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Review of *Sangri* (*Prosopis Cineraria* Pods) - A Rich Protein Source of Rajasthani Cuisine.

Natasha Yadav,[1] Monjoy Kumar Choudhury.[2]

1-Assistant Professor, Department of Dravyaguna Vigyana, State GAY&N College Jaipur Rajasthan India
2-Director, Ayuresurgence Diabetes Clinic, 1st Floor. Ambika Devendralaya, Block A, Chilarai Nagar Path, Bhangagarh Guwahati.

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Corresponding author-
Natasha Yadav, Assistant Professor, Department of Dravyaguna Vigyana, State GAY&N College Jaipur Rajasthan India

Email: drnatashayadav@gmail.com

ABSTRACT:

Even though Indian cuisines are famous worldwide for its culinary flavours but it is to be noted that the ingredients of Indian cuisines also possess medicinal properties as well as nutritive value. Unlike the western cuisines where meat dominate dietary protein, in India certain edible common plants provide both protein and medicinal properties. *Prosopis cineraria* is one such plant belonging to Fabaceae family whose fruits are unique to the dry arid regions of the Indian state of Rajasthan. The fruit of the plant which is commonly called as Sangri is a common vegetable regularly consumed by the locals of Rajasthan. Since the plant had been extensively mentioned in ayurveda in this review we would explore the presence of various molecules with medicinal properties and how it prevents diseases while remaining hidden as part of our food habit.

Key words- *Shami*, *Prosopis cineraria* pods, *Sangri*

INTRODUCTION

Prosopis cineraria, is also known as *Jandi*, *ghaf*, and *Khejdi*, is a promising multifunctional indigenous tree species with challenging weather tolerance. It is also known as *Kalpataru* in ayurvedic and siddha literature. Due to its beneficial properties it is also known as the Wonder tree and King of the desert .[1] In the UAE, it is known as *Ghaf;* in India, it is known as *Jand*; in Sindh, it is known as *Kandi;* in Karnataka, it is known as *Banni*; in Tamil Nādu, it is known as *Vanni;* and in Gujarat, it is known as Sami and *Sumri.* It is known as *shami* in Sanskrit. *Sankhphala, Keshahantri, Sivaphala, Mangalya*, and *Papanasini* are a few examples.[2] Khejri is a small to medium-sized thorny tree with thin branches equipped with conical thorns and light bluish-green leaves. Although they are members of the same family as beans and lentils, they are commonly classified as a different category according to how they are cooked. The many forms of sangria are all spherical, which distinguishes them from beans and lentils. Dried sangria is made by collecting and drying the pods when they are fully grown. They may split spontaneously after drying and removing the skins. The trees not only help companion plants grow and produce more, but they also give fuel, fodder, food, tiny timber, medicines, gum, and tannin. Its leaves offer nutritious feed for animals, and the wood is suitable for domestic use. Prosopis cineraria crude extracts show promising results in promoting health benefits and preventing a wide range of illnesses, including protein and mineral insufficiency.[3] The decoction made

from its twigs and petals, for example, is said to be anti-diabetic. P. cineraria leaf extracts exhibited antibacterial, antihyperglycemic, antihyperlipidemic, and antioxidative properties. External use of an aqueous extract of bark and leaves to treat skin illness disinfects wounds and aids healing. Dry pods of Khejri are reported to counteract protein and mineral deficiencies.[4] Prosopis cineraria has a variety of chemical components. In most portions of P. cineraria, phytochemical examination indicated the presence of carbohydrates, proteins, tannins (gallic acid), steroids (stigmasterol, campesterol, sitosterol etc), flavone derivatives (Prosogerin A, B, C, D, and E), alkaloids (spicigerine, prosophylline), and terpenes. The leaves are used to heal eye problems, stomach problems, and skin problems, but the fruit is claimed to be indigestible, causing biliousness, and damaging nails and hair. One of the natural cures for snake bite and scorpion sting is the plant material. Wood ash may be used as a potash source, and the ashes can be spread over the skin to eliminate hair. Prosopis cineria leaves and bark have been demonstrated to have high DNA-binding capacities. Antifungal action of seed protein against post-harvest fruits is also seen. It is feasible to make activated carbon from dried pods of *Prosopis cineraria*.[5] Adsorbents made from Prosopis Cineraria sawdust, an agroindustry waste, were effectively employed in a batch reactor to remove malachite green from an aqueous solution.[6]

MATERIAL & METHODS

Material related to *Prosopis cineraria* pods is collected from text book of Ayurveda, commentaries and modern medicine respectively. The index, non-index medical journals has also referred to collect information of relevant topic.

