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Review of Shirish (Albizia lebbeck) therapeutic properties

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ABSTRACT

Hebs in Ayurveda have created interest among the people by clinically proven various effects. Also the overuse of synthetic drugs, which results in higher incidence of adverse reaction,has motivated humans to return to nature for safer remedies. In this review we have taken Albizia lebbeck which is an important medicinal tree found in Asia.
Name of the Plant: Albizzia lebbeck (Linn.) Benth, The genus Albizzia commonly known as Shirish belongs to family Mimosaceae.
The present study evaluates the composition and therapeutic effects of A. lebbeck plant. Use of Shirish has been comprehensively recommended to remove toxins from the body. It has also been used in the treatment of respiratory problems like bronchial asthma and seasonal cough and cold. Kwath (herbal tea) made from bark of Shirish is indicated for asthmatics as it helps to control the frequency and intensity of the dyspnoea due to asthmatic attacks. In Ayurveda its use in allergic skin conditions, allergic cough and seasonal cold is indicated to get relief. Researches of recent past have also reported anti-inflammatory, anti-histaminic, anti-anaphylactic, anti-asthmatic, anti-microbial properties of the plant. Saponins isolated from the methanolic extract of bark and pod of Albizia lebbeck Benth. have found to possess anti-spermatogenic effect.Some uses given in PI vol III are – *Pama, Kushtha, kandu, visarapa, kasa, vrana, shotha, svaas, mushak vish, shit pitta, rakta dushti, vishamjwara, sarpdansh, vishadushti, suryavart, ardhaavbhedak, netrabhishyanda.*

Key words: Albizia lebbeck (L.) Benth.,anti-microbial, anti asthamatic, saponins, spermatogenic

INTRODUCTION

Albizia lebbeck (L.) Benth. (Family - Mimosaceae), known locally as shirish, is an unarmed deciduous woody tree, 12–21 m in height, having pale bark with glabrous young shoots. It is cultivated in many parts of Pakistan in farmlands, along roadsides, on irrigated plantations, along rivers,and as an ornamental plant in gardens due to its pleasant appearance (1,2). The plant has a remarkable reputation due to its food, feed, and medicinal value. It is considered a potent alexipharmic, and every part of it is prescribed for the treatment of bites and stings from venomous animals. Its leaves are reported to be good for ophthalmic diseases, night blindness, syphilis and ulcer (3,4), cold, cough, and respiratory disorders (5,6). The leaves are also used as cattle fodder, mulch, and manure due to high nitrogen contents (7). The bark is bitter, cooling, and anthelmintic, and cures diseases of blood, leucoderma, itching, skin disease, piles, excessive perspiration, inflammation, bronchitis, and toothache and strengthens the gums and teeth; it is used for leprosy, deafness,

boils, scabies, syphilis, paralysis, and weakness (8). After drying and pounding, it is used as a soap substitute. Its roots alleviate spasms and stimulate the cardiovascular system, besides having anticancer and spermicidal properties (9).The flowers are aphrodisiac, emollient, and maturant, and their smell is useful in hemicranias (4). Flowers are used for the treatment of spermatorrhea. Its seeds are eaten after boiling by native people. The seeds are aphrodisiac, astringent, and used as brain tonic as well as for treating gonorrhea, while the seed oil is applied topically to cure leucoderma (10). Seeds are also used to cure piles, diarrhea, and scrofulous swellings. The pod extract is believed to possess antiprotozoal, hypoglycemic, antidiabetic, and anticancer properties (6,11). Despite its versatile uses, there are limited data on the composition of seeds and pods as well as the antioxidant capacity of the stem, pods, and root of A.lebbeck. Ayurvedic preprations containing Albizia lebbeck are *Shirish twak kwath, vasadi kwath, dadrughna lepa*.

Distribution & Habitat (Kumar et al. 2007):

The genus Albizzia comprises almost 150 species.Albizzia lebbeckBenth is a large, erect, unarmed, deciduous spreading tree. Throughout India, usually planted, tropical and subtropical regions of Asia and Africa. It is native to deciduous forests in Asia from eastern Pakistan through India and Sri Lanka to Burma. In India it is known by various names in different regions viz. siris in Bengal, Begemara in Karnataka and Pilo-srasia in Gujarat.

Plant Description:

A medium to large sized unarmed deciduous about 20 m in height with an umbrella-shaped crown and grey to dark brown rough irregularly cracked bark; leaves abruptly bipinnate, main rachis with a large gland above the base and one below the upper-most pair of pinnae, pinnae 2-4 pairs, leaflets, 5-9 pairs with glands ovate-oblong , all unequal sided; flowers white, fragnant, in globose umbellate heads; fruits long, characteristic pods, bluntly pointed, thin, pale yellow, smooth shiny, reticulately veined above the seed; seeds 4-12, pale browns, ellipsoid, oblong, compressed.

Phytochemical Profile (Rastogi et al. 1990):

The phytochemical profile of this plant reveals the Bark contains 7-11% tannins; d-catechin d-leucocyanidin and it yield 7 compds. Including frieedlan-3-one-and y-sitosterol. The leaves contain echinocystic acid and it yield flavon, vicenin II and β-sitosterol. Flowers yield triterponiodssapononslabbekanin D and 4 saponins glycosides lebbckannins D, F, G & H. Mature leaves of Albizzialebbeck contained keto acids including phosphoenolpyruvate, glyoxalate, oxalacetate and α-oxoglutarate; vicenin-2, reynoutrin, rutin, myricitrin and robinin from leaves. Leaves also have alkaloids, flavonoids, tanins, saponins .
Compositional studies indicated carbohydrates as major components while saponin was found as a major antinutrient in both pods and seeds. Potassium was found in the highest amount and copper in the lowest. The amino acid profile indicated that arginine and lysine are present in excessive amounts in seeds while glutamic acid and aspartic acid are present in the highest concentrations in pods. While the linoleic acid was detected as the major fatty acid in pod and seed oil, α-tocopherol was determined as the major tocopherol component in oil. In vitro antioxidant assays such as ferric reducing antioxidant power, total radical-trapping antioxidant parameter, and Trolox equivalent antioxidant capacity showed that the examined extracts have potent antioxidant potential.

Classical categorization:

Charaka Samhita –

Vishaghna – group of anti-poisonous herbs

Vedanasthapana – Analgesic group of herbs

Shirovirechana – group of herbs that are used to cleanse and detoxify sense organs and brain

Kashaya skanda – astringent group of herbs

Sushruta – Salsaradi Gana

Vagbhata – Asanadi Gana

Medicinal qualities*:*

Guna - Laghu , Rooksha , Teekshna

Rasa – Kashaya , Tikta, Madhura

Vipaka – Katu

Veerya – Ishat Ushna

Effect on *Tridosha – Tridoshahara* .

Usage in poisoning:

Its flower is squeezed and juice is extracted. It is triturated with black pepper and sugar and is used for nasal instillation, and for oral intake in snake bites. (Charaka Samhita, Chikitsathana 25th chapter

Medicinal uses:

Bark of the plant is used in the treatment of leucoderma, itching, skin diseases, piles, exercise perspiration, inflammation, erysipelas and bronchitis, Bark of the plant is used in the treatment of asthma and allergic disorders, Leaves of the plant are used in night blindness and strengthen the gums and the teeth, The seeds are useful as aphrodisiac and tonic to the brain; Used for gonorrhoea and tuberculosis glands; oil is applied topically in leucoderma, Flowers are given for asthma and snake-bite, All part of plant is recommended for the treatment of snake-bite.

Hepatoprotective activity:

SrNo	Plant	Part used	Type of Extract	Inducer-hepatotoxicy	Animal used	Result	Reference
1	Albizzia lebbeck	leaves	Ethanolic extract	Paracetamol	Rat	The results proof the remarkable hepatoprotection by the leaves extract	Devendra etal. 2008
2	Albizzia lebbeck	Bark	Ethanolic extract	CCl4	Rat	Hepatoprotective activity of the test extract were found be siginificant.	Tushar et al. 2010
3	Albizzia lebbeck	leaves	Ethanolic extract	Thiocetamie	Rat	Extract revealed amarked hepatoprotection.	Devendra etal. 2012

The ethanolic extract of leaves & bark of Albizzia lebbeck showed significant hepatoprotective activity by PCM, CCl4 & Thiocetamide induced hepatic injury in rat.

