



ETHNOBOTANY OF GENUS *CALOTROPIS* IN RAJASTHAN

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ABSTRACT

Two species of *Calotropis* grow in Rajasthan. *Calotropis procera* is wild and xerophytic species. It is widely distributed throughout in the state. *Calotropis gigantea* is the other species growing wild as well as in cultivated form. It is planted near house and worshipped by Hindus. This paper elucidates uses of *Calotropis* species by tribal and traditional communities of the state. These species have multifarious ethnobotanical uses, which are medicinal, religious, magico-medicine, domestic article, construction etc.

INTRODUCTION

Rajasthan state has about 92.38 lacs tribal population forming 13.5% of state's population. The tribal of Rajasthan constitute about 8.85% of the total population of India. Like the Western Ghats, the Chhota Nagpur and the Assam hills, the Aravallis and the Vindhyan complex are the regions of high concentration of tribal population.

The southern and south-eastern Rajasthan forms the core territories of the Bhil and Meena tribes. Garasia, Damor and Kathodias are also settled with them. Seharias are the inhabitants of the Vindhyan and Deccan plateau.

Several ethnobotanical studies have been made in different parts of Rajasthan (Sebastian 1985, Shekhawat 1986, Joshi 1987, Vyas 1987, Pandey 1989, Das 1990, Khandelwal 1998, Sinha 2000, Shrivastava 2001, Baghel 2002, Sanyasi Rao et al. 2014, Mishra et al. 2014 and Hada and Katewa 2015).

Ethnobotany of single plant species has also been carried out in Rajasthan. Sharma (1991) elucidated the ethnobotany of *Solanum surattense* from Mukundaras (south-east Rajasthan). Khandelwal (1998) described role of *Phoenix sylvestris* in Bhil life of Rajasthan. He also reported detailed uses of *Butea monosperma* in 2000. Traditional uses of *Acacia jacquemontii* was described by Choudhary et al. (2009). Meena et al. (2014) made ethnobotanical studies of an important threatened medicinal plant *Citrullus colocynthis*. Perusal of literature revealed lack of concise ethnobotanical study of *Calotropis* species from Rajasthan and therefore, present study was made to collect detailed information on uses of this plant.

METHODOLOGY

Extensive and intensive field surveys were made in different parts of the state and ethnobotanical informations were collected based on methodology followed by Jain (1967, 1987, 1989), Jain and Mudgal (1999), Martin (1994). Besides tribal and traditional people, medicine men and women, local Vaidh, Bhopa, Ojha, Gothiya, Shane etc. were also interviewed. Informations were recorded and documented on datasheets. Herbarium sheets were prepared and deposited in Rajasthan University Botanical Library (RUBL).

Botanical description

Calotropis gigantea - an erect shrubs or small tree, with ash coloured bark, clothed with white pubescence all over. Leaves sessile, elliptic-oblong or obovate-oblong, acute to acuminate at apex, semi- amplexicaul at base. Flowers in terminal and lateral umbellate cyme. Corolla purplish or white, follicles glaucous green, recurved, seeds broadly ovate, flat, comose.

Calotropis procera - Large erect shrub, stem woody, branched at the base, branches ascending, leaves opposite, decussate, sub-sessile, glandular at the junction of lamina with petiole, fugaciously cottony pubescent, flowers medium sized, arranged in axillary umbellate or sub-corymbose cymes, corona staminal, of five fleshy, leathery compressed lobes with a recurved spur at the base, adnate completely to the staminal column, more or less equal to it in length, follicles in pairs, turgid, recurved, many seeded, seed comose, coma silky white.



Phytochemistry

The latex which is present in all parts of the plant contains water and water soluble matter (86.0-95.5%) and caoutchouc (0.6-1.0%). The latex contains cardiac steroid glucosides while leaves and stalk bear calotropin and calotropenin. The root bark possesses benzoyl isolineolone, benzoyllineolone, isolineolone, madaralban and madar fluavil. Flowers contain cyaniding-3-rhamnoglucoside. Enzymes such as trypsin, A-calotropeol, B-calotropeol, B-amyrin and inorganic components such as calcium oxalate, nitrogen and sulphur are present in all parts of plants.

Pre-existing Ayurvedic uses

There are two species of Akarda, one bears white flower and other with purple. Both varieties however, possess similar therapeutic properties. Both species are alternative and they are found to be very useful in flatulence, leprosy, boils, splenic infections, piles, cough, disorders of liver and stomach, worms and other affections.

Calotropis having white flowers promote semen, are mild and digestive and cure cough, aversion of food, piles and respiratory troubles.

The purple flowers of other species of *Calotropis* are sweet and slightly bitter. These are useful in leprosy, worms, cough, piles, haematemeses and thickening of abdominal viscera.

Findings

The use of genus *Calotropis* by the natives of Rajasthan can be put into following categories.

Hut Construction

Twigs are used in wall construction and used as purlins.

Domestic articles

The wood is used to make churner and ladle. The long slender twigs used to prepare granaries.

Fibre

Fibre obtained from stem bark is made into string, which is used for weaving cots. Lint of seeds used for stuffing pillows and mattress.