Review Of Literature

Prosopis Cineraria Pods

Prosopis Cineraria is the state tree of Rajasthan with good reason. This multifunctional tree, also known as *Khejri, Shami*, or *Jand,* is well-adapted to a hot desert climate because to its drought-tolerant properties. It not only plays an important part in the Thar Desert's environment, but it also maintains the soil's nutritional value. The *khejri,* known as the desert's lifeline, is a significant source of protein for both man and animal and avoids nutritional deficits. Its components can be eaten raw or cooked, as a vegetable or snack, pounded into flour, boiled into drinks, or used to make edible gum.[7]

Onomatology

The word meaning of *Shami* is "*Shamayati rogan iti, Shamu upashame*" – which pacifies diseases or cures diseases.

History

Veda and Purana

Shami was known as *Bruhatpalasha, Subhaga, Varshavridha*, and *Rutavari* throughout the Vedic period. According to Atharvaveda, *Ashwatha* and *Shami* were utilised as *'Uttaraarani' and "Adhara-arani*" to generate fire during Yagnas. After *Annaprashana Samskara, Shami* leaves were utilised for *Godhana*.[8] According to *Saayana, Shami* is believed to reduce the effects of fire/burn, thus the name *Shami.* According to *Koushikasutra,* it is one of the *Shanta Vriksha. Shami* leaves were employed for *Snana* during Moola Nakshatra, according to *Atharva Parishista*, to obtain *Putra Santana*.[9]

- The post-Vedic period *Shami* was the tree behind which the *Pandavas* concealed their weapons for a year during their exile in the Mahabharata. Charaka of the Samhita Period *Shami* was stated by Samhitha Acharya Charaka under Kashaya Skanda and *Phala Varga.* [10] For the purpose of *Dhoopana* in *Arshas Shami Patra* along with *Arka Moola* has been mentioned.[11] *Shamiphala* has *Madhura Rasa, Guru, Rooksha Guna* and *Ushna Veerya* and *Keshagna Karma*.
- Sushrutha Samhita Sushruta referenced *Shami Beeja's Romashatana Karma*, as well as *Kadali, Shyonaka*, and *Haratala*.[12] *Shami Phala* has *Madhura Rasa, Guru, Rooksha Guna, Ushna Veerya,* and *Keshanashana Karma,* according to *Annapanavidhi Adhyaya*.[13] In *Visha Adhyaya Shami* is one of the ingredients in *Sarva Sarpa Vishaghna Ksharagada*.[14] *Shami* is also used in the treatment of *Amatisara*, along with *Aralutwaka, Tinduka, Dadima*, and other herbs.[15]
- According to Astanga Hridaya *Shami* is a kind of *Hriberadi Gana* that may be used to treat spider poisoning.[16] *Shami,* along with *Arkamoola,* was mentioned by Vagbhatacharya for the purpose of *dhoopana* in *Arshas. Granthi* and *Ganda* are reduced when *Lepa* is prepared with *Shigru Beeja, Shami, Mulaka*, and *Sarshapa* crushed in sour butter milk.[17]
- According to *Balagraha Pratishedhadhyaya*, new-borns should be washed at night with Kashaya made from the bark and leaves of Put*ika, Barbara, Tumbi, Vishala, Araluka, Shami, and Bilva*.[18]

- Astanga Sangraha *Shami Phala* is described as *Guru, Ushna, Madhura* and *Keshgna.*[19]
- Nighantu Kala Almost all the Nighantukara's quoted *Shami* specially in Raja Nigahntu,Kaiyadeva Nighantu[20] and Madanapala Nighantu have described about Shamiphala having *Medhya and Keshagna Karma*.[21]

Rasapanchaka[22]

- *Rasa - Tikta, Katu,Kashaya*
- *Guna - Laghu, Ruksha*
- *Veerya - Sheeta (Phala Ushna)*
- *Vipaka - Katu*
- *Doshakarma - Kaphashamaka, Vatavardhaka*

Karma*- Sangrahi, Vishaghna, Krimighna, Raktapittahara, Rechani, Rochani Phala is Keshaghna and Medhya*
Rogaghnata*: Atisara,Visha, Arsha, Shwasa, Kasa, Kusta, Krimi, Bramaroga and Netraroga.*

Part used: *Twak, Patra* and Fruits

Varieties/*Bhedha* According to Bhavaprakasha

- *Shameera* (Prosopis stephaniana kunth) Smaller variety - Found in Punjab and Gujarat.
- According to Raja Nighantu - Shanta (Prosopis grandulosa)

