Study on the Modern Application of Schisandra Chinensis

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Abstract. This paper analyzes the chemical, pharmacological and application characteristics of Schisandra chinensis, and provides a way for comprehensive utilization of Schisandra chinensis. To summarize the existing experimental and clinical research of Schisandra chinensis, analysis of the characteristics of Schisandra, comprehensive utilization of Schisandra way. The main chemical constituents of Schisandra chinensis, lignans, polysaccharide, volatile oil, Triterpenes, organic acids, amino acids and inorganic elements. It has the advantages of increasing central nervousness, enhancing immunity, cardiovascular system tension and cardiac contractility, and reducing the pharmacological effects of serum alanine aminotransferase (ALT) activity in patients with viral hepatitis. Schisandra has a high medicinal value, its active ingredients in-depth development of research, in particular, the tumor is expected to find active compounds or innovative drugs, for the development of Schisandra food, health products, also has broad prospects.

Introduction

Schisandra chinensis is the dried ripe fruit of Schisandra chinensis in the magnolia plant. The main production in the northeast, North China, Hubei, Hunan, Jiangxi, Sichuan and other places [1]. Schisandra has the effect of convergence Guse, tonifying qi and promoting blood circulation, tonifying kidney and heart[2]. Commonly used in the treatment of long coughing virtual asthma, dream slippery, injury and thirst, palpitation and insomnia and other symptoms. Schisandra was first contained in the “Shen Nong’s herbal classic”. In the “Master Lei’s Discourseon Drug Processing”“Where (Schisandra) with copper knife split two pieces, with honey soak steamed from si to shen, but in two places with slurry leaching, drying". Chinese Pharmacopoeia contained in the efficacy of Schisandra is astringent, Yiqi Bushen Ningxin. The chemical constituents of Schisandra chinensis are rich in lignans, polysaccharides, volatile oil, terpenes, organic acids, amino acids and inorganic elements, the main component is lignans, accounting for about 8%.2015 version of the “Chinese Pharmacopoeia” provides that, fructus schisandrae chinensis contains not less than 0.40%.Modern pharmacological studies Schisandra has increased central nervousness, enhanced immunity, cardiovascular system tension and cardiac contractility. Schisandra also has analgesic, stable, lipid-lowering, lowering enzymes and other functions, and can promote cardiac activity and respiration, the cerebral cortex of the excitatory and inhibitory process also has an impact. In order to further discuss the future research of Schisandra chinensis, This paper made a systematic analysis of the chemical constituents, pharmacological effects, clinical and therapeutic application.
Chemical Composition

Lignans

Lignans are the main components of Schisandra chinensis. The nuclei of this element are mostly biphenyl cyclooctane type, and most of them are chiral differences. Mainly include Schisandrin, the new Schisandrin, Schisandra ester A, Schisandra B, Schisandrin, Schisandrin B and so on [3].

Polysaccharides

Water extraction and alcohol precipitation method schisandra was used to extract polysaccharides, butanol and chloroform to remove protein.0.1% activated carbon decolorization, determination of polysaccharides by phenol sulfuric acid method. The content of polysaccharide from Schisandra chinensis was 85.56% by high performance capillary electrophoresis. High performance capillary electrophoresis was used to determine the content of Polysaccharide from Schisandra chinensis. The content of polysaccharide was 85.56%, including rhamnose, galactose, glucose and Arabia sugar.2 kinds of polysaccharide components were isolated and separated from Schisandra chinensis polysaccharide [4]. The crude polysaccharide was extracted from Schisandra chinensis by hot water extraction, and the extraction rate was 5.61%.

Volatile Oils

Schisandra chinensis contains 5% to 6% of volatile oil. The main components are terpenoids, including monoterpenes, oxygenated monoterpenes, sesquiterpenes, oxygenated sesquiterpene, as well as a small amount of alcohol, acid and other oxygenated compounds. The sesquiterpenes, containing sesquialter (sesquicarenene), beta 2- bisabolene (2-bisabolene), beta pisifera ene (beta -chamigrene) and ylangene (alpha -ylangene) etc. Analysis of volatile oil components of Schisandra chinensis [5]: Level 3 chemical composition palustric carvone, dehydroepiandrosterone white calamus hexene, 2-chloro-ethyl linoleate, methyl 9,12-octadecadienoic acid and 9,12-octadecadienoic is main ingredient.