Hygiene

Warmed twigs used for brushing teeth. Flower's juice is used as detergent.

Medicine

Antidote – the decoction of leaves is used or latex applied.

Asthma - A decoction is prepared by boiling bark of *Acacia ferruginea* and *Holarrhena antidysenterica* in water with *Acacia catechu* and *Calotropis procera* root, which is cooled and given at the bedtime.

THE FLOWERS ARE EATEN WITH RABDI

Appetizer – The flowers mixed with jaggery, made into pills and taken orally.

Boils and pimples – The roots are crushed over stone, the sap resulting is applied locally or latex applied.

Conjunctivitis – a cotton plug soaked in latex is tied on the soles in afternoon.

Cracked skin – latex applied locally.

Deafness - yellow leaf pounded, a pinch of salt added, filtered, juice dropped in the ear for few days.

Diabetes – root extract is given orally. Seeds of *Achyranthes aspera* dipped in the latex, kept in an earthen pot, covered and kept on fire till ash formed, this mixed with honey and licked by patient to cure.

Dog bite – latex is dropped in fine sand or mixed with sand, pills are made and given for a month.

Earache – 2-3 drops of leaf juice dropped in nostrils.

Eczema – 250 g latex mixed with 250 g cow's ghee and applied locally. Latex and grains of pearl millet made into ointment and applied locally or grains soaked in latex for few days, dried, powdered and mixed with ghee and applied locally.

Fever - Leaves boiled in water, vapours inhaled and bath given with the water.

Root powder mixed with water and taken orally.

Flatulence – Crushed root bark is taken with water to induce vomiting.

Fracture – warmed up root or its paste tied locally to relieve in pain.

Guinea worm – latex applied locally or warmed up leaves tied on mouth of swelling over the part infested with guinea worm, following this guinea worm will come out easily.

Headache – Juice of yellow leaves is dropped in nostrils, this result in sneezing followed by relief or warmed leaves tied on head or leaves burnt and smelled to get relief.

Inflamed skin – Paste of fresh leaves is applied locally.

Muscular pain – leaves boiled in oil and this medicated oil is used to massage for relief.

Pain, abdominal – warmed root or its paste tied locally.

Pneumonia - warmed or boiled leaves rubbed over body

Purgative – the root bark is crushed and given orally.

Retention of urine – latex is smeared locally on nails of hands and feet as remedy.

Rheumatism – warmed leaves rubbed over affected area. Latex is also massaged over affected part.

Ringworm – latex applied locally.

Scorpion sting – crushed root applied locally. Latex dropped in leaf and inhaled by victim of scorpion sting to get relief from pain.

Snake bite – the root grounded with the bark of *Moringa oliefera* and given to drink or crushed root given to drink will result in vomiting.

Styptic – bark tied on injury or latex applied locally.

Swollen gums – tender twigs warmed and used as toothbrush.

Thorn injury – warmed up leaves tied locally or latex applied locally for removal of thorn. Latex smeared on tobacco leaf, warmed and tied locally.

Toothache – tender twigs or root used as toothbrush.

Vertigo, in weakness – root crushed and filtrate given to avoid vertigo.

MAGICO MEDICINE

Seven leaves are circled clockwise and anticlockwise around boils. Used leaves are kept in the hut till the patient is cured.

Twigs are used for *Jhadja* to cure diarrhea, madness, swellings and vomiting.

The root is tied to the waist of a child bearing lady for easy delivery.

TOYS

The fruits are given the shape of animals by using splints of bamboo.

MUSICAL INSTRUMENTS

Sticks of *Dhol* are made using wood of this plant. Hollowed dry stem used to make *Algoza*.

rites-de-PASSAGE

A wooden structure called the *Toran* is hung at the gate, which is made of *Calotropis procera* in the desert.

The groom strikes the *Toran* with either a sword or a twig of the *Calotropis* plant.

MISCELLANEOUS

The natives of the State use latex as adhesive.

Conclusion

Genus Calotropis is widely used by tribal and traditional communities for different purposes such as in hut construction, in making of domestic articles and their personal hygiene. Long and strong fibers are obtained from the stem bark and stuffing fibers from the lint of seeds.

The different parts of plant are commonly used to cure 31 diseases. Latex is the most common part used to cure 13

diseases. Leaves and roots are used in the treatment of 9 and 11 diseases respectively.

DISCUSSION

Several uses of *Calotropis* plant has been described in the ancient literature. *Charaka* has recommended this plant in nausea and vomiting, piles, boils and carbuncle on thigh.

Sushruta has found it useful in killing worms growing in the ulcers of leprosy, earache, respiratory trouble and dog bites. According to *Bagbhata*, it is useful in toothache. *Chakradatta* has recommended it in elephantiasis of the leg and scrotum and scorpion bites. *Bhavprakash* has found it useful in splenic disorders, cough, asthma, fever, malaria, rheumatism, sprain, and swellings. *Bangasena* has recommended it in rheumatism, black spots on the face, and eye complaints. From above information it is found that there is a great scope for researchers on this plant.

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