

Review article

SIRAS (*ALBIZIA LEBBECK* (L.) BENTH.) AND ITS MEDICINAL USES IN UNANI MEDICINE- A REVIEW

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ABSTRACT

Higher incidences of adverse reaction associated with the prolonged use of synthetic drugs has once again increased the faith of humans in the traditional systems of medicine and motivated them to return back towards the clinical proven remedies for the treatment. It is also true that number of modern medications used in the present scenario, were developed from various plants. In Unani System of medicine, numerous herbal drugs are mentioned for medicinal purpose. *Siras* (*Albizia lebeck* (L.) Benth.) is one of them. It is found all over India. Almost all parts of this plant are used for the treatment of ailments such as migraine, conjunctivitis, diarrhea, jaundice, skin problems, asthma etc. Many chemical constituents have been isolated from *Albizia lebeck* such as lebbekannin, echinocystic acid, flavonoids, Linoleic acid, saponins etc. This review highlights the medicinal properties and therapeutic uses of *Albizia lebeck* and scientific studies conducted on the drug in human and animal models that will provide the further research direction.

Keywords *Siras*, Unani medicine, *Albizia lebeck*, therapeutic uses.

INTRODUCTION

In Unani System of Medicine, most of the remedies and compound formulations are prepared from the plant origin drugs meant for therapeutic purpose. *Siras* (*Albizia lebeck*) is one of them which is described in Unani classical literature for its potent pharmacological action and medicinal uses. It is a large deciduous perennial tree resembles very much with the tamarind tree (Shirazi, 2014). Ibn-Sina, in his book *Al-Qanoon* has discussed about this plant as *Sirish*. He has mentioned with reference to Dioscorides (Great Botanist of 1 century) that it is a well-known flowering tree, and has long and round root (Sina, 1998). It has remarkable importance for its medicinal uses. (Dymock, 1890). Various parts of the plant show specific properties and characteristics. It is grown itself along roadsides and cultivated also. The plant is grown as ornamental tree for its fragrant flowers and beautiful appearance, used to control soil erosion due to the shape of its root which binds the soil, wood is used as fuel, leaves are used as fodder as they contain 17-26% crude protein; 100kg of leaves yield 11-12kg of digestible protein and 37kg of digestible carbohydrate. Woody legume has nitrogen fixation activity that increases with the age of the plant (Tasnim, 2014). Seed of the plant has high protein and crude fibre contents, saponin and also found minerals like magnesium, iron and selenium, so seeds can be used as a fodder after removing anti nutritional factors after well processing (Muhammad, 2010; Nikhat, 2013).

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Fig.1 Siras Tree

Taxonomy

Classification from Kingdom down to species of *Albizia lebeck* Benth (Verma, 2014; Nadkarni, 1976).

Kingdom	Plantae (Plants)
Subkingdom	Tracheobionata (Vascular plants)
Division	Magnoliophyta (flowering plants)
Class	Magnoliopsida (Dicotyledons)
Sub class	Rosidae
Order	Fabales
Family	Fabaceae
Subfamily	Mimosaceae
Genus	<i>Albizia</i> Durazz (<i>albizia</i>)
Species	<i>Albizia lebeck</i> (L.) Benth.

Synonyms

Sirish or *Siras* Arabic- *Sultan al-Ashjar*, *Badshah al-Ashjar*, *Darakht-i Zakariya*, (Shirazi, 2014; Khan, 1847; Nabi, 2007) *Suka-priya* (dear to parrots) (Dymock, 1890), *Dam Shakham* or *Damshkham*, *Sirisha*, *Yalook*, *Phanda*, *Mridu pashika* (having soft flower), *Shamparni* (Khan, 2012).

Vernacular names

Persian- *Darakht-i Zakariya* (Nabi, 2007), Sanskrit- *Shirisa* (Barhapushpa, Bhandi, Mradupushpa and Kalinga) (Verma, 2014; Nadkarni, 1976; Mishra, 2010; Khare, 2007), Gujarati- *Shar Sarad*, Marathi- *Shiris*, Bengali- *Sharis Gachh*, Punjabi- *Sareeh* (Verma, 2014), Hindi -*Siris*, Tamil- *Vaghai* in Dirisana in Telgu, *Vaka* in Malyalam, *lebbeck* tree or East Indian walnut in English, *Kot-vaghe* in Madras, Woman's tongue tree in West Indies.



Fig. 2 *Siras* tree, showing leaves, pods and flowers

Habitat and description

Siras (*Albizia lebbeck* Benth.) is a tropical tree which is grown throughout India from the ancient time (Khan, 1847; Chopra, 1956). It is abundant in Myanmar, Andaman and Nicobar, South Africa and Australia (Mishra, 2010; Fazil, 2012). The plant is found in tropical and sub-tropical areas of India, from the plains up to 900 meters in the Himalayan region (Anonymous, 2006). It acquires the height of 40 to 60 feet with a thick trunk of 50 cm to 1 m in diameter. Bark is dark gray in colour become dark brown as the tree grows older, rough, pitted and fissured, which can be separated in flakes, acidulous and astringent in taste (Dymock, 1890). and the outer surface has longitudinal and transverse fissures whereas inner surface is whitish and shows longitudinal station (Yadav, 2011). Leaves are bi-pinnate and leaflets are 3-9 pairs which are wide and unequal sides, bright green colour initially but later become dull green on maturity. Flowers are pale yellow or white, fragrant, (Khan, 1847; Khan, 2012) spiked, found as an axillary cluster of 15-40 flowers, fused at the base and tipped with pale green. Stamen is longer than corolla. Flowers bloom in *chait* and *Besaakh* months but seen in other seasons also. Pods contain seeds and are 20-30 cm long and 5 cm wide, flat and pale yellowish in colour and contain 8-12 seeds (Ghani, 2010). Mature pods can be seen from May to July period (Yadav, 2011). Fresh pods are soft and become hard when dried. Pulp found in the pod is astringent and tasteless. These are linear-oblong to obovate, laterally compressed, measuring 6-10 x 5-10cm, filled with two large cotyledons which are pale yellow in colour. Seed coat is brown and non-shiny with a horse shoe shaped marking on both sides (Anonymous, 2006). Seeds are hard resembles with the seeds of *Amaltas* (*Cassia fistula* Linn.), but are smaller (Shirazi, 2014;

Khan, 2012). Seed have astringent and pungent taste (Yadav, 2011).



Fig. 3 *Siras* Seeds

Mizaj (Temperament) of the Plant

Haar (Hot) in 1st degree (Sina, 1998).

Haar (Hot) and *Yabis* (Dry) (Khan, 2012).

Haar (Hot) and *Yabis* (Dry) in 2nd degree (Kabiruddin, 1937).

Barid (Cold) and *Yabis* (Dry) in 2nd Degree (Shirazi, 2014; Ghani, 2010).

Barid (cold) (Khan, 1847)

According to most of the physicians, it has *Haar* (Hot) and *Yabis* (Dry) temperament. Flowers and leaves are of *Barid* (Cold) and *Yabis* (Dry) temperament whereas the temperament of seed is *Haar* (hot) (Nabi, 2007).

Flower- *Barid* (Cold) and *Yabis* (Dry) or Moderate (Khan, 2012).

PHYTOCONSTITUENTS FOUND IN THE PLANT

Stem bark yields 7 to 11 % tannins; D-catechin D-leucocyanidin and it yield seven compounds including friedlan-3-one and γ -sitosterol. Three Saponins were isolated from bark (Pal, 1995).

Oil obtained from seeds contains sterols, methyl sterols, triterpene alcohol, tocopherol, hydrocarbons and carotenoids, cycloeucalenol, 24-ethylphenol, cycloartenol.

Flowers yield triterpenoids, saponins, labbekanin D and 4, glycosides, lebbekannins D, F, G, and H. High concentration of non-protein amino acids is found in young a leaf that is uncommon to other plants. The leaves contain echinocystic acid and it yielded flavon, vicenin II and β -sitosterol. Mature leaves of *A. lebbeck* contained keto acids including phosphoenolpyruvate, glyoxylate, oxaloacetate, and α -oxoglutarate; vicenin-2, reynoutrin, rutin, myricitrin, and robinin. Leaves also have alkaloids, flavonoids, tannins, saponins, carbohydrates. Seeds contain glycosides, proteins/aminoacids (arginine and lysine), resins, reducing sugars, saponins, flavonoids, glucosides (Anonymous, 2006) while aminoacids like glutamic acid and aspartic acid are present in the highest concentrations in pods. Linoleic acid was detected as the major fatty acid in pod and seed oil (Sharma, 2015; Fazil, 2019).

Part used: (Shirazi, 2014; Khan, 2012, Ghani, 2010) Stem bark, leaves, flowers, root, seeds, gum.

