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STYPHONOLOBIUM JAPONICUM (SOFORA JAPONICA) THE CHEMICAL COMPOSITION AND APPLICATION IN MEDICINE

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ANNOTATION

This article describes the morphology, chemical composition, pharmacology of the Sophora japonica or Styphnolobium japonicum tree, found in Uzbekistan, and its use in medicine and folk medicine.

Key words

Sophora japonica, legumes, styphnolobium, rutin, chemical composition, use in folk medicine.

АННОТАЦИЯ

В данной статье рассказывается о морфологии, химическом составе, фармакологии дерева **Софора японская** или Стифнолобий японский (Styphnolobium japonicum), встречающегося в Узбекистане, и его использовании в медицине и народной медицине.

Ключевые слова

Софора японская, бобовые, стифнолобиум, рутин, химический состав, применение в народной медицине.

Introduction. Sophora japonica is a pharmacopoeial plant, the composition of which and its effect on the human body have been quite well studied. This species is also widely used in its homeland - in Chinese medicine it is considered one of the 50 most important medicinal plants.

Botanical description and spreading. Japanese Sophora (Sophora japonica), other names, Crimean Sophora, Japanese acacia, or Japanese pagoda, is a deciduous tree from the Legume family, growing up to 20-25 meters in height. In summer, the tree produces clusters of fragrant, creamy-white, butterfly-type flowers (like peas, black locusts, and other legumes). The size of an individual flower is 1-1.5 centimeters.

The flowers are fragrant and honey-bearing, but poisonous.

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After flowering, bunches of long fleshy beans with interceptions are formed, filled with yellowish-green sticky juice - the seeds look like beans.

The fruits ripen in October and stay on the tree all winter.

Sophora japonica is a monoecious species, one tree bears male and female flowers and is pollinated by insects. It is a showy, slender tree with a broad, rounded crown and fine texture with arching branches. The leaves are bright green, complex openwork, pinnate, 15-25 centimeters long and consist of 7-17 small alternating ovate leaves.

Styphonolobium japonicum. General view of an adult tree

Like many trees from the legume family, Sophora also has an interesting bark. It is dark green in color and has small white spots, lines and deep wrinkles along the entire shaft. On the territory of Russia, the tree can grow only in the southern regions, since the minimum winter hardiness zone for this plant is 5, that is, frosts below -23...-29 degrees will be destructive for it. Even if it is a short-term drop in temperature. If the wood can still withstand a harsh winter, then there is no question of bearing fruit in the middle zone. In addition, trees need a lot of light and heat.

Sophora japonica today is purposefully cultivated as a medicinal plant and used in urban landscaping in the south of Ukraine, Crimea, Uzbekistan, Tajikistan, Turkmenistan, Dagestan, Azerbaijan, Armenia and Georgia.

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Foliage and inflorescences

Fruits (beans)

The medicinal raw materials are the buds of Japanese Sophora (lat. Alabastra Sophorae japonicae) and the fruit of Japanese Sophora (Fructus Sophorae japonicae). The buds are harvested in dry weather at the end of the budding phase, and the fruits are harvested in an unripe state in September - October, cut with pruners, scissors or carefully breaking off panicles with beans. Dry in attics with good ventilation or in dryers. The main active ingredients are flavonoids, the main one being rutin.

Chemical composition: It contains rutin, glycoside, additives, alkaloids, organic acids, vitamin C (ascorbic acid). The seed contains 10% fatty oil. The drug Rutin is obtained from the buds, which is used for the prevention and treatment of hypo- and vitamin P deficiency, vascular permeability disorders, and for the treatment of capillary lesions. A tincture is obtained from the fruits, used as a wound-healing agent for washing, irrigation, and wet dressings for purulent inflammatory processes - wounds, burns, trophic ulcers.

Sofora nectar has an average sugar concentration of 50%. Nectar is high in glucose.

Toxicity: except for the flowers, all parts of the plant, the bark and seeds, especially the fruit peel, are very poisonous. The main toxic active substances are 0.08% soforabiozide in fruits, rutin and other substances, 2% sophoricoside in unripe fruits and cytisine, toxalbumin and soforamine in seeds.

Sophora flowers and fruits contain many flavonoids, including rutin (up to 20% in its flowers), which is the main active ingredient of sophora preparations. Japanese sophora flowers contain a large amount of vitamin P, alkaloids and glycosides. During the ripening period, the fruits contain up to 8 flavanoids, depending on the place and time of collection. The seeds contain up to 10% fatty oil.

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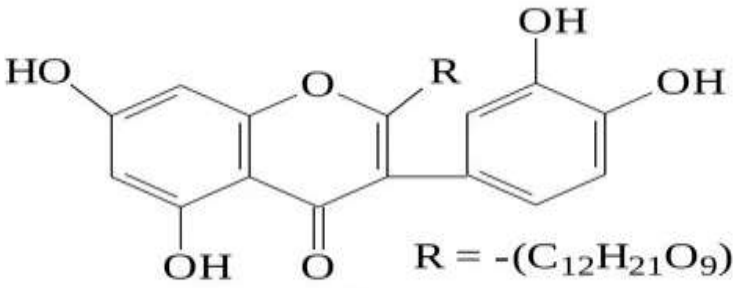

Рутин

Pharmacological properties: In China and Japan, Sophora japonica is used as a diuretic, laxative, antipyretic and tonic, and also shows effectiveness in the complex treatment of infertility. Almost all parts of this amazing tree have medicinal properties.

