

Ethnomedicinal Plants of Rajasthan Desert used in Herbal and Folk Remedies

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The Rajasthan desert is very rich in medicinal plant wealth. The medicinal plants of this region have great potential to be used in drug and pharmaceutical industries. These medicinal plants have been used by local people, tribal communities, vendors, native doctors such as Ojhas, Bhagats, Bhopas and experts of Ayurvedic fields since long time in herbal and folk remedies. Kalbelia, Nats, Bhils, Raika, Banjara, Gadolia-Lohar, Garasia, Kathodi, Dhanka, Saharia, Damor and Meena communities of this region have a rich knowledge of plants based traditional medicines. Ten ethnomedicinal plants like *Calotropis procera* (Ait.) R. Br., *Cleome gynandra* Linn., *Clerodendrum phlomidis* Linn., *Echinops echinatus* Roxb., *Leucas aspera* (Willd.) Spreng., *Mimosa hamata* Willd., *Moringa oleifera* Lamk., *Peganum harmala* Linn., *Sida cordifolia* Linn., *Solanum surattense* Burm. have been selected for this research work. The present investigation is aimed to create awareness about the ethnomedicinal value of the plants and their uses to draw the attention of pharmacologists, phytochemists and pharmaceuticals.

Key words: Ethno medicinal plants, Rajasthan Desert, Herbal and Folk Remedies

Introduction

India is one of the richest floristic regions of the world and is well known for its ancient heritage regarding medicinal plants and plant drugs. Medicinal plants occupied an important position in the socio-culture, spiritual and medicinal arena of rural people of Rajasthan. The inhabitants of remote areas of arid zone of Rajasthan are totally dependent on indigenous system of medicine for their health care as it is difficult for them to get modern medical facilities for their day to day health problems. The traditional healers and inhabitants of this region have a rich knowledge of traditional plant based medicines. To preserve this valuable knowledge, there is a need to document it. This will not only provide recognition of this undocumented knowledge but will also help in conservation of such important medicinal plants. The Ethnomedicinal plants of Rajasthan have been studied for their medicinal uses in herbal and folk remedies by many workers like Singh and Pandey (1998), Katewa and Sharma (2001), Singh *et al.*, (2002), Kapoor and Ranga (2003), Kapoor and Ranga (2005), Sharma and Kumar (2006), Kapoor and Ranga (2008), Kapoor and Prajapat, 2010, Kapoor *et al.*, 2010, Kapoor (2010), Kapoor (2011), Sharma and Kumar (2011), Kapoor (2012), Kapoor and Kumar (2013), Kapoor and Sharma (2013).

The present chapter highlights the importance of ethnomedicinal plants of Rajasthan Desert. Rajasthan

Desert covers most of the north-western part of Rajasthan state. This region exhibits a great variety of geology, physiography, climatic, edaphic and biotic conditions and represents diversity of medicinal plants, which occur on a wide range of habitat. Kalbelia, Nats, Bhils, Raika, Banjara, Gadolia-Lohar, Garasia, Kathodi, Dhanka, Saharia, Damor and Meena communities of this region have a rich knowledge of plants based traditional medicines used in herbal and folk remedies.

Materials and Method

To collect and document this valuable information, several field trips were made in all the twelve districts of this region. Interviews were conducted with experienced people of various tribal communities, vendors, experts of Ayurveda, and native doctors such as Ojhas, Bhopas, Bhagats and Vaidyas as they possess inherited knowledge regarding the plants of ethnomedicinal importance. Repeated enquiries and group discussion on the use of same plant were made to ascertain the authenticity of information.

Results and Discussion

Ten important ethnomedicinal plants are described here in brief with their botanical name, family, local name and ethnomedicinal uses.

1. *Calotropis procera* (Ait.) R. Br.

Family: Asclepiadaceae

Local Name: Aak, Aakra, Madar

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Ethnomedicinal Uses:

- The tribals use the plant to cure liver disorders.
- The milky latex and its flowers are cooked in earthen utensils to dry ashes. The ashes are to be taken with honey regularly one teaspoonful twice daily to cure asthma.
- Dried leaves are smoked in a pipe to cure asthma and cough.
- Dried roots (1kg) and *Achyranthes aspera* (250 gm) are mixed with dried rhizome of *Curcuma longa* (250 gm) and *Gingiber officinalis* (250 gm) and placed in earthen pot. This mixture is burned slowly to make ash. Half teaspoonful of this ash is taken by tribals with honey twice a day for 15 days to cure asthma.
- One gnostegium is given to the patient of asthma for 1st day, two for 2nd day, three for 3rd day and so on up to seven days and again it is given in decreasing order like seven for 8th day, six for 9th day and so on to cure asthma.
- Latex mixed with jiggery to consume as such to cure asthma.
- 5-6 flowers soaked in buttermilk for 2-3 hours are cooked as vegetables and eaten as such to cure asthma.
- A hollow is made into stem of this plant. Mixture is prepared by adding 50 gm coriander seeds, 50 gm sugar candy and some dry chestnuts. The mixture is kept in the hollow and closed for 8 days. On ninth day this mixture is taken out and consumed orally in the morning for 8 days to cure asthma.
- The Bhil tribals boil the dry stem bark with mustard oil and 3-4 pieces of garlic and apply this paste against rheumatic pain.

2. *Cleome gynandra* Linn.

Family - