

PHARMACOLOGICAL ACTIVITY AND MEDICINAL VALUE OF SHAMI (PROSOPIS CINERERIA)- A REVIEW

¹Nikita Sharma, ²Chandan Singh, ³Rajendra Prasad Purvia, ⁴Manoj Adlakha, ⁵Manoj Mahawar

¹ PG Scholar, Department of Dravyaguna Vijnana, Dr. Sarvapalli Radhakrishnan Ayurved College, Jodhpur, Rajasthan

² Professor & Head of Department of Dravyaguna Vijnana, Dr. Sarvapalli Radhakrishnan Ayurved College, Jodhpur, Rajasthan

³ Associate Professor, Department of Dravyaguna Vijnana, Dr. Sarvapalli Radhakrishnan Ayurved College, Jodhpur, Rajasthan

⁴ Associate Professor, Department of Dravyaguna Vijnana, Dr. Sarvapalli Radhakrishnan Ayurved College, Jodhpur, Rajasthan

⁵ PG Scholar, Department of Dravyaguna vijanana, Dr. Sarvapalli Radhakrishnan Ayurved College, Jodhpur, Rajasthan

Corresponding Author: ns.nikita7790@gmail.com

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ABSTRACT

Prosopis cineraria Druce of family Mimosaceae is an indigenous plant which has mentioned in Ayurveda with several clinical properties. Prosopis cineraria is also the national tree of Telangana, Rajasthan, and Western Uttar Pradesh in India. In Rajasthan, it is known as Khejri, and in Western Uttar Pradesh as Chhonkara. A violent environmental conflict occurred in the Rajasthani village of Khejarli near Jodhpur in 1730 AD. In an effort to save some Khejri trees that Maharaja Abhay Singh had ordered cut down to make room for his new palace, Amrita Devi and her three young daughters sacrificed their lives. Widespread defiance resulted from this, and 363 people were killed while attempting to save the trees. The Chipko movement was born in the 1970s as a result of this sacrifice memory. This tree is referred to as 'Kalpataru' and "the king of the desert. This plant has valuable properties for nutrition,

animal feed, and "medicine." *Prosopis cineraria* (L) Druce, also known as shami, is a member of the Fabaceae family and is used for spiritual purposes in India. It is referenced in practically all of the Nighantu's of Ayurveda. It only occurs in hot, dry, and arid areas of India. Even while practically all of the components of Shami, especially the Bark and Fruit, have pharmacological effects.

Keywords: *Khejri, Ayurveda, Shami*



INTRODUCTION

The foundation of traditional Indian medicine, or Ayurveda, is a traditional medical system, much like the foundation of traditional Chinese medicine. Both systems were created in their respective geographical areas. The practice of Ayurveda has a lengthy history of treating disease and dates back about three thousand years. The five pillars of Indian philosophy are the source of the three fundamental concepts known as doshas (vata, pitta, and kapha). The three doshas identified by Ayurveda are *vata*, *pitta*, and *kapha*. *Vata* and its sub-doshas regulate input/output processes and motion. According to the WHO, a drug is "any substance or product used or intended for use to modify, explore, or treat physiologic or pathological conditions for the benefit of the recipient." Ayurveda holds that every substance in the universe is *Panchbhautik* in nature. The ideal comprehension of a drug includes all of its components, including composition, potency, pharmacological effects, and indications, among others. In the dry regions of India and the Arabian Peninsula, the *Shami* plant, also referred to as *Khejri* and scientifically known as *Prosopis cineraria*, is a valuable deep-rooted plant that serves multiple purposes, including

providing cattle with fodder. During times of famine, the bark is ground up to be turned into flour.

Botanical Description-

The tree has spikes and is of medium height. Bark has a white outside and a yellow interior. branches that are descending leaves with eight to ten leaflets. *Prosopis cineraria* is a nearly evergreen tree that reaches a height of 6.5 meters. The species gets its name from the thick, coarse, deeply fissured, and cinereous (ash-grey) bark. It features an open crown that rounds out when lopping is applied. The stem of the tree is up to 30 cm in diameter, 2 m high, and straight. Like rose trees, *Prosopis cineraria* contains many internodal thorns. It has a deep taproot that extends down to three meters or even further (20 meters). It has a cylindrical fruit with a multi-seeded pod that can reach a length of 20 cm. When the fruit reaches maturity, it is initially green but eventually becomes yellow or dull brown. The tree's crown is substantial, round, and shaded.

