Smilax Zeylanica Linn. - A Natural Therapeutic Hub

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Summary

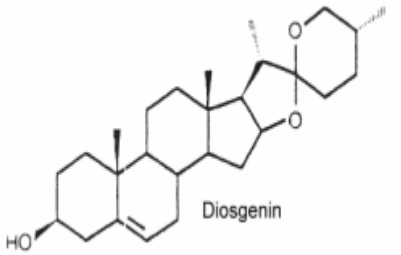
Smilax zeylanica, family liliaceae has been found to be the therapeutic hub showing its efficiency as antidiabetic, anthelmintic, antioxidant, pesticidal, antiepileptic and many other ailments. This article covered the medicinal properties of smilax zeylanica.

Introduction

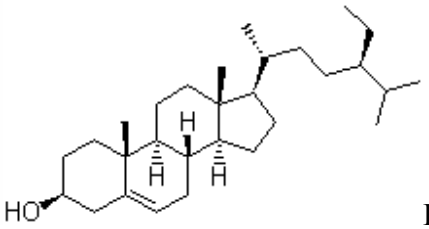
Smilax zeylanica , Family Liliaceae has been used for its medicinal important since ancient times in the Indian History. It is a perennial , dioecious shrub of climbing nature. Leaves of S.zeylanica are found in various shapes like ovate, elliptic, oblanceolate which are generally round at the base. Flowers are generally greenish-white in colour, white in umbels. Stem is woody with thorns. Fruits are berries. Smilax zeylanica is widely distributed in the forest and hills of south India. It is known with different names like in *Hindi* - Chobchini, Jangaliaushbah , Bhitura, Kamurika, Ramdatun, Kumarilata ; *Sanskrit* – Chopachinee, Vanamadhusnuhi *; Tamil* – Ayadi, Tirunamappalai, Periyakanni, Karuvilanchikudam, Kaattukkodi, Malaitthamarai ; *Marathi* – Gholbel, Gutwel, Guti ; *Malayalam* – Cherunchakayagavalli, kalthamara, karivilanti ; *Kannada* – Kaadu hambu thaavare ; *Telugu* – Kummeritheega, Kondadantena, Kondagarbhathige, Konda, Sithapa, Gurivatheega, Kondathaamara, Kummarabaddu, kushtaptamara ; *Bengali* – Kumarik. As per Ayurveda the plant is useful against skin disease, pitta, insanity, diarrhea, colic, vata,

syphallis, gonorrhea, fever, arthritis, leucorrhoea, impotency and general weakness etc. Till now various pharmacological activities had been done on different parts of the plant like antidiabetic, antihelmentic, antioxidant, antiepileptic, pesticidal, antigonorreal.

Phytoconstituents in Smilax Zeylanica: The preliminary phytochemical analysis of the plant revealed the presence of glycosides, diosgenin, saponins, B-sitosterol, sarsapogenin/ smilagenin, flavanoids, phytosterols, alkaloids, carbohydrates, fixed oils, fats, gums, mucilage, polyphenolic compounds and tannins.



Diosgenin



B-sitosterol

Toxicity Profile: In acute toxicity study the extract of Smilax zeylanica (roots & rhizomes) did not produce lethality up to the dose level of 2000mg/kg. However the leaves of smilax zeylanica are relatively non-toxic which renders them suitable as therapeutic agents.

The lethal dose of in-vivo antioxidant effect of S.zeylanica (roots & rhizomes) was found to be higher than 2000mg/kg

Medicinal Importance

Antidiabetic Activity: V Rajesh and its coworkers had evaluated the antidiabetic profile of Smilax zeylanica leaves using its methanolic extract on streptozotocin induced rats. The continuous treatment of leaf extract for a period of 15 days produced a significant decrease in blood glucose level in diabetic rats which is comparable to that of standard drug Glibenclamide which is used in treatment of type II diabetes mellitus. The standard drug Glibenclamide stimulates insulin secretion from beta cells of islets of langerhans. From the study, it is suggested that the possible mechanism by which the plant extract decreases the blood glucose level may be by potentiation of insulin effect either by increase in pancreatic secretion of insulin fom beta cells of islets of langerhans or by increase in peripheral glucose uptake.[1]

Anthelmintic Activity: V Rajesh and its coworkers had evaluated the antihelmintic activity of S.zeylanica leaves using its petroleum ether, benzene, chloroform and methanolic extract on Indian adult earthworm (Pheretima posthuma). Petroleum ether and chloroform extract showed potent anthelmentic activity than the standard drug, albendazole. The benzene extract is inactive at low concentration but have dose dependent action on paralysis and death at high dose. The methanolic extract showed dose dependent anthelmentic avtivity. Paralytic condition was achieved faster by petroleum ether extract even at 20mg/ml whereas death of test organism was early with methanolic extract. The result signifies that steroidal components would be active for achievement of paralytic condition, whereas flavanoids and polyphenolic compounds would somehow responsible for the death of P. posthuma. [2]

Antioxidant Activity: Anita Murali and its coworkers had evaluated the in-vitro and in-vivo antioxidant activity of S.zeylanica leaves by using its methanolic and aqueous extract. In-vitro models used for evaluation were DPPH, hydrogen peroxide, ABTS, nitric oxide and superoxides free radical whereas that for in-vivo models were catalase activity, peroxidase activity, glutathione reductase activity and SOD activity on CCL4 induced hepatotoxic system. The extracts from leaves of *S. zeylanica* exhibited strong antioxidant and free radical scavenging effects in different in vitro and in vivo systems. In vitro antioxidant scavenging activities were expressed in terms of IC50, which is the concentration of sample required to cause 50% inhibition of free radicals. Both extracts of *S. zeylanica* showed scavenging effects to different extents in the different models studied. The scavenging effect may be due to the hydrogen donating ability of *S. zeylanica*. *S.zeylanica* leaf extracts are relatively non toxic which renders them suitable as potential therapeutic agents. [3]

They had also evaluated the in-vitro and in-vivo antioxidant activity of S.zeylanica roots and rhizomes by using its methanolic and aqueous extract. In-vitro models used for evaluation were DPPH, hydrogen peroxide and ABTS free radicals whereas that for in-vivo models were total proteins activity, catalase activity, peroxidase activity, glutathione reductase activity and SOD activity on CCL4 induced hepatotoxic system. *S. zeylanica* can be considered as one of the potential alternate sources of the drug Chopachinee because *extract from roots and rhizomes of S. zeylanica* exhibited strong antioxidant property and its extract was found to be relatively non toxic which renders potential therapeutic potential for the drug. [4,5]

Pesticidal activity: M.A.Bari and its coworkers had evaluated the pesticidal activity of S.zeylanica leaves by using its chloroform and methanolic extract against the adultsof flat grain beetle, Cryptolestes pusillus (Schon.) by the surface film method. The methanolic extracts of *S. zeylanica* are more toxic to the adults of *C. pussilus* and which could be potent controlling agent against the beetle. When mixed with stored-grains, leaf, bark, seed powder, or oil extracts of plants reduce oviposition rate and suppress adult emergence of bruchids, and also reduced seed damage rate. [6,7]

Antiepileptic activity: V.Madhavan and its coworkers had evaluated the antiepileptic activity of S.zeylanica roots and rhizomes by using its alcoholic and aqueous extract on Pentylenetetrazole (PTZ) and maximal electro shock (MES) induced convulsion models in swiss albino mice. Both the alcoholic and aqueous extract shows significant antiepileptic activity. The study substantiates use of *Smilax zeylanica* Linn. as an additional botanical source for the Ayurvedic drug Chopachinee in the treatment of epilepsy. [8]

Ayurvedic Formulation: Ayurvedic medicinal properties –

Rasa - Tikta, Kashaya

Guna - Lakhu, Rooksha

Virya - Seeta

S.zeylanica is also used ayurvedically for certain diseases:-

Ten grams of sun dried powder of each Smilax zeylanica L. and Asparagus racemosus Willd. and 20 g of processed sugar along with 250 ml of cold water taken orally in empty stomach to cure leucorrhoea, metrorrhagia, spermatorrhea. Persons who are suffering from impotency, nocturnal emission and chronic sterility are prescribed for 1 month. It also acts as aphrodisiac and helps to increase sperm in semen. [9]

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