Sophora flowers are considered antibacterial, anticholesterolemic, anti-inflammatory, antispasmodic, and hemostatic. The buds, especially just before they bloom, are a rich source of rutin and have a pronounced hypotensive effect. The leaves are an effective laxative and are also used in the treatment of epilepsy and seizures.

A decoction of the stems can be used for eye inflammation and various skin problems. The pods have an immunostimulating, hypoglycemic (diabetes) and hepatoprotective effect. Externally, a tincture or decoction of the pods shows very high effectiveness for deep, purulent wounds, burns, frostbite, cracks, and trophic ulcers.

Mainly, Sophora japonica is used to treat circulatory disorders, hemorrhoids, hematuria, uterine bleeding, constipation, inflammation of the intestines, dizziness, headaches and hypertension, insomnia. However, it should be used with caution as the raw material of Sophora is toxic and also has an abortifacient effect when taken orally during pregnancy.

Sophora Japanese tincture, 250 ml

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Medicinal properties. For medicinal purposes, the buds and fruits of the tree are used, which have:

- wound healing properties;
- accelerate tissue regeneration;
- reduce the permeability and fragility of capillaries;
- increase the body's ability to absorb ascorbic acid.

The fruits have a bactericidal effect against Staphylococcus aureus and Escherichia coli.

Use internally:

- for the treatment and prevention of hemorrhages;
- with high blood pressure;
- pulmonary tuberculosis in the initial stage;
- with paraproctitis - inflammation of the tissue around the cecum;
- stomach and duodenal ulcers;
- dysentery.

Externally used in the form of lotions, irrigations for:

- eczema;
- acute and chronic purulent inflammatory processes - abscesses, phlegmons, wounds, cracked nipples, hair loss, burns, trophic ulcers.

Contraindications for use. Internal use requires caution and limited doses.

Use in folk medicine: In folk medicine, Japanese sophora has a positive effect on high blood pressure, ulcers of the intestine, stomach (stomach) and duodenum, and internal bleeding. In this case, tincture of Japanese sophora fruit in alcohol is used. Alcohol tincture is also used for external treatment, that is, it is recommended as a bactericidal factor in the treatment of deep and purulent wounds. In medicine, it is an effective remedy against colds. It can also be an ointment in dentistry. For example, alcohol tincture is beneficial for periodontitis, stomatitis and other diseases of the oral cavity. People suffering from high blood pressure (hypertension) and peptic ulcers can be cured with Japanese safflower infusions. Medicinal agents extracted from Japanese sophora flowers are widely used. It cures rheumatism, radiation sickness, diabetes, glomerulonephritis, and thrombopenitis.

Recipe for healing tincture. The recipe for preparing Sophora japonica tincture for external use for various skin lesions is very simple: the beans are collected in a slightly unripe form, when the “pods” are 9-10 centimeters long and 10-12 millimeters thick. You can purchase ready-made raw materials at the pharmacy.

The beans are crushed and then filled with 60% alcohol in a 1:1 ratio. It is necessary to infuse Sophora beans in alcohol for 10-12 days in a dark place, then strain and pour into a glass container.

Sophora fruit decoction:

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- Brew 1 cup boiling water 2 tsp. fruits, leave for 10-15 minutes, strain;
- use for hair loss.

Sophora fruit tincture:

- pour 0.5 liters of vodka 1-2 tbsp. l. crushed fruits, leave in a warm place for 14 days, shaking occasionally, strain;
- drink 20 ml 3 times a day 20 minutes before meals.

Conclusion. In conclusion the properties of Japanese Sophora have long been successfully used for the prevention and treatment of many diseases, primarily vascular ones. The human body is not capable of synthesizing vitamin P, and for normal functioning, rutin must be supplied from the outside. Thanks to the routine, Sophora eliminates increased fragility and permeability of blood vessels, including capillary vessels of the brain, restores their elasticity, cleanses and strengthens the walls of blood vessels, and has a positive effect on lipid metabolism in atherosclerosis. Sophora japonica is used for the prevention and complex therapy of atherosclerosis, coronary heart disease, heart attacks, ischemic strokes, hypertension, thrombophlebitis, and varicose veins. Sophora improves vision and restores the retina. Sophora japonica preparations are used in the treatment and prevention of hemorrhages, especially in the brain, heart and retina of the eyes, with capillary hemorrhages of toxic origin. Sophora reduces blood sugar and is used in the treatment of diabetes. Sophora is used for internal bleeding, stomach and duodenal ulcers, and gynecological diseases. Sophora preparations are used for diathesis, eczema, psoriasis, and joint diseases. Sophora has an antiallergic effect and improves immunity. As an external remedy, it is used for irrigation, lotions and washing of deep wounds, poorly healing ulcers, phlegmatic acne and other purulent inflammatory processes, burns, as well as cracked nipples of the mammary glands and hair loss.

We want to produce phytopreparations and tinctures for the treatment and prevention of the above diseases in the future, using the flowers and fruits of the Japanese safflower widely used in folk medicine and modern medicine. We started to conduct scientific work with great goals.

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