Other Categories

Schisandra also contains citric acid, malic acid, tartaric acid, succinic acid, vitamin C, etc. The total amount is 1.37% in the fruit of Schisandra chinensis, total amino acid content was 9.23%.In the analysis of 16 amino acids, six kinds of essential amino acids, a total amount of 3.135% [6].Schisandra chinensis also contains sterols, coumarin, lactone, protein, alkaloids, flavonoids, cardiac glycosides, etc, but also contains potassium, magnesium, calcium, sodium, manganese and other elements.

Pharmacological Action

Effects on The Central Nervous System

Sedative and Hypnotic Effects. Schisandra chinensis has obvious sedation, hypnotic effect, and the dose showed a certain correlation. Wang Chunmei [7] found that Schisandra polysaccharide can reduce the number of spontaneous activity in mice, Wang Chunmei found that Schisandra chinensis polysaccharide can reduce the frequency of spontaneous activity of mice, increased the subthreshold dose of pentobarbital sodium induced sleeping number, shorten the sleep latency of mice significantly extend the threshold dose of sodium
pentobarbital induced sleep time in mice. From the crude and processed products have sedative and hypnotic effects, and the processed products (wine, vinegar) is better than that of raw materials, which is better than that of wine vinegar.

**Analgesia.** A certain amount of Schisandra chinensis decoction can reduce the writhing times of mice induced by acetic acid, prolong the latent period of writhing and the incubation period of mice induced by hot water, in the formalin test of mice, the decoction of Schisandra chinensis can inhibit the reaction of the II phase, but it has no effect on the reaction of the I phase.

**Protects Brain Cells.** Miao Yanyan found that large and small doses of Schisandra extract could significantly improve the activity of acetylcholinesterase, The activity of Na + -K + -ATP and Ca2 + -ATPase in model mice was significantly increased by high dose of Schisandra. Fructus Schisandrae could significantly improve brain energy metabolism in mice with repeated cerebral ischemia and reperfusion. Fructus Schisandrae extract significantly reduced the brain AchE activity in model mice, significantly increased brain norepinephrine (NA) and dopamine (DA) levels, significantly increased serotonin (5-HT) levels. Schisandra extract could regulated the synthesis of central neurotransmitter, which was beneficial to learning and memory.

**On The Protection of The Liver**

Schisandrin, vitamin B, propane, alcohol, alcohol, etc., for the liver caused by chemical damage could increase the serum transaminase to a certain extent reduce the role. At the same time, they could effectively reduce the content of MDA in liver, and inhibited the lipid peroxidation of liver homogenate in mice. Schisandra chinensis polysaccharide could reduce the activity of ALT and AST in serum of rats with liver injury induced by CCl4, and enhanced the activity of SOD, ATPase and gamma-GT [8].

**Effects on The Cardiovascular System**

Schisandrin has an inhibitory effect on the contraction of isolated mesenteric artery in dogs, which can increase the coronary blood flow in isolated heart and anesthetized dogs. Feeding the rabbits with Schisandra chinensis could regulated the energy metabolism of myocardial cells and cardiac and renal arterioles, improved the activity of myocardial metabolic enzymes, and improved the nutrition and function of myocardium. Schisandra water extract alcohol precipitation could made the body frog heart single-phase action potential frequency slows down, the action potential amplitude decreases, the platform period down, the platform period is shortened, could made isolated frog heart muscle contractility weakened, the effect was stronger than Peace of mind. Studies have shown that Schisandra has the effect of enhancing cardiovascular function.

**The Role of Anti-aging**

The polysaccharide of Schisandra chinensis could thicken the thymus and spleen of mice, and increased the number of thymocytes and spleen lymphocytes, it was indicated that polysaccharides could promoted the development of nerve cells and enhanced the function of anti-aging. Schisandra chinensis could reduce serum cholesterol, increased the content of protein in brain and liver.
Antitumor Effects

Inhibitory effect of Schisandra chinensis polysaccharide may not directly kill tumor cells, but with cell apoptosis and improve cell physiological function, improve the stability of membrane, the enhanced immune function. We found that the high dose had an inhibitory effect on the transplanted tumor of mice, the tumor inhibition rate was 52.83%, and the spleen index of the tumor bearing mice could be enhanced [9]. Effects of Schisandra chinensis polysaccharide on serum Zn and Se levels in H22 tumor bearing mice, and it was found that the level of Se may be one of the targets of Schisandra chinensis polysaccharide, Schisandra chinensis polysaccharide could increase the serum Se level of H22 tumor bearing mice to enhance its ability of anti-liver cancer.

