



Ethnobotanical Survey of Mimosaceae Family in Barmer, Rajasthan

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Abstract: Herbal plants are incredibly plentiful in the Thar Desert's Barmer region. The use of herbal plants in the medicinal and pharmaceutical industries has a lot of potential. These medicinal plants have long been used for a variety of ailments by locals, indigenous people, sellers, traditional medical practitioners like Bhopas, and professionals in Ayurvedic fields. In the arid region of the Thar desert, members of the Mimosaceae plant family are more prevalent. For this study, ethnomedicinal plants such as *Acacia leucophloea* (Roxb.) Willd., *Acacia nilotica* (Linn), *Acacia senegal* (L.) Willd., *Acacia tortilis* (Forssk.) Hayne, *Albizia lebbek* (L.) Benth., *Dichrostachys cinerea* (L.) Wight & Arn., *Leucaena leucocephala* (Lam.) de Wit, *Prosopis cineraria* (L.) Druce, and *Prosopis juliflora* (Swarz) DC have been selected. In an effort to draw the interest of pharmacologists, phytologists, and pharmaceutical corporations, the current investigation aims to increase understanding of the ethnomedicinal value of the plants and their uses.

Key words: Bhils, Ethnomedicinal plants, Herbal & Folk Remedies, Thar Desert.

I. INTRODUCTION

The Thar Desert, very rich in biodiversity with arid climatic conditions suitable for adaptation of different species in the region. But, extreme weather conditions like low and erratic rainfall, high temperatures, strong winds and low humidity makes it inhospitable to different habitats leaving to migration and loss of vegetation in the region¹.

Barmer is located in the western part of the state Rajasthan forming a part of the Thar Desert. The district is surrounded by Jaisalmer district in the north, Jalore district in the south, Pali district and Jodhpur district in the east and Pakistan in the west. The whole district lies between 24°58' - 26°32' N Latitudes and 70°5' - 72°52' E Longitudes. The variation in temperature in various seasons is quite high. In summers the temperature soars to 46°C to 51°C. In winters it drops to 0°C (41°F). Primarily Barmer district is a desert where average rainfall in a year is 277 mm. Kalbelia, Nats, Bhils, Raika, Bhopas, Banjara, Gadolia-Lohar, Langa and Manganiars communities residing in the district have a rich knowledge of plants used as traditional medicines².

The desert flora includes a large number of plants that are of economic or medicinal importance and 45 species that are classified as rare or endangered³. The vegetation of the Thar desert is primarily dependent on the legumes. Legume plants play a vital ecological role in N₂ fixation. The legumes are used to revitalize nutrient depleted soils, abused agricultural and grazing lands. The legumes produce secondary metabolites of poisonous nature that provide protection against predators⁴. Important secondary metabolites of legumes are flavonoids, alkaloids, terpenoids, and non-protein amino acids⁵.

Rendle, 1959 concluded that the family Mimosaceae is the smallest family of order Fabales, it includes some 40 genera and about 500-2000 species⁶, while Heywood, 1993 mentioned 56 genera and 500-3000 species⁷. Mainly tropical and subtropical are trees and shrubs. Mimosaceae classified into 8 tribes based on the nature of leaves and the number and degree of the stamens fusion⁸ or separated to 5 groups on the basis of pollen grain types suggested by Heywood, 1993. Plants of the Subfamily Mimosoideae are best known for their shade & aesthetic purpose rather than food.

Legumes play a number of important economic and ecological roles, such as providing food for people and livestock, being sources of firewood, timber, honey or medicine, and maintaining soil fertility. Most legumes are able to form dinitrogen (N₂)-fixing symbioses with a group of phylogenetically diverse soil bacteria, belonging to the Alpha- or Betaproteobacteria, that are collectively known as rhizobia⁹.



II. OBSERVATION AND DISCUSSION

Some important ethnomedicinal plants are described here in brief with their botanical name, local name and medicinal properties.

1. *Acacia leucophloea* (Roxb.) Willd.

Local name: Harmo Baval

Uses: Antipyretic and expectorant properties have been found in the bark of *Acacia leucophloea*. The various diseases that can be treated with *Acacia leucophloea* include vomiting, diarrhoea, ulcer wounds, etc.¹⁰. Bark of the plant used as an antibacterial, anthelmintic; cough suppressant, and plasma purification. Aside from skin problems like leprosy, it is used to treat periodontal bleed, mouth sores, dry cough, and fevers, as well as snakebites and diabetic febrile conditions such as diabetes. This plant's gum and bark decoction have traditionally been used to treat menstruation irregularities. The tree's inner bark is used to make dyes and tannins¹¹. Leaves are used to treat harmful bites and stings in Burma. Cough is treated in Malaysia by pounding the young leaves with rice and applying a thin paste around the neck. It's also used to cure measles by rubbing it all over the body. Scurf is treated with a mixture of leaf ash and coconut oil applied to the body. Leaves are used to cleanse the body with an herbal bath. Seeds are used as Anthelmintic and as a diabetic treatment in Indonesia. The roasted seeds are used to assist improve menstrual flow in the Philippines¹².

2. *Acacia nilotica* (Linn)

Local name: Kalo Baval

Uses: possesses various medicinal properties as per classical Unani texts such as astringent, tonic, and wound healing, aphrodisiac, expectorant, resolvent, and antispasmodic. In vivo, in vitro, and clinical studies from the published articles validate the fact that *A. nilotica* is a potential source of various bioactive compounds having various pharmacological properties and therapeutic uses. The various pharmacological activities are anti-inflammatory, analgesic, antibacterial, anticancerous, antidiabetic and antihypertensive properties¹³.

