of free radicals. Danggui Buxue Tang (DBT), a herbal decoction composing of Astragali Radix (AR) and ASR, has been utilized for more than 800 years in China having known anti-oxidative property. Ferulic acid is a major active ingredient in DBT; however, the role of ferulic acid within the herbal mixture has not been resolved. In order to elucidate the function of ferulic acid within this herbal decoction, a ferulic acid-depleted herbal decoction was created and named as DBTΔfa. The anti-oxidative properties of chemically modified DBT decoction were systemically compared in cultured H9C2 rat cardiomyoblast cell line. The application of DBT and DBTΔfa into the cultures showed functions in (i) decreasing the reactive oxygen species (ROS) formation, detected by laser confocal; (ii) increasing of the activation of Akt; (iii) increasing the transcriptional activity of anti-oxidant response element (ARE); and (iv) increasing the expressions of anti-oxidant enzymes, i.e. NQO1 and GCLM. In all scenario, the aforementioned anti-oxidative properties of DBTΔfa in H9C2 cells were significantly reduced, as compared to authentic DBT. Thus, ferulic acid could be an indispensable chemical in DBT to orchestrate multi-components of DBT as to achieve maximal anti-oxidative.

Tanshinone IIA combined with adriamycin inhibited malignant biological behaviors of NSCLC A549 cell line in a synergistic way.

https://www.ncbi.nlm.nih.gov/pubmed/27863471
BMC Cancer. 2016 Nov 18;16(1):899.
By Xie J, Liu JH, Liu H, Liao XZ, Chen Y, Lin MG, et al.,

Abstract

BACKGROUND:

The study was designed to develop a platform to verify whether the extract of herbs combined with chemotherapy drugs play a synergistic role in anti-tumor effects, and to provide experimental evidence and theoretical reference for finding new effective sensitizers.

METHODS:

Inhibition of tanshinone IIA and adriamycin on the proliferation of A549, PC9 and HLF cells were assessed by CCK8 assays. The combination index (CI) was calculated with the Chou-Talalay method, based on the median-effect principle. Migration and invasion ability of A549 cells were determined by wound healing assay and transwell assay. Flow cytometry was used to detect the cell apoptosis and the distribution of cell cycles. TUNEL staining was used to detect the apoptotic cells. Immunofluorescence staining was used to detect the expression of Cleaved Caspase-3. Western blotting was used to detect the proteins expression of relative apoptotic signal pathways. CDOCKER module in DS 2.5 was used to detect the binding modes of the drugs and the proteins.

RESULTS:

Both tanshinone IIA and adriamycin could inhibit the growth of A549, PC9, and HLF cells in a dose- and time-dependent manner, while the proliferative inhibition effect of tanshinone IIA on cells was much weaker than that of adriamycin. Different from the cancer cells, HLF cells displayed a stronger sensitivity to adriamycin, and a weaker sensitivity to tanshinone IIA. When tanshinone IIA combined with adriamycin at a ratio of 20:1, they exhibited a synergistic anti-proliferation effect on A549 and PC9 cells, but not in HLF cells. Tanshinone IIA combined with adriamycin could synergistically inhibit migration, induce apoptosis and arrest cell cycle at the S and G2 phases in A549 cells. Both groups of the single drug treatment and the drug combination up-regulated the expressions of Cleaved Caspase-3 and Bax, but down-regulated the expressions of VEGF, VEGFR2, p-

PI3K, p-Akt, Bcl-2, and Caspase-3 protein. Compared with the single drug treatment groups, the drug combination groups were more statistically significant. The molecular docking algorithms indicated that tanshinone IIA could be docked into the active sites of all the tested proteins with H-bond and aromatic interactions, compared with that of adriamycin.

CONCLUSIONS:

Tanshinone IIA can be developed as a novel agent in the postoperative adjuvant therapy combined with other anti-tumor agents, and improve the sensibility of chemotherapeutics for non-small cell lung cancer with fewer side effects. In addition, this experiment can not only provide a reference for the development of more effective anti-
tumor medicine ingredients, but also build a platform for evaluating the anti-tumor effects
of Chinese herbal medicines in combination with chemotherapy drugs.

Research Committee wishing all ATCM members

A Merry Christmas & Happy New Year!