Table.4.Experimental details of Albizzia lebbeck

Antiasthmatic activity:

Asthama is primarily inflammatory condition. Albizzia lebbeck has been shown to possess antihistaminic activity.Clinical trials with the bark have showed significant relief in case of bronchial asthma. In an experiment, the bark decoction in dose of 0.25g to 1.0 g/kg significantly protected the guinea pig against 1% Histamine induced bronchospasm.The action started within one hour of drug administration.The decoction of flower in dose of 50mg/kg significantly protected the guinea pig against Histamine induced bronchospasm. Both the bark and flower decoction of the plant protect the guinea pig against Histamine induced bronchospasm (11)and it could be due to smooth muscle relaxation.

Pulmonary eosinophilia :-

As per the recent study in a preliminary screening 35 cases of tropical eosinophilia were treated with Shirish flower for 6 weeks. The dose 200mg twice a day with water. The result indicated that 82% cases showed excellent response, 12% showed good response whereas 6% showed poor response.No side effect observed.(11)

Ant allergic activity:

Histamine plays major role in allergic disease and its action is mediated mainly by Histamine H1 receptor (H1R).Research studies have demonstrated that histamine signalling related H1R and histadine decarboxylase(HDC) genes are allergic disease sensitive genes and there expression level effect severity of the allergic symptomps. Therefore compounds that supress histamine signalling should be promising *dravya* as antiallergic drugs(11).The same studyinvestigated the effect ofextract of bark of A.lebbeck on rats. Administration of shirish extract significantly decreased allergy symptoms(11).

Other reported activity:

a) Analgesic & Anti-Inflammatory Activity of Albizzia lebbeck was proved (Achinto et al.2009)

b) Antiulcer properties of 70% ethanolic extract of leaves of albizzia lebbeckc) Antiinflammatory activity of 70% ethanolic extract of albizzia lebbeck leaves was reported (Shirode et al., 2008).

c) Methanolic extract of bark of Albizzia lebbeck possess anti-inflammatory activity .(Pramanick et al., 2005).

d) The leaves of Albizzia Lebbeck possess nootropic activity in mice (Kasture et al., 1996).(11)

e) V.P. reported that the Saponins of the leaves Albizzia lebbeck possess nootropic & anxiolytic activity .(Une et al., 2001). (11)

f) The leaves of Albizzia lebbeck possess anticonvulsant activity.(Kasture et al., 2000).

g) Methanolic pod extract of Albizzia lebbeck (L) Benth possess antifertility activity in male rats. (Gupta et al ., 2004)

h) The seed extract of Albizzia lebbeck Benth. Possess antidiarrhoeal activity. (Ganguly et al., 2002)

i) The effects of the decoction of the bark and flower of Albizzia Lebbeck were studied for its anti-asthmatic and anti-anaphylactic activity (Tripathi et al., 1977).

j) The effect of extract is studied for antioxidant activity . (12)

Parts used –

Bark, seeds, leaves and flowers of Albizia lebbeck are used for medicinal purposes.

Dose: Powder – 3 – 6 grams per day,

Water decoction – 50 – 100 ml

Fresh juice – 10 – 20 ml

CONCLUSION

This study indicates Albizia lebbeck *shirish* may provide healthy and useful food by providing many of the nutrients to the human body ,as it is high in protein, cholesterol-free, high in dietary fibers, and low in saturated fat besides its medicinal qualities. It can be concluded that extracts of A. lebbeck have significant antiallergic, antiasthamatic, hepatoprotective , antioxidant activity along with nutritional value thus seems to be promising drug for various activities. So this plant can be further explored pharmacologically

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