3. *Acacia senegal* (L.) Willd

Local name: Kumat, Goradio Baval

Uses: Gum Arabic is incorporated in several pharmaceutical preparations addressing ailments such as cough and sore throat infections^{14, 15}, used to treat diarrhoea, catarrh (accumulation of mucus in an airway or body cavity), pain, and wounds. When the gum is chewed, it reduces bacteria around the teeth and gums and slows the accumulation of plaque. Modern pharmaceutical applications include use as an encapsulation agent in medications and as a texturizer for oral medications. The gum is also used as a fixative in textiles, inks, tempera paints, watercolours, and gilding, and it has applications in photography, pyrotechnics, shoe-polish, and ceramic glazing¹⁶.

Gum Arabic is utilized in the food industry to set flavours, as an emulsifying agent, to prevent the crystallization of sugar in confectionary and as a stabilizing agent in frozen dairy products. It is also useful in the baking industry because of its viscous and adhesive properties, which are used to stabilize mousses and as a turbidity agent in beer. Gum Arabic is a soluble alimentary fibre and, because it can be fermented, it can be used as a prebiotic¹⁸.

4. *Acacia tortilis* (Forssk.) Hayne.

Local name: Baonli

Uses: The various part of *Acacia tortilis* plant leaves, pods, gum exudates and bark are found to be beneficial for the purpose commercially as well as medicinally. Commercially tannins derived from the bark part used as a dyestuff, pods and gum are used as a food, and leaves are useful for land fertility and cattle's grazing whereas medicinally it is useful for the treatment of various diseases like skin allergy, diabetes, diuretic and hypertension. *Acacia tortilis* are drought resistant plants; The survival of this plant in this part of the land is due to its ability to endure harsh conditions and it is also helpful to prevent soil erosion¹⁹.

5. *Albizia lebbek* (L.) Benth.

Local name: Kalio-Shirish

Uses: Traditionally plant is used as anti-asthmatic, anti-inflammatory, anti-fertility and anti-diarrhoeal, antiseptic, anti-dysenteric, anti-tubercular, leprosy, paralysis, helmenth infection²⁰, Allergic rhinitis²¹, astringent, to treat the eye, psychoactive, flu, lung problems, pectoral problems, cough, gingivitis, abdominal tumors²². It is also used in the treatment of ringworms and wounds by washing the affected areas, gonorrhoea, leucorrhoea and other genital diseases²³. Plant also shows cardio protective effects²⁴.

**6. *Dichrostachys cinerea* (L.) Wight & Arn.**

Local name: Veer-Taru, Mordhundhyu

Uses: traditionally used in the treatment of rheumatism, diabetes, coughs, asthma, kidney disorders, gonorrhoea, syphilis, malaria, tuberculosis, epilepsy, snake bites, pains, wounds, boils, burns, toothache, headache, and scabies. Veer-Taru show various important medicinal properties as anti-inflammatory, antidiarrheal, anti-analgesic, hepatoprotective, anti-urolithiatic, anti-lice, anti-dandruff, and neuropharmacological activities²⁵.

7. *Leucaena leucocephala* (Lam.) de Wit

Local name: Subabool, Liso Baval

Uses: Subabool used as hedge plants, green manure, food for animals, timber and as a bioenergy crop. The plant is also used in phytoremediation. The plant has high nutritive contents like protein, carbohydrates and fat as that of alfalfa. As timber, it is used as a raw material for making agricultural implements and the seed oil could be used as a biofuel by blending with the conventional diesel²⁶.

8. *Prosopis cineraria* (L) Druce

Local name: Khejadi, Shami, Janti

Uses: The bark is used for medicine. Bark is dry, acrid, bitter with a sharp taste. It has anthelmintic properties and is prescribed in treatment of bronchitis, asthma, piles etc. The pods are a rich source of protein and carbohydrate and eaten by animals as fodder. It is also eaten as a vegetable and pickle by local people. The leaves are palatable and nutritious feed for livestock in the desert²⁷.

9. *Prosopis juliflora* (Sw) DC

Local name: Gando-Bavalio

Uses: It controls soil erosion, stabilizes sand dunes, improves soil fertility, reduces soil salinity, provides fuelwood, construction timber, feed and food^{28, 29}. The tree's flour is used as an aphrodisiac, its syrup as an expectorant, and tea infusion to restore digestion and to treat skin lesions²⁹. *Prosopis juliflora* has also been used to treat sexually transmitted diseases and its anticarcinogenic effects have been reported³⁰.

III. CONCLUSION

The arid ecosystem of western Rajasthan exhibits a great variety of geology, physiography, and peculiar edaphic and climatic conditions. The region is a rich repository of genetic material of important arid medicinal plant wealth. These plants are not valued as herbal drugs but utilized for food, fodder, gums & resins, essential oils, dyes, fatty oils, condiments, spices etc. There is an urgent need to create greater awareness amongst the population as a whole particularly the farmers about the medicinal and economic values of these plants, hence heritage may be wisely used and exploited and at the same time conserved and perpetuated through judicious management for future generations.

This would ensure eventual conservation of valuable germplasm of medicinal plants.

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