Other Effects

It also has the effects of anti-allergic, hypoglycemic, lipid-lowering, anti-fatigue, anti-oxidation, anti-radiation and so on. It also has the ability to adapt to the original, could enhanced the body's ability to non-specific stimulation and significantly prolonged the swimming time of mice. The ethanol extract of Fructus schisandrae chinensis was inhibited by Bacillus subtilis, Staphylococcus aureus and Salmonella typhi. Schisandra plays an important role in the treatment of diabetic nephropathy by affecting the metabolism of tryptophan, purine metabolism, enteral metabolism, and fatty acid metabolism. The purine metabolism and intestinal metabolic pathway may be an important way for Schisandra to play a therapeutic role. Schisandra chinensis can play an important role in the central nervous system, such as sedation, analgesia, hypnosis, etc. It also has a significant role in protecting the liver, anti-aging and cardiovascular disease.

Clinical Application

Schisandra chinensis powder has a significant effect on reducing the level of alanine aminotransferase in infectious hepatitis, and it has no obvious side effects. Schisandra chinensis could also be used to treat patients with neurasthenia insomnia, headache, dizziness, vertigo, and heartbeat, spermatorrhea and other symptoms disappear or improve, so as to restore health. The results showed that the cure rate of the treatment group was 12.5%, the total effective rate was 87.5%, the cure rate of the control group was 6.7%, the total effective rate was 76.7%, the treatment group was better than the control group. The treatment of acute bacterial dysentery in 33 cases. Results 29 cases were cured, 3 cases markedly effective, 1 cases of death, results except 1 cases of death were cured; 10 cases of acute enteritis were cured. 91.1% of cases after taking 1 to 4 days of fever; by a course of treatment, heartbeat, shortness of breath, dizziness and other symptoms are improved or disappeared; Arrhythmia have improved, aphrodisiac murmur improved, low blood pressure also have recovery, and heart and pulse after treatment no significant improvement; some cases of ECG changes also returned to normal.

Therapeutic Effects

Bass Schisandra soup: Wash the bass into the pot, and then add cooking wine, Schisandra, etc. Cook until cooked and served with pepper. Apply to the liver and spleen weakness, insomnia, forgetfulness, high blood pressure, obesity. Schisandra tea. Wash the Schisandra, with water slightly hot, immediately fish out, on the cup, add rock sugar, with boiling water.
Apply to heart and kidney qi deficiency, premature ejaculation, nocturnal emission, insomnia, forgetfulness. Schisandra porridge: rice and Schisandra amount, with a slow fire brewed. Schisandra can Yanggan Bushen, drink after eating can reduce the damage to a lot of alcohol on the liver. Five flavors of ginkgo biloba by Schisandra, ginkgo biloba, jujube composition, 3 drug wash, add water soak for 2 hours, and then even the water into the casserole, add boiling water, filtered juice, even fried 3 times. 3 times will be mixed with juice, put casserole, concentrated, into the honey, while boil up and stir, bottling spare. Suitable for coronary heart disease, atherosclerosis. Schisandra walnut sugar by Schisandra, grapefruit meat, walnut meat composition. Mountain flesh, walnut, add Schisandra fried juice soaked, into the mountains and elegant meat mix well, rock sugar research fine sprinkled on top, and then covered, steamed 3 hours. Suitable for dizziness, waist and knee pain, forgetful tinnitus, enuresis urinary frequency were taken.

Schisandra is a famous traditional Chinese herbal medicines, and edible plants. Traditional Chinese medicine believes that it can be used for daily health care products. The diet of Schisandra paste Anshen cure insomnia, five kinds of Chinese wolfberry kidney treatment forgettery, Schisandra showwumi tonifying the liver and kidney treatment of white hair, five kinds of Ginkgo honey blood treatment arteriosclerosis, yogurt and other fermented beverages, With the continuous development and application of Schisandra chinensis and its extract in the health care products, its deep processing and utilization will be improved, and will bring considerable economic and social benefits.

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References


