

Pharmacology of *Spatholobus suberectus* Vine Stems: A Comprehensive Review

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Introduction

In the realm of Traditional Chinese Medicine (TCM), the utilization of herbal remedies dates back thousands of years, offering a treasure trove of potential therapeutic agents. Among these botanical wonders is *Spatholobus suberectus*, commonly known as the vine stems of *Spatholobus* or Ji Xue Teng in Chinese. This plant, native to Asia, particularly China and Japan, has garnered increasing attention in recent years due to its rich pharmacological properties. In this comprehensive review, we delve into the pharmacology of *Spatholobus suberectus* vine stems, exploring its traditional uses, chemical composition and potential therapeutic applications.

Description

Botanical description and traditional uses

S. suberectus, belonging to the Leguminosae family, is characterized by its slender, twining stems and pinnate leaves. The plant typically thrives in moist, forested areas and is cultivated for medicinal purposes. In Traditional Chinese Medicine (TCM), *S. suberectus* vine stems, known as "Jixueteng," have been utilized for millennia to invigorate blood circulation, dispel blood stasis and alleviate various ailments.

Traditional uses

Spatholobus suberectus has been a staple in traditional Chinese medicine for centuries, revered for its versatile medicinal properties. In TCM, it is believed to invigorate blood circulation, dispel blood stasis and alleviate pain. The vine stems are commonly prescribed to treat gynecological disorders such as irregular menstruation, dysmenorrhea and postpartum abdominal pain. Additionally, it is utilized to address rheumatic conditions, traumatic injuries and cardiovascular ailments.

Chemical composition

The pharmacological efficacy of *Spatholobus suberectus* vine stems can be attributed to its complex chemical composition. Extensive phytochemical analysis has revealed the presence of various bioactive compounds, including flavonoids, stilbenes, phenolic acids and polysaccharides. Notable constituents include catechin, epicatechin, resveratrol, piceatannol and astragaloside.

These compounds exhibit diverse pharmacological activities, ranging from antioxidant and anti-inflammatory to anticancer and cardioprotective effects.

Pharmacological activities

The pharmacological efficacy of *S. suberectus* vine stems can be attributed to its rich phytochemical composition. Among the key bioactive constituents are flavonoids, phenolic acids, stilbenes and triterpenes. Rutin, catechin, epicatechin and resveratrol are some of the prominent flavonoids and phenolic compounds found in the vine stems. These compounds exhibit diverse pharmacological activities, including antioxidant, anti-inflammatory, anticancer and cardioprotective properties.

Antioxidant activity: The antioxidant properties of *Spatholobus suberectus* vine stems play a crucial role in protecting cells from oxidative damage caused by free radicals. Flavonoids and stilbenes present in the plant exert potent antioxidant effects, scavenging reactive oxygen species and reducing oxidative stress. This antioxidant activity contributes to the plant's anti-aging properties and may help prevent chronic diseases associated with oxidative damage.

Anti-inflammatory effects: Inflammation is a hallmark of many diseases, including arthritis, cardiovascular disorders and neurodegenerative conditions. Studies have demonstrated that extracts of *Spatholobus suberectus* possess significant anti-inflammatory activity, mediated by inhibition of pro-inflammatory cytokines and enzymes. These anti-inflammatory effects make it a promising candidate for the management of inflammatory diseases.

Cardiovascular protection: Traditional uses of *Spatholobus suberectus* in cardiovascular disorders are supported by scientific evidence indicating its cardioprotective properties. Research suggests that the plant extracts can improve blood circulation, lower blood pressure and reduce cholesterol levels. Moreover, its antiplatelet and anticoagulant effects may help prevent thrombotic events, reducing the risk of cardiovascular events such as heart attack and stroke.

Anticancer potential: The anticancer properties of *Spatholobus suberectus* have attracted significant interest in recent years. Preclinical studies have demonstrated its ability to inhibit the proliferation of cancer cells, induce apoptosis and suppress tumor growth. These effects are attributed to various bioactive compounds present in the plant, which exert cytotoxic effects on cancer cells while sparing normal cells. Additionally,

its antiangiogenic properties may help inhibit tumor angiogenesis, a crucial process for tumor progression.

Immunomodulatory activity: The immunomodulatory effects of *Spatholobus suberectus* vine stems have implications for enhancing immune function and combating infectious diseases. Polysaccharides isolated from the plant exhibit immunostimulatory properties, enhancing the activity of immune cells such as macrophages and lymphocytes. This immune-enhancing activity may contribute to the plant's therapeutic effects in conditions characterized by immune dysfunction.

Neuroprotective effects: Neurodegenerative disorders, such as Alzheimer's and Parkinson's diseases, present immense challenges in healthcare. Emerging evidence suggests that *S. suberectus* vine stems may offer neuroprotective effects against such conditions. Flavonoids and other bioactive compounds in the vine stems exert neuroprotective effects by reducing oxidative stress, suppressing neuroinflammation and enhancing neuronal survival. These findings highlight the potential utility of *S. suberectus* in neurodegenerative disease management.

Clinical applications

Despite the promising pharmacological profile of *Spatholobus suberectus* vine stems, clinical research in humans remains limited. Most studies have been conducted *in vitro* or in animal models, highlighting the need for well-designed clinical trials to validate its therapeutic efficacy and safety in humans.

Nevertheless, preliminary evidence suggests that Spatholobus suberectus holds potential for the management of various diseases, including cardiovascular disorders, inflammatory conditions, cancer and immune-related ailments.

Safety and precautions

While *Spatholobus suberectus* is generally considered safe when used appropriately, caution should be exercised, especially in pregnant and breastfeeding women, as well as individuals with known allergies or sensitivities to the plant. As with any herbal remedy, it is advisable to consult with a qualified healthcare professional before using *Spatholobus suberectus*, particularly if you have underlying medical conditions or are taking medications.

Conclusion

In conclusion, *Spatholobus suberectus* vine stems represent a valuable botanical resource with diverse pharmacological activities and potential therapeutic applications. From its traditional use in Chinese medicine to its modern exploration in scientific research, this plant continues to intrigue researchers and healthcare practitioners alike. While further studies are warranted to elucidate its mechanisms of action and clinical efficacy, the existing evidence suggests that *Spatholobus suberectus* holds promise as a natural remedy for various health conditions. As interest in herbal medicine continues to grow, *Spatholobus suberectus* stands out as a botanical marvel deserving of further investigation and utilization in integrative healthcare practices.