

Analysis of the Chemical, Pharmacological and Clinical Applications of Polygonum Cuspidatum

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Abstract. Traditional Chinese medicine Polygonum cuspidatum widely used, the larger production, and in the clinical application of more, but the role played by the role of different roles are also different. By reviewing the relevant literatures in recent years, the chemical constituents and pharmacological effects of Polygonum cuspidatum were sorted and summarized, and the role of Polygonum cuspidatum was analyzed, and the function of Polygonum cuspidatum was explored to find out the role of Polygonum cuspidatum in compatibility. Application law. Which can not only study the medicinal mechanism of Polygonum cuspidatum, but also provide the theoretical basis for the medicinal development, clinical treatment and comprehensive utilization of Polygonum cuspidatum.

1. Introduction

Polygonum cuspidatum is the dry rhizome and root of Polygonum cuspidatum, distributed in most parts of China, mainly in East China, South China, East China, Northwest, Southwest and other places, rich in resources, often in the spring and autumn mining, taste slightly bitter, slightly cold; Liver, gallbladder, lung meridian. Contains anthraquinones, stilbene, flavonoids, polysaccharides and other chemical composition, the dampness back yellow, detoxification, stasis pain, cough and phlegm effect is significant.

2. Chemical Composition.[1-11]

2.1 Anthraquinones

There are emodin, anthranin A, anthranin B, 6-hydroxy aloe emodin, 6-hydroxy aloe emodin-8-monomethyl ether, emodin-8-monomethyl ether, emodin-6-methyl ether, Rhubarb, emodin-6-methylene-8- β -D-glucoside, emodin-8- β -D-glucoside.

2.2 Flavonoids

There are mainly nuts, quercetin, quercetin-3-glucoside, luteolin-7-glucoside, kaempferol, celeryin, etc.

2.3 Polysaccharide

Polygonum cuspidatum contains a polysaccharide consisting of multiple monosaccharides, including D-glucose, D-galactose, D-mannose, L-sitron, L-arabinose, etc.

2.4 Coumarin, stilbene and fatty acids

Coumarin mainly 7-hydroxy-4-methoxy-5-methyl coumarin; stilbene mainly resveratrol and polydatin and its derivatives; fatty acids are palmitic acid, stearic acid, peanut oil Acid and so on.



2.5 Other compounds

Such as protocatechuic acid, gallic acid, 2,5-dimethyl-7-hydroxychromone, 5-hydroxymethyl-7-hydroxy-2-methylchromone, 5,7-dihydroxy-3H-isobenzofuranone and the like.

3. Pharmacological effects.[12-21]

3.1. Anti-thrombosis, inhibition of platelet aggregation.

Polydatin can inhibit the formation of thrombosis, the main way to play a role in improving microcirculation, polydatin can also inhibit platelet aggregation, the reason is because polydatin can inhibit thrombin activity and thus reduce the platelets and neutrophils. Between the adhesion and reduce the accumulation of platelets. The use of shocks to stimulate the carotid artery and ligation of the inferior arteries can lead to the formation of thrombosis in rats, and polydatin has a significant inhibitory effect on thrombosis caused by both methods and can significantly reduce the production of platelet thromboxane A₂.

3.2. Lowering blood sugar, lowering blood sugar

Resveratrol in *Polygonum cuspidatum* has the effect of lowering blood fat, and it has the same effect as resveratrol glucoside, both of which can reduce the level of triglyceride in the body serum, but also can greatly reduce the cholesterol content. Play the role of hypolipidemic. *Polygonatum odoratum* is the main component of its hypoglycemic effect. Studies have shown that the oxalic acid in *Polygonum cuspidatum* can cause the blood glucose content of rabbits to decrease significantly and cause shock. Therefore, oxalic acid plays an important role in the prevention and treatment of diabetes mellitus.

3.3. Expansion of blood vessels, improve microcirculation.

Polydatin also has the effect of dilating blood vessels, its regulation of calcium and PH in the body is bi-directional, polydatin can increase the extracellular calcium influx, the body's intracellular calcium content increased, the concentration increased, but also so that cells in the PH increased, resulting in increased blood pressure and then play the role of expansion of blood vessels. Polydatin also has the effect of improving microcirculation, mainly acting directly on white blood cells to reduce adhesion to vascular endothelium.

3.4. Anti-inflammatory, anti-bacterial.

Polygonum cuspidatum in the more anti-inflammatory ingredients, mainly emodin, resveratrol, etc., which can inhibit the formation of PGE₂ and play an anti-inflammatory effect, followed by the inhibition of cellular immune system. Emodin and other chemical components also have the role of antibacterial, *Staphylococcus aureus* have a significant inhibitory effect on the bacillus bacteria also have a good effect.

3.5. Antiviral, antitumor.

Polygonum cuspidatum in the composition of the virus and other ingredients have a certain inhibitory effect, the clinical language commonly used in the treatment of jaundice hepatitis, but also can be used for chronic hepatitis. Studies have shown that emodin in *Polygonum cuspidatum* has a good effect on the treatment of tumor mice, including liver tumors, breast tumors, etc.

3.6. Anti-oxidation, anti-shock.

Polygonum cuspidatum in the resveratrol has a good antioxidant effect, can make the body's malondialdehyde levels significantly reduced, and significantly increased SOD and CAT and other activities, for the prevention and treatment of cerebral ischemia and tissue damage treatment. Has a better effect, which proved that resveratrol is the role of anti-oxidants in *Polygonum cuspidatum*. The anti-shock effect of polydatin can also prolong the survival time of shock mice, and it has better effect on the treatment of body shock.

3.7. *Anti – AIDS.*

Polygonum cuspidatum in the anti-AIDS component is mainly resveratrol, and the effect is significant, mainly stilbene compounds, but its mechanism is not very clear, pending further study.

3.8. *Others*

The study found that *Polygonum cuspidatum* also has immune function regulation, sedative, regulating metabolism and inhibition of enzyme activity.

4. The Application of *Polygonum Cuspidatum* in Compatibility.[22-30]

Polygonum cuspidatum in the unilateral or prescription compatibility in the treatment of diseases have a good effect, such as cardiovascular disease, hepatobiliary disease, burns, etc., in the treatment of hyperlipidemia, obesity and other diseases have a significant effect.

4.1. *Polygonum cuspidatum and Hawthorn compatibility for the treatment of atherosclerosis.*

Atherosclerosis is mainly caused by lipid metabolism disorders, leading to thrombosis, arterial wall thickening, and ultimately lead to arterial obstruction. Chinese medicine *Polygonum cuspidatum* has detoxification, blood circulation and swelling and dampness, especially its contains polydatin and resveratrol and other active ingredients on the prevention and treatment of atherosclerosis has a great effect, not only can regulate blood lipids, inhibition Platelet aggregation, but also on the vascular endothelium there is a certain protective effect, to a large extent inhibited the occurrence of atherosclerosis. Hawthorn in the total flavonoids with dilated blood vessels, reduce the role of blood lipids, to a large extent reduce the deposition of lipid in the blood vessels, *Polygonum cuspidatum* and Hawthorn compatibility after the expansion of blood vessels, inhibition of platelet aggregation, improve blood lipid levels, atherosclerosis The treatment of hardening plays a positive synergistic effect.

4.2. *Polygonum cuspidatum and yellow grass compatibility of liver and gallbladder efficacy.*

Huang Huang grass heat dampness, cooling blood stasis effect is remarkable, clinically used for the treatment of acute hepatitis, cholecystitis and other diseases. *Polygonum cuspidatum* can improve blood circulation, but also to prevent liver fibrosis, with clear liver, gallbladder, the role of yellowing, clinically available for the treatment of hot and humid jaundice. The results showed that the combination of *Polygonum cuspidatum* and *Rhizoma Polygonatum* can significantly reduce the activity of alanine aminotransferase and aspartate aminotransferase in CCL4-induced acute liver injury, and it could protect the liver injury. The compatibility of the two could also significantly increase the bile content, to a certain extent Reduce the incidence of jaundice, and the effect is better than a single taste of traditional Chinese medicine, there is a better liver and gallbladder effect.

4.3. *Effect of Compatibility of Polygonum Cuspidatum and Guizhi on Acute Gouty Arthritis.*

Polygonum cuspidatum commonly used in the treatment of gout, Guizhi volatile oil has a significant anti-inflammatory effect. Studies have shown that *Polygonum cuspidatum* and Guizhi compatibility can significantly reduce the acute gouty arthritis in patients with uric acid content in the body, the body uric acid content is too high will cause hyperuricemia, and hyperuricemia is caused by acute gouty arthritis biochemical Basis, so *Polygonum cuspidatum*, Guizhi compatibility of acute gouty arthritis treatment has a significant impact.

4.4. *Polygonum cuspidatum, borneol and cork compatibility for the treatment of burns, burns.*

From the *Polygonum cuspidatum*, borneol, *Phellodendron* compatibility from the burned tincture with heat detoxification, heat analgesic effect, topical for burns, scald effect is obvious, which Duldus micro-cold as a medicine is not only detoxification and can get wet sore, for burns , Scalded treatment has a significant effect.

5. Looking ahead

Polygonum cuspidatum is a very common medicinal material, contains more chemical composition and widely distributed, rich in resources, pharmacological effects significantly, the clinical use of more. The

results show that resveratrol extracted from *Polygonum cuspidatum* has many kinds of effects, especially its anti-cancer effect, which is regarded as green anti-cancer drug, the market demand is very high, and has developed "Tiens Qiangkang capsule" "Zijin Capsule", "Napa Yisheng Capsule" and other health products containing resveratrol. *Polygonum cuspidatum* is another major component of "emodin" the use of research has become a hot spot for *Polygonum cuspidatum* research and development, because of its anti-tumor effect and antibacterial effect is widely used in clinical, greatly reducing the incidence of leukemia, gastric cancer and other diseases. The discovery of *Polygonum cuspidatum* provides a good opportunity for the development of food, health care, cosmetics and other industries. As a natural edible pigment, it is not only stable, but also has strong antioxidant activity and has a very wide use prospect.

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7. References

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