MEDICINAL USES OF *Siras* IN UNANI LITERATURE

It is *Musaffi* (blood purifier), *Muqawwi* (general tonic), *Mufatteh* (de-obstruent), *Mudir* (diuretic) and *Muhallil-i Waram* (anti-inflammatory), *Mudammil-i Quruh* (healing agent), *Mudir-i Bawl* (diuretic) *Mudir-i Tams* (emmenagogue), *Tiryaq* (antidote). (Khan, 1847; Nabi, 2007; Ghani, 2010) It removes derangement of *Safra* (bile) and *Balgham* (phlegm) (Khan, 2012).

It is beneficial for *Waram-i Haad* (acute inflammations), and

Dumbal (boils), and useful for *Quruh al-Wasakha al-Khabisa* (bad wounds), *Harq al-Naar* (fire burns), *Waja al-Ayn* (ophthalmic pains), *Rataundi* (night blindness), *Waja al-Asnaan* (toothache), *Waja al-Uzn* (earache), *Waram-i Pistan* (mastitis), *Sual* (cough), *Lasat al-Aqrab* (scorpion bite). (Sina, 1998; Khan, 2012; Khan, 1847) *Kasrat-i Ireq* (excessive sweating), *Khushk wa Tar Kharish* (dry and wet type of pruritus) (Ghani, 2010) and *Yarqaan* (Jaundice), *Zeeq al-Nafs* (bronchial asthma), *Sual* (cough) and *Falij* (paralysis) (Khan, 2012).

Part of <i>Albizia lebeck</i>	Medicinal properties	Diseases
Stem bark	Anti-inflammatory, healing agent, antidote, blood purifier (Kabiruddin, 1937) and strengthens gums and teeth (Nabi, 2007).	Excellent tonic and alterative when used with pure ghee, (Shirazi, 2014) ulcers, cough, migraine, jaundice, (Khan, 2012; Khan, 1847) leprosy, numbness, boils and furuncles, pruritus, paralysis, facial palsy, orchitis, neurological diseases (Ghani, 2010), ascites, Skin diseases, (Nabi, 2007) wounds, acnes (Sharma, 2015). Ash is useful for <i>Da al-Salab</i> (alopecia) and <i>Behaq Abyaz</i> (Pityriasis alba) (Sina, 1998).
Root and root bark	Root is anti-inflammatory. Root-bark strengthens gums and teeth (Ghani, 2010).	Root- pityriasis alba and mastitis (Sina, 1998). Root bark-gingivitis, pyorrhea, gonorrhea, poisonous insect bite and swelling of the body (Khan, 2012; Ghani, 2010).
Leaves	Teeth and gum strengthening agent, vermifugal, semen inspissant (Khan, 2012) resolvent and improves vision (Ghani, 2010).	Night blindness, helminthiasis conjunctivitis, gonorrhea, earache, corneal opacity and gastralgia (Shirazi, 2014; Khan, 2012; Ghani, 2010).
Flower and its oil	Anthelmintic, removes the derangement of phlegm bile, and is antidote.	Leprosy, skin diseases, inflammation, blood impurities, cough, headache, migraine, epilepsy and, insanity (Khan, 2012), jaundice (Ghani, 2010; Khan, 1847) and scorpion bite (Sina, 1998).
Seeds and oil	Semen inspissant, anti diarrheal, anti-catarhal.	Pre mature ejaculation, catarh, lymphadenitis, diarrhea, gastralgia, junoon (insanity) and epilepsy, vitiligo, leprosy and hemorrhoids (Ghani, 2010).
Gum	It is useful for toothache.	Toothache (Ghani, 2010).

Parts of the plant are used in various dosage forms

(Sina, 1998; Khan, 2012; Ghani, 2010; Nabi, 2007)

Oral use- *Araq* (distillate), *Matbookh* (decoction), *Usarah* (Extract), *Safuf* (powder), *Laoq* (linctus), *Roghan* (oil).

For local use-*Qutoor-i Anaf* (nasal drop), *zimad* (paste), *Qutoor-i Chashm* (eyedrop), *Ghargharah* (Gargling) *Mazmazah* (mouth rinse), *Zaroor* (powder for sprinkle), *Naswaar* (Snuffing), *surma/ kajal* (corrylium) (Shirazi, 2014; Khan, 2012, Ghani, 2010).

Dose (*Miqdar*)

Stem bark 5-7 gm (Kabiruddin, 1937) or up to 12 gm (Nabi, 2007), seeds- 3-3.5 gm (Shirazi, 2014; Khan, 2012, Ghani, 2010).

Harmful effect (*Muzir*)

It is not suitable for dry temperament personnel (Kabiruddin, 1937).

Corrective (*Musleh*)

Sarphuka (Nabi, 2007), Roughan Zard (pure ghee) (Kabiruddin, 1937).

RESEARCH STUDIES

Anti histaminic activity

Babu *et al.* reported that alcoholic extract of *A. lebeck* has antihistaminic property, by neutralizing the histamine directly or due to corticotrophic action as evidenced by raising cortisol levels in plasma (Babu, 2009).

Histological analysis of the lungs of guinea pigs treated with *Albizia lebeck* has shown reduction in tissue edema, epithelial cell hypertrophy, infiltration of inflammatory cell, and airway lumen plugging, thereby decreasing inflammation and bronchoconstriction, which leads to normal lumen size (Tiwari, 2015).

Allergic conjunctivitis

In a clinical study, it was revealed that oral administration 29% of ghasatva of *Albizia lebeck* bark and 500 mg capsule of *Albizia lebeck* showed very favorable response in all kinds of allergic conjunctivitis (Mukhopadhyay, 1992).

Significant reduction in symptoms of allergic conjunctivitis was reported in a clinical trial conducted on 60 patients suffering from allergic type of conjunctivitis. *A. lebeck* is used in the form of eye drop given 2 drops 3 times a day for 30 days and compared with standard drug treatment sodium cromoglycate 2% eye drop (Haramohan, 2017).

Analgesic and Anti-inflammatory activity

The Analgesic and Anti-Inflammatory Activities of the Extract of *Albizia lebeck* in Animal Model was reported by Saha and Ahmed (Saha, 2009).

In another study, the anti-inflammatory effect of various solvent extracts of *Albizia lebeck* on acute and chronic phases of inflammation as well as anti-inflammatory effect of the extracts in adjuvant induced arthritis was studied in animal model. Extracts of the drug displayed considerable potency in anti-inflammatory action and has prominent effects on adjuvant arthritis by alleviating paw edema (Narsimham, 2009; Nikhat, 2017).

Anti convulsive activity

Anticonvulsive action of leaves of *Albizia lebbbeck* against pentylenetetrazol, and maximal induced seizures in mice was reported (Kasture, 1996).

Srivastava Neeti *et al.* reported potent anticonvulsant activity of ethanolic extract of the leaves of *Albizia lebbbeck* in the rats. It may help in development of natural antiepileptic drug (Srivastav, 2016).

In another study, the ethanolic extracts of leaves of *Albizia lebbbeck* and flowers of *Hibiscus rosa sinensis* and the petroleum ether extract of flowers of *Butea monosperma* exhibited anticonvulsant activity in mice (Kasture, 2000).

Anti-bacterial activity

The methanolic extracts of *A. lebbbeck* illustrated inhibitory activity against the pathogens *Bacillus subtilis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Salmonella typhi* and *Staphylococcus aureus*; whereas the ethyl acetate extract demonstrated inhibition against *Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumonia* (Bobby, 2012).

Antimicrobial, cytotoxicity and free radical scavenging activity

The antimicrobial activity, cytotoxicity and free radical-scavenging activity of different extracts (hexane, methanol, ethyl acetate, aqueous and butanol extract) of the bark of *Albizia lebbbeck* was reported. All the extracts showed moderate antimicrobial activity more on gram positive bacteria than gram negative bacteria. Significant cytotoxic activity was noticed and hexane extract was found the most lethal to brine shrimp nauplii. Good free radical scavenging activity was observed in all the extracts, and hexane extract was found be the most potent (Tasnim, 2014).

Anthelmintic activity

In an in vitro study, alcoholic extract of the bark showed Anthelmintic activity against live *Ascaris lumbricoides* (Raj, 1975).

CONCLUSION

Siras (*Albizia lebbbeck* (L.) Benth) possesses multiple actions and can play a significant role in controlling inflammatory, psychological, respiratory problems without producing any side effects. These claims of Unani medicine on the pharmacological actions of *Siras* tree have also been proved by scientific studies to some extent. There is a need to conduct more clinical studies on the efficacy of the drug in migraine, headaches and other diseases of brain, etc. However, further researches may be done to explore the therapeutic potential of this plant for its establishment as an effective and standard drug (Nikhat, 2018).

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CONFLICT OF INTEREST

The authors have no conflicting financial interests

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