Geographical distribution-

A species of flowering tree in the Fabaceae family of peas is called *Prosopis cineraria*, sometimes referred to

as ghaf. Its native range includes Yemen, Afghanistan, Bahrain, Iran, India, Oman, Pakistan, Saudi Arabia, and other desert regions of Western Asia and the Indian Subcontinent. One of the most prevalent tree species is khejri (*Prosopis cineraria*), which is found in Afghanistan, Iran, Pakistan, and India's dry regions of Rajasthan, Delhi, Gujarat, Punjab, and Madhya Pradesh. It is essential to maintaining the ecosystem of dry and semi-dry regions, particularly in the Thar Desert. The tree can withstand high temperatures ranging from 40 to 45 °C in the summer to less than 10 °C in the winter. It is also resistant to frost and drought. It can

thrive where there is 100–600 mm of rainfall per year. The tree can endure the sweltering winds and the driest season, and it can persist where other plants cannot.

Chemical constituents of Shami-

It mostly contains tannins (gallic acid), alkaloids, flavone derivatives (prosogerin A, B, C, D, and E), and quercetin, which has antioxidant, anti-microbial, anti-bacterial, anti-convulsant, and antidepressant effects.

The chemical constituents of different parts of plants are as follows

| Plant part | Chemical Constituents |
|------------|---|
| Flower | Patulitrin, sitosterol, spicigerine, prosogerin A & Prosogerin B, 4-pentamethoxy -7-hydroxy flavone |
| Seeds | Flavone prosogerin C, Prosogerin E, gallic acid, patuletin, iutolin, patulitrin, rutin, prosogेरins C & D, glycosidic polyphenolics, stigmaterols, linolic acid, oleic acid |
| Root | Methyl tritriacontanoate, B-sitosterol, B-glucose |

Action & Uses (Ethnomedicinal uses)-

In cases of scorpion bites, the bark is applied locally. Additionally, it is beneficial for anorexia, diarrhea, dysentery, piles, haemetemesis, rheumatoid arthritis, bronchitis, and skin disorders. It is also useful in mouth ulcers, bleeding disorders, and repeated abortions. It balances the kapha dosha and is useful in productive cough, asthma, bronchitis, and chest congestion. It is also used in the treatment of vertigo and as a brain tonic.

- Leprosy, dysentery, bronchitis, asthma, leucoderma, piles, spasms of the muscles, and mental wandering are all treated by the bark, which is dry, acrid, and bitter with a harsh flavour. It is also cool and Antihelminthic.
- Flower paste mixed with rock sugar is given to pregnant women to prevent abortion.
- A decoction of atisara bark is effective for treating diarrhoea.
- Raktapitta - For hemostasis during epistaxis, shami leaf juice is administered as nasya (juice in both nostrils).
- For eye problems, leaf smoke is beneficial.

- The bark is utilised as a rheumatism treatment in the central regions.
- Women undergoing menstruation pound the flowers and combine them with sugar before eating them.

Ayurvedic Properties(pharmacodynamics)-

Rasa- Kashaya, Madhura

Guna-laghu, ruksha

Veerya- Sheeta (Fruits- *ushna veerya*)

Vipaka- Katu

Clinical Reference-

The classical description of *Shami* in different Nighantu-

Shami is primarily mentioned in *Atharvaveda*, where it is taken by pregnant women as a preventative measure against miscarriage. *Shami* is mentioned in different ayurvedic texts such as *Charak Samhita*, *Sushruta Samhita*, *Ashtang Sangraha*, *Ashtang hridaya*, *Harita Samhita*, and *Bhavprakash*. The description of *Shami* its actions and uses have been mentioned in different *Nighantus*, which are as follows-

Dhanvantari Nighantu-

शमी शङ्कफला तुङ्गा केशहन्त्री शिवाफला।

ईशानी शङ्करी लक्ष्मीर्मङ्गल्या पापनाशिनी ॥

शमीफल गुरु स्वादं रुक्षोष्णं केशनाशनम् ।(ध. नि. 5/95-96)

Dhanvantari Nighantu mentioned 10 synonyms of *Shami* plant. *Dhanvantari Nighantu* also classified it in *Pancham sarga* namely *Amradi varga*.

Bhavprakash Nighantu-

शमी शक्तुफला तुङ्गा केशहन्त्री शिवाफला।

मंगल्या च तथा लक्ष्मीः शमीरः साऽल्पिका स्मृता ॥

शमी तिक्ता कटुः शीता कषाया रेचनी लघु।

कफकासभ्रमश्वासकुष्ठार्शः कृमिजितस्मृता ॥(भ . नि. 6/59-60)

According to *Bhavprakash Nighantu*, *Shami* plant is indicated in *kapha* disease such as cough, asthma, bronchitis and chest congestion. It is also use in skin diseases, Haemorrhoids, asthma and chronic respiratory disorders, worm infestation etc.

Kaiyadev Nighantu-

शमी लक्ष्मी शिवा सीता मंगल्या केशहुतफला ।

पवित्रपत्रा शक्ती तुंगा सक्तुफला रसा।

शमी राधिः शमी भूमिः शमी शानथ शङ्करः ।

शमी तिक्ता कटवनुष्णा कषाया रेचनी लघु ॥

निहन्ति कफकुष्ठार्शः श्वासकासभ्रम किमीन ।

तत्फलं स्वादु रुक्षोष्णं मेध्य केशनाशनम् ॥(के. नि.1/1083-1085)

Kaiyadev Nighantu mentioned *Shami* in *Aushadhi varga*. *Kaiyadev nighantu* mentioned that *shami* is useful in *kaphaja roga*(cough, asthma, bronchial disorders), *kushtha*(skin diseases), *Arsh* (Haemorrhoides), *Shwas*(Asthma) *kaas*(Cough) and *bhrama* also it is useful in worm infestation.

Pharmacological Actions

The pharmacological actions of *Shami* are as follows-

1. Anti- convulsant Activity-

The effects of a methanolic extract of the *Prosopis Cineraria* (Linn) Druse stem barks on mouse convulsions caused by pentylenetetrazol (PTZ) and maximum electroshock (MES) were investigated. The extract prevented PTZ-induced seizures and reduced HLTE (hind limb tonic extensions) that were brought on by MES.

2. Anti-emetic activity-

It tested the anti-emetic properties of crude methanol extracts from the leaves of *Prosopis cineraria* L.,

Peltoforum roxburghii L., *Adenantha pavonina* L., and *Prosopis juliflora* DC. Male chicks that were four days old were given 50 mg/kg of copper sulphate orally to cause emesis. When compared to the common medicine Chlorpromazine at the same dose, all extracts (150 mg/kg body weight orally) showed anti-emetic action.

3. Itching Skin diseases-

Decoction of fresh leaves is made, and after taking a bath, this decoction is poured over the lesions which are oozing or itching.

4. Anti-hyperglycemic activity-

Fasting blood glucose level decreased by 27.3%, comparable to that of standard Glibenckamide, which produced a 49.3% reduction, and liver glycogen content was significantly increased as compared to the control group.

5. Antibacterial Activity-

It is tested that Aqueous and methanol extract of stem bark is taken and Antibacterial activity at 250 Ug/mg. All pathogens are significantly affected by the methanolic extract.

6. Eye diseases-

conch shell that has been fumigated with ghee-smearred shami leaves and breast milk-rubbed in a copper vessel applied to the eyes to relieve eye pain and itching. (A.H.16/35)

In order to treat eye problems, the fruits of udumbara are rubbed with breast milk in an iron vessel and fumigated using ghee-smearred shami leaves. (A.H.16.36)

7. Anti-carcinogenic Activity-

Male Wistar rats that had experimental liver tumours caused by N-nitrosodiethylamine (DEN, 200mg/kg) were tested using *Prosopis cineraria* methanol extract (MPC). As evidenced by a decline in the N nitrosodiethylamine (DEN) produced high levels of alfa feto protein (AFP) and lipid peroxidation (LPO), it was discovered that the administration of MPC (200 and 400mg/kg) successfully inhibited liver tumour induced by DEN.

CONCLUSION

Most references of *Shami* can be found in the *Atharvaveda*. It is used by pregnant women in *Atharvaveda*

as a preventative measure against miscarriage. In the Samhitas and Nighantu, Prosopis cineraria is used in a variety of ways. It is recommended for a variety of illnesses, including Arsha (piles), Kustha (skin diseases), Visha (poisoning), Swas (bronchial asthma), Grah (microbial disease), and Arbud (cancer). Almost all of the Keshnashan karma (hair removal) practises are recorded in the Samhita and Nighantu.

The Kramighana karma (antimicrobial action) in Bhavprakash and Kaidev is stated, and they are also referenced in terms of skin disorders. Research can be done to examine the medhya and keshaghna karma of the Shami phala, which is commonly cited. The keshaghna karma ,protein and

carbohydrate content of shami pods make them potent cosmoceuticals and nutraceuticals. In folkloric practice, shami twak, phala, and patras are frequently utilised to treat a variety of illnesses. This tree's ability to thrive in arid, hot climates without much rain as well as on poor, damaged soil, makes it special.

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