WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 7, 278-287. Review Article ISSN 2277–7105

SHAMI (PROSOPIS CINERARIA) - THE WONDER TREE OF THE DESERT: A SYSTEMATIC REVIEW OF TRADITIONAL USES AND PHARMACOLOGICAL ACTIVITIES

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Article Received on 25 Jan. 2026,
Article Revised on 17 March 2026,
Article Published on 01 April 2026,

https://doi.org/10.5281/zenodo.19326356

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How to cite this Article: *[1]Vishesh, [2]Rohit Johari (2026). Shami (Prosopis Cineraria) - The Wonder Tree Of The Desert: A Systematic Review Of Traditional Uses And Pharmacological Activities. World Journal of Pharmaceutical Research, 15(7), 278–287.

ABSTRACT

Prosopis cineraria is a tree from the Leguminosae family and is commonly known as *Khejri*, *Khijdo* and *Shami*. The leaves and pods are widely used as animal feed. *Shami* is recognized as the national tree of Telangana, Rajasthan and Western Uttar Pradesh. In Rajasthan, it is called *Khejri*, while in Western Uttar Pradesh it is known as *Chhonkara*. *Prosopis cineraria* is often referred as the “wonder tree” or “lord of the desert” because it survives well in dry and harsh conditions. The green pods, locally called *Sangari*. It used as a popular vegetable in Rajasthan and are eaten both fresh and dried. The tree has been used for a long time in traditional and folk medicine. Different parts of the plant are used to treat health problems. The leaves, pods, flowers, stem, and seeds all contain useful natural compounds. *Prosopis cineraria* is also a good source of vitamins, especially for people living in desert regions. Several species of the *Prosopis* genus are known for their medicinal value. This plant mainly contains tannins (such as gallic acid), alkaloids (like spicigerine and prosophylline), flavonoids (prosogerins A–E), and quercetin, which are responsible for its health-promoting properties.

KEYWORDS: *Shami*, *Prosopis cineraria*, Leaves, Pharmacological action.

INTRODUCTION

Prosopis cineraria is a small to medium-sized tree, typically reaching a height of 5–10 m, and is well adapted to dry and arid regions Indian states including Rajasthan, Haryana, Punjab, Gujarat, Western Uttar Pradesh and the dry zones of the Deccan plateau. It is commonly known as *Khejari* and regarded as the "golden tree" of the Indian desert due to its crucial role in maintaining the ecological balance of arid and semi-arid environments. Because every part of the tree is useful, it is often referred to as *Kalpataru* and is also popularly called "king of the desert".

The tree possesses a thick, rough, grey bark marked by deep fissures. It develops an extensive strong taproot system that can penetrate vertically. The leaves serve as valuable fodder for animals while the pods are consumed as a vegetable. The leaves are bipinnately compound and alternately arranged, consisting of 15–18 pairs of oblong leaflets with glabrous surfaces and reticulate venation. Fresh leaves are green, odorless, and have a bitter taste. During summer, new leaves emerge either before or simultaneously with the older ones. Small yellow flowers appear following the new leaf flush, typically between March and May.

There is a growing demand for medicinal plants in the modern pharmaceutical industry and *Prosopis cineraria* holds a significant place in this context. *Shami* is considered one of the sacred tree described in ancient *Ayurvedic* texts. Traditionally, it has been used in the treatment of numerous ailments.

The genus *Prosopis*, belonging to the family Fabaceae (Leguminosae), comprises approximately 45 species of thorny trees and shrubs distributed across tropical and subtropical regions of the world. Historically, species of this genus have been employed in the management of a wide range of health conditions.[1]

Ayurveda Literary Review

Onomatology

The term *Shami* is derived from the Sanskrit expressions *"Shamayati rogan iti"* and *"Shamu upashame"*, meaning "that which pacifies or cures diseases," indicating its therapeutic significance in Ayurveda.

Historical Background

Vedic and Puranic Period

During the Vedic period, *Shami* was known by several synonyms such as *Bruhatpalasha, Subhaga, Varshavridha,* and *Rutavari*. References in the *Atharvaveda* describe the use of *Shami* and *Ashwatha* wood as *Uttara-arani* and *Adhara-arani* for producing sacred fire during *Yagyas*. The leaves of *Shami* were used in *Godhana* rituals following *Annaprashana Samskara.*[2-3]

Post-Vedic Period

In the *Mahabharata, Shami* is described as the tree under which the Pandavas concealed their weapons during their year of exile.

Samhita Period

Charaka Samhita

Acharya Charaka classified *Shami* under *Kashaya Skanda* and *Phala Varga*. The leaves are indicated for *Dhoopana* in the management of *Arshas* (hemorrhoids), along with *Arka Moola*. *Shamiphala* is having *Madhura Rasa, Guru* and *Ruksha Guna, Ushna Veerya, Katu Vipaka* and *Keshaghna* action.[4-5]

Sushruta Samhita

Sushruta mentioned the use of *Shami Beeja* for *Romashatana* (hair removal) along with *Kadali, Shyonaka,* and *Haratala*. In *Annapanavidhi Adhyaya, Shamiphala* is again described with *Madhura Rasa, Guru* and *Ruksha Guna, Ushna Veerya,* and *Keshanashana* properties. *Shami* is also included in *Sarva Sarpa Vishaghna* for the management of snake poisoning and is indicated in *Amatisara* along with other drugs.[6-9]

Ashtanga Hridayam

In *Ashtanga Hridayam, Shami* is classified under *Hriberadi Gana* and is indicated in spider poisoning. *Acharya* Vagbhata also mentioned its use for *Dhoopana* in *Arshas*. A *Lepa* prepared from the seeds of *Shigru, Shami, Mulaka,* and *Sarshapa* mixed with sour buttermilk is described for reducing *Granthi* and *Ganda* (cystic swellings). In *Balagraha Pratishedha Adhyaya,* bathing infants with decoctions containing *Shami* bark and leaves is advised.[10-11]

Nighantu Period

Almost all major *Nighantus* have extensively described *Shami*, highlighting its therapeutic importance. Classical texts describe *Shamiphala* as possessing *Medhya* (intellect-promoting) and *Keshaghana* (hair-removing) properties. *Shami* among the *Panchbhringa* group of plants used for therapeutic bathing after recovery from disease.

Prosopis cineraria

Botanical Name

Prosopis cineraria (L.) Druce.

Family

Leguminosae (Fabaceae)

Geographical Distribution

Prosopis cineraria is naturally distributed across arid and semi-arid regions of the world.

- **Worldwide:** The native range of the species includes Yemen, Afghanistan, Bahrain, Iran, Oman, Saudi Arabia, Pakistan, India, and other desert regions of Western Asia and the Indian subcontinent.
- **India:** In India, the plant is predominantly found in dry and arid zones, particularly in Rajasthan, Haryana, Punjab, Gujarat, western Uttar Pradesh, and the drier regions of the Deccan plateau.

Vernacular Names

Prosopis cineraria is known by different local names across various Indian languages:

- **Bengali:** *Shami*
- **Gujarati:** *Khijado, Sumri, Semru, Sami, Kamra*
- **Hindi:** *Janti, Banni, Jand, Sangri, Shami, Chaunkra, Khejri*
- **Sanskrit:** *Jhind, Jhand*
- **Urdu:** *Jandi, Thand, Kan*

Taxonomical Classification

- **Kingdom:** Plantae
- **Sub-kingdom:** Phanerogams
- **Division:** Angiosperms
- **Class:** Dicotyledons

- **Sub-class:** Polypetalae
- **Series:** Calyciflorae
- **Order:** Rosales
- **Family:** Leguminosae (Fabaceae)
- **Genus:** *Prosopis*
- **Species:** *cineraria*

Morphological Description of *Prosopis cineraria*[12]

- **Habit**

A moderate-sized evergreen tree, attaining a height of approximately 9–18 m. The root system is extensive, penetrating several feet deep into the soil.

- **Bark**

The bark is thick, hard in texture, and dark brown in colour.

- **Leaves**

Leaves are compound and bipinnate, arranged alternately, and borne on petioles. Stipules are modified into spines. Leaflets are ovate with a mucronate apex, unequal base, entire margins, and reticulate venation. Each leaflet measures about 1–1.5 cm in length and 0.4–0.6 cm in breadth.

- **Inflorescence**

Inflorescence is a racemose spike.

- **Flowers**

Flowers are small, yellow to creamy white, nearly sessile, and arranged in slender, pedunculated axillary spikes measuring 5–13 cm in length.

- **Fruit (Pods)**

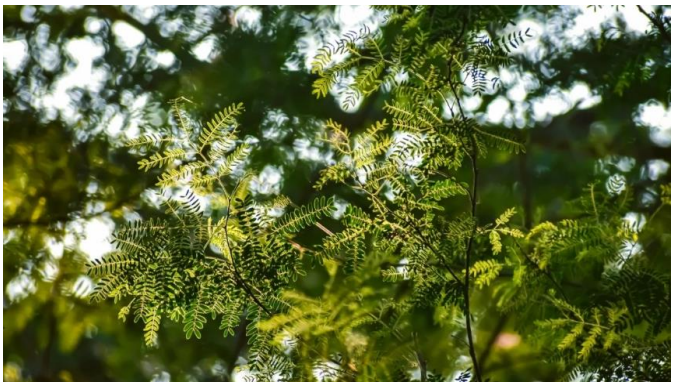
The fruit is a pod composed of three parts: mesocarp (56%), which is ground to produce flour; endocarp (35%), which is discarded as waste; and seeds (9%). Pods are yellow to reddish-brown in colour. Fleshy pods are sickle-shaped, while dry pods are cylindrical and slightly curved. Pods measure 10–20 cm in length and 0.5–0.8 cm in thickness and contain 10–15 seeds.

- **Seeds**

Seeds are dark brown, non-endospermic, and embedded in brown pulp. They are ovoid in shape, with approximately 10–25 seeds present in a single fruit.

- **Flowering and Fruiting**

Flowering and fruiting occur from February to May.



Leaves of *Shami*

Bark of *Shami*

***Rasapanchaka of Shami*[13]**

RASA	*GUNA*	*VEERYA*	*VIPAKA*	*PRABHAVA*	*DOSHGHNTA*
Katu, Tikta, Kashaya	*Laghu, Rooksha*	*Sheeta (bark) Ushna (fruit)*	*Katu*	*Rechaka*	*Kaphapitta Shamaka*

Classical Categorization of *Shami*[14-19]

Samhita	*Varga*
Charak Samhita	*Phala Varga*
Dhanvantari Nighantu	*Aamradi Varga*
Kaiyadeva Nighantu	*Oshadhi Varga*
Madanpala Nighantu	*Vatadi Varga*
Bhavapraksha Nighantu	*Vatadi Varga*
Nighantu Adarsha	*Babbulyadi Varga*

Phytoconstituents[20]

Tree: Quercetin, tannin and tryptamine

Bark: Glycoside. vitamin K1, n-octadecyl acetate, the long chain aliphatic acid. glucose, rhamnose, sucrose and starch.

Flowers: Patuletin glycoside patulitrin, luteolin and rutin sitosterol, and spicigerine. Flavone derivatives Prosogerin A and Prosogerin B.

Leaves: Campesterol, sitosterol and stigmasterol, octacosanol, Tricosan1-ol, and 7,24-Tirucalladien-3 one along with a piperidine alkaloid spicigerine

Seeds: Prosogerin C, Prosogerin D, Prosogerin E, Gallic acid, patuletin, patulitrin, luteolin, and rutin.

Doshakarma - *Kaphashamaka, Vatavardhaka Karma: Sangrahi, Vishaghana, Raktapittahara, Rechani, Rochani.*

Rogaghanta*: Atisara, Visha, Arsha, Shwasa, Kasa, Kushta, Krimighana, Bhramroga and Netraroga.*

Phala is Keshaghana and Medhya

Part used*: Twak, Patra* and *Phala*

Pharmacological actions of Prosopis cineraria[21-22]

Activity	Part used	Results
Nootropic Activity	Stem bark	The oral administration of methanol extract of P. cineraria in all doses tested, significantly ($p < 0.05$) improved both spatial reference and working memories in the MWM test in terms of decrease in escape latency. Pre treatment for 7 days significantly inhibited the activity of AChE.
Antioxidant Activity	Pods	Trolox equivalent antioxidant capacity (TEAC) of the Shami pods extracts was evaluated as percent inhibition of ABTS free radicals. The antioxidant activity determined by ABTS assay was found to be highest in MeOH extract and least in case of DCM extract
Cytotoxic Activity	Pods	Possessed significant cytotoxicity towards tumour cells.
Antihyperglycemic Activity	Stem bark	Fasting blood glucose level decreased by 27.3%,
Hypolipidemic Activity	Fruit	Significantly reduced serum total cholesterol, LDLC, triglyceride, VLDL-C and also Total cholesterol
Antibacterial Activity	Bark and Fruit	Antibacterial activity at 250 µg/ml. Methanolic extract shows significant action on all pathogens.

DISCUSSION

Prosopis cineraria (*Shami/Khejari*) represents a unique convergence of ecological importance and therapeutic potential. Its wide distribution in arid and semi-arid regions highlights its remarkable adaptability, supported by morphological features such as a deep taproot system, thick fissured bark, and bipinnate leaves, which enable survival under extreme climatic conditions. These characteristics not only contribute to soil stabilization and ecological balance but also ensure sustained availability of medicinal raw material.

The extensive documentation of *Shami* in Ayurvedic literature—from the Vedic and *Samhita* periods to the *Nighantu* era—underscores its longstanding therapeutic relevance. Classical texts consistently describe its *Rasapanchaka, Dosha karma,* and *Rogaghanta*, indicating its role in managing disorders such as *Atisara, Arsha, Kasa, Shwasa, Kushta, Vishavikara,* and *Krimiroga*. The categorization of *Shami in Charaka Samhita, Sushruta Samhita, Ashtanga Hridayam,* and *Nighantus* further reflects its polyvalent medicinal use.

Phytochemical investigations support these traditional claims, revealing the presence of bioactive compounds such as flavonoids (quercetin, luteolin, rutin), alkaloids (tryptamine, spicigerine), sterols (sitosterol, campesterol, stigmasterol), phenolic acids (gallic acid), and glycosides. These constituents are well known for their antioxidant, anti-inflammatory, neuroprotective, antimicrobial, and metabolic regulatory activities.

Modern pharmacological studies corroborate classical indications, demonstrating significant nootropic, antioxidant, antihyperglycemic, hypolipidemic, cytotoxic, and antibacterial activities across different plant parts. Notably, inhibition of acetylcholinesterase activity supports the *Medhya* property described in Ayurveda, while antioxidant and metabolic effects align with its *Kaphapitta-shamaka* action. Thus, *Prosopis cineraria* serves as a promising bridge between traditional knowledge and contemporary pharmacological research.

CONCLUSION

Prosopis cineraria is a valuable medicinal and ecological resource with profound significance in both traditional Ayurveda and modern pharmacology. Classical Ayurvedic texts extensively describe its therapeutic properties, *Dosha*-modulating actions, and wide-ranging clinical applications, while contemporary studies validate many of these claims through phytochemical and pharmacological evidence. The presence of diverse bioactive compounds across various plant parts supports its multifaceted biological activities, including

neuroprotective, antioxidant, metabolic, antimicrobial, and cytotoxic effects. Given its sustainability in arid environments and its broad therapeutic potential, *Prosopis cineraria* holds promise as a natural source for drug development and integrative healthcare. Further experimental and clinical studies are warranted to elucidate its mechanisms of action, standardize formulations, and explore its full potential in evidence-based medicine.

REFERENCES

1. Chavan P, Bhosale S, Jadhav A. Shami plant: A wonder tree—Review on ethnomedicinal claim of *Prosopis cineraria*. Int J Herb Med., 2025; 13(4): 55–60. doi:10.22271/flora.2025.v13.i4a.999.
2. Sharma PV. *Dravyaguna Vijnana*. Vol 3. Varanasi: Chaukhambha Bharati Academy; 2006.
3. Sastry JLN. *Dravyaguna Vijnana*. Vol 2. 2nd ed. Varanasi: Chaukhambha Orientalia, 2005; 74.
4. Agnivesa. *Charaka Samhita* (revised by Charaka and Dridhabala), commentary by Chakrapanidatta. Edited by Trikamji JA. 5th ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2001. Sutrasthana; 27: 160.
5. Agnivesa. *Charaka Samhita* (revised by Charaka and Dridhabala), commentary by Chakrapanidatta. Edited by Trikamji JA. 5th ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2001. Chikitsasthana; 14: 49.
6. Sushruta. *Sushruta Samhita*. 6th ed. Varanasi: Chaukhambha Orientalia; 1997. Chikitsasthana, 1: 107. p. 22.
7. Sushruta. *Sushruta Samhita*. 6th ed. Varanasi: Chaukhambha Orientalia; 1997. Sutrasthana, 46: 193. p. 98.
8. Sushruta. *Sushruta Samhita*. 6th ed. Varanasi: Chaukhambha Orientalia; 1997. Kalpasthana, 6: 3. p. 89.
9. Sushruta. *Sushruta Samhita*. 6th ed. Varanasi: Chaukhambha Orientalia; 1997. Uttarasthana. 40: 41. p. 195.
10. Vagbhata. *Ashtanga Hridayam* with Sarvangasundhara of Arunadutta and Ayurveda Rasayana of Hemadri. Kunte AM, Navre KR, editors. Reprint ed. New Delhi: Rashtriya Sanskrit Sansthan; 2002. Uttarasthana, 30: 16.
11. Vagbhata. *Ashtanga Hridayam* with Sarvangasundhara of Arunadutta and Ayurveda Rasayana of Hemadri. Kunte AM, Navre KR, editors. Reprint ed. New Delhi: Rashtriya Sanskrit Sansthan; 2002. Uttarasthana, 3: 60.

12. Sharma PV. *Dravyaguna Vijnana*. Vol 2. Varanasi: Chaukhambha Bharati Academy; 2006; 482.
13. Kirtikar KR, Basu BD. *Indian Medicinal Plants*. Vol 2. 2nd ed. Dehradun: International Book Distributors, 1999; 911–912.
14. Shukla V, Tripathi R. *Charaka Samhita*. Vol 1. Sutrasthana 27/160. New Delhi: Chaukhambha Sanskrit Pratishthan, 404.
15. Sharma GP. *Dhanvantari Nighantu*. Varanasi: Chaukhambha Orientalia, 164.
16. Sharma GP. *Kaiyadeva Nighantu*. Varanasi: Chaukhambha Orientalia, 1979; 200.
17. Vaidya RP. *Madanpala Nighantu*. Bombay: Khemraj Shri Krishnadas, 164.
18. Chunekar KC. *Bhavaprakasha Nighantu*. Vatadi Varga. Varanasi: Chaukhambha Vishvabharati, 2010; 534.
19. Vaid B. *Nighantu Adarsha*. Vol 1. Babbulyadi Varga. Varanasi: Chaukhambha Bharati Academy; 421.
20. Pareek AK, Garg DS, Kumar M, Yadav SM. *Prosopis cineraria*: A gift of nature for pharmacy [Internet]. 2015 [cited year month day]. Available from: http://www.ijpsr.info/docs/IJPSR15-06-06-002.pdf
21. Kandpal P, Kumar D, Sharma S. Medicinal value of three common plants of Rajasthan, India: A review. J Med Plants Stud., 2018; 6(6): 96–101.
22. Islam MW, et al. Exploring the literature on *Prosopis cineraria* Linn. for its therapeutic potential and safety: A review. Int Res J Pharm., 2019; 10(7): 1–8. doi:10.7897/2230-8407.1007208
23. Images of shami : The Shami Plant: Discover the Amazing Ancient Healing Powers of this Sacred Tree | Shehri Kisaan® --- The Urban Farmers.