Phytochemical Constituents of Pods

Calcium and phosphorus are found in fresh, ripe pods. They are high in carbs, a decent source of protein, and have high fibre content. Dry pods containing copper, manganese, and zinc produced fatty oils. 3-benzyl-2-hydroxy-urs-12-en28-oic acid, maslinic acid 3-glucoside, linoleic acid, prosphylline, 5,5'-oxybis-1,3-benzendiol, 3,4,5, trihydroxycinnamic acid 2-hydroxy ethyl ester, and 5,3',4'-trihydroxyflavanone 7- glycoside are also found in dried pods. When the boiling water extract of the pods is fractionated using methanol and trichloro methane, it results in the isolation of compounds such as 3-benzyl-2-hydroxy-urs-12- en28-oic acid and maslinic acid-3-glucoside (triterpernoids); linoleic acid (fatty acid); prosophylline (piperidine alkaloid); 5,5′-oxybis-1,2-benzanediol; 3,4,5- trihydroxycinnamic acid 2-hydroxyethyl ester; and 5,3′,4′-trihydroxyflavanone 7-glycoside (polyphenols). Various phytoconstituents like tannins (gallic acid), steroids (stigma sterol, campestral, sitosterol, etc.), Flavone derivatives (prosogerin A, B, C, D, and E), alkaloids (spicigerine, prosophylline), etc. have been isolated from the Prosopis pods.[23]

Nutritional and Medicinal Importance

Sangri are extremely nutritious and have powerful therapeutic effects. The dried pods include 40-58% carbs, 8-20% protein, 24-28% crude fibre, 3.2-4.1% fat, 5.4% ash, 0.33% calcium, and 0.44% phosphorus. Furthermore, sangri has a high-quality amino acid makeup. Dry pods have a healthy iron concentration (208-639 ppm), while copper (13-16 ppm), manganese (22 ppm), and zinc content (13-16 ppm) are likewise acceptable for human consumption.[24] The khejri tree is known as kalpataru because various plant components have been used for medical purposes in some form or another. The root is used to treat dysentery, and the smoke from the leaves is used to treat eye diseases. In the case of animals, fresh leaves of the plant are mashed to produce a paste and used to treat blisters, boils, and mouth ulcers. The bark of the tree has been shown to be effective in treating asthma, bronchitis, dysentery, leukoderma, leprosy, rheumatism, muscular spasms, and piles. This tree also has abortifacient and laxative properties. The stem bark may be used to treat respiratory and gastrointestinal ailments. The blooming flower of the tree is blended with sugar and consumed to prevent miscarriage. The twig and flower parts work as anti-diabetic agent.[25]

DISCUSSION

Plants' nutritional and therapeutic capabilities have been known for a long time, but their disease-preventing and health-promoting properties have just recently been discovered. Plant foods, such as vegetables and fruits, are essential for human health because they include carbs, lipids, proteins, vitamins, and minerals. Various health organisations have developed dietary guidelines for the prevention of chronic illnesses, cancer, and atherosclerosis. Antioxidants are the principal substances considered to give the protection provided by fruits and vegetables. Natural antioxidants found in fruits and vegetables have gained popularity among consumers and scientists as studies show that they help reduce the risk of cardiovascular disease and cancer. Vitamins, phenolics, and carotenoids are the three primary types of natural antioxidants found in fruits and vegetables. The Shekhawati area of Rajasthan, particularly the Thar deserts of Sikar, Jhunjhunu, and Churu (Sardarshahr) is blessed with rich flora that benefits humans, animals, and nutrient-deficient soils. The foliage of unripe fruit (sangri) is used by the locals to create vegetable and health care products, while ripe fruit known as 'Kho-Kha' is orally consumed by

youngsters and livestock. Plant-based medications have helped people manage a variety of ailments. A recent ethnobotanical plant study among the inhabitants of these areas revealed that numerous types of dicotyledonous plants are used. Indian and traditional methods of medicine are well recognised in the vast desert area of medicine. Prosopis cineraria (Fabaceae), an arid plant, is also known as Khejri/Shami/ Janti or the 'kalp virkash' of Indian thar deserts. The unripe and dry pods are eaten as a vegetable, while the leaves are used in traditional medicine. The antibacterial activity of different extracts of Prosopis cineraria stem bark and leaves (green and dried) is also beneficial fodder for cow feeders. This plant's roots aid nitrogen fixation. *Shami Twak, Phala,* and *Patra's* are frequently utilised in folkloric practise to heal a variety of diseases. *Shami Phala* is widely noted for its Medhya and *Keshaghna Karma*, which may be researched. *Shami pods* contain *Keshaghna Karma* and are high in protein and carbohydrates, making them effective Cosmeceuticals and Nutraceuticals.

CONCLUSION

Prosopis cineraria pods have been shown to help prevent protein and mineral deficiencies. Cattle, camels, and goats feed on the leaves and pods of this plant. P. species have also been widely employed as a folklore indigenous system of medicine for a variety of maladies such as leprosy, dysentery, bronchitis, asthma, leucoderma, piling, muscular spasms, and mental wandering. It also has anthelmintic, antibacterial, antifungal, antiviral, anticancer, and other pharmacological effects. Despite its great nutritional content and distinctive test, this crop is underutilised and requires attention to become popular all over the world.

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ORCID

Natasha Yadav , https://orcid.org/ 0009-0003-0576-0885

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