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A PHARMACOLOGICAL REVIEW OF SAPTAPARNA (ALSTONIA SCHOLARIS R.BR.)

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ABSTRACT

There are many herbs on earth which are unexplored in the field of Ayurvedic medicine. Once such herb Alstonia scholaris R.Br. which is commonly knows as Devils tree, Saptaparna. It is evergreen tree which belong to Apocynaceae family. Alstonia scholaris have various medicinal values like Anti-inflammatory, Analgesic, Antibacterial, Antianxiety, Anticancer, Antidiabetic effect. The plant is rich in alkaloids (Echitamine, Ditamine, Alstonidine, Echicaoutchin, Alstonine etc.). Reports on the Pharmacological activities of many isolated constituents from Astonia scholaris one lacking which needs further pharmacological studies. in the present review, The plant has been in enlightend to evaluate the medicinal value of the plant.

KEYWORDS: Alstonia scholaris R.Br., echitamine, Pharmacology, review.

INTRODUCTION

Herbal medicine has become an integral part of standard health care, based on traditional uses and on going scientific research. The traditional indian system of medicine, Ayurveda, which means the science of life, is one of the world's oldest system of medicines. Ayurveda mainly use plant-based formulas developed through the experiences and experimentation. The Apocynaceae family consists of about 250 genera and 2000 species of tropical trees, shrubs and vines. This family is known for plants that have a very high biological activity and medicinal properties. Some of the well known of this family such Alstonia scholaris, Nerium indicum and Rauwolfia serpentina are known for the enough amount of medicinal potential. Alstonia scholaris R.Br. also known as "Saptaparni" or "Devil tree" one of the most versatile medicinal plant having a wide spectrum of biological activity. It is a common tree, growing up to 3.0 m. is height, distributed throughout the Sub. Himalayan belt, West Bengal, U.P., Bihar and Southeast Asia. It is a popular ornamental tree in the garden and landscapes in the warm and temperate regions. Historically, the plant was scientifically named by Linnaeus as Echites Scholaris. Alstonia scholaris known to be a powerful medicinal plant has been studied well for the bio.active principles present in the leaf, stem and the root barks.

Vennacular name of Alstonia scholaris R.Br.

Language	Name
English	Dita bark, White cheese bark
Hindi	Satvin
Sanskrit	Saptaparna
Tamil	Pala
Gujarati	Saptaparni
Bengali	Chattin

Synonyms of Saptaparna: Vishaltwak, Chatraparna, Gucchapushpak, Sharada, Saptacchada, Madaganda etc.

Properties and action mentioned in Ayurveda
Rasa - Kashaya, Tikta
Guna - Laghu, Snigdha
Veerya - Ushna
Vipaka - Katu
Dosha - Kaphavatashamak (Acc. to some Acharya Tridoshashamak).
Acc. to Ayurveda Saptaparna used in Kushtha, Visarpa, Gulma, Udarda, Shwas, Jwara.

Morphological Characteristics
Leaves - Leaves are 3-7 in a whorl, coriaceous, bluntly acuminate, dark green. Leaf stalk is 1-1.5 cm long, the Lamina is elliptical or elliptical-Lanceolate, 10-20cmx4-5cm in the size, upper surface is dark green and the lower surface is green-white. The tip of the leaf is rounded or shortly pointed and tapering towards the base.

Bark - Bark is rough, grayish brown, branches whorled, young branches lenticellate. When the bark cut, milky latex flow rapidly.

Flower - Flower are greenish white small in umbrellately branched manner. They are 7-10mm long, white, cream

or green. The tube is hairy lobes sparsely or densely pubescent, 1.5-4mm long, strongly perfumed.

Fruit - Fruit pendulous dehiscent follicles, two lobed green or brown, dry or wood, spindle shaped, 16-30 cm long, 5-6 mm in diameter, containing numerous flat, oblong, brown seeds.

Phytochemistry

Stem bark-It having echitamine, new glycoside-renoterpine, glucoside triterpenes, aamyring acetate, echitamidine, echitenine, Ditamine.

Root- It contains akuammigine, tubaitowine, akuammigine, Hydroxyl-19.

Leaves- It contains an indole alkaloid- picrinine, botalin, ursolic acid, β-sitosterol, new alkaloid Scholarin.

Flowers- Picrinine, strictamine are present in flowers.

Fruits- Fruit contains Akuammidine (rhazine).

Pharmacological Activity

Anti-inflammatory and Analgesic: The alkaloids fraction of Alstonia scholaris leaf, three main alkaloids, picrinine, vallesamine and scholaricine, may produce the anti-inflammatory and analgesic effect peripherally based on several in vivo assays. In in vitro tests, alkaloids exhibited inhibition of inflammatory mediators (COX-1, COX-2 and 5-LOX), which is accordant with results on animal models. Besides, COX-2/5-LOX dual inhibitors found in the experiment, such as 16-formyl-5α-methoxystrictamine, picralinal, and tubotaiwine might be valuable for further attention.

Antibacterial activity: The antibacterial activity of Alstonia scholaris against test bacteria is an indication that the possibility of sourcing alternative antibiotic substances in this plant for the development of newer antibacterial agent.

Antidiabetic and antihyperlipidemic activity: Alstonia scholaris bark significantly reduced serum triglyceride level in diabetic patient support its long term use not only for better control of blood glucose but also for normalization of disturbances in lipid metabolism which may prevent further predisposition of the patients to cardiovascular complication.

Traditional Uses

Bark: The bark of A. scholaris is useful in malarial fevers, dyspepsia, skin disease and in abdominal disorders. the bark is bitter,astringent, digestive, laxative, anthelmintic, antipyretic, stomachic, cardiotonic, and tonic. The bark extract has been reported to possess antiplasmodial, immunostimulant, and anticancer effect and is also hepatoprotective. In Ayurveda, it is reported that the bark of the plant, when soaked in water overnight, can reduce the blood glucose level after oral administration. Bark is also used as febrifuge, depurative, and galactagogue. It is effective in leprosy, skin diseases, pruritis, chronic and foul ulcers, asthma, bronchitis, agalactia, and debility. In folklore medicine, milky juice is applied on wounds, ulcers, and rheumatic pains; mixed with oil and dropped into ear, it relieves earache.

Leaves: The leaves have been used traditionally as folk remedies for the treatment of many diseases including diarrhea, dysentery, malaria, and snake bites. Juice of the leaves acts in certain cases as a powerful galactagogue. Leaves used in beriberi, dropsy, and congested liver. Latex applied to sores, ulcers, tumors, and rheumatic swellings.

Fruits: The ripe fruits of the plant are used in syphilis and epilepsy. It is also used as a tonic, antiperiodic, and anthelmintic

CONCLUSION

Alstonia scholaris R. Br. has been used in traditional systems of medicines for treating various ailments such as antibacterial, antimicrobial. The plant contains various chemical constituents mostly alkaloids that can promote health and reduce illness. Therefore, our efforts should be directed towards the review of medicinal Plant, screening of activity, isolation and characterization of the active principles and explanation of the relationship between structure and activity that can aim towards clinical relevance. The global scenario has shown a great increase in pharmacognostical research. So, in future the drug development from this plant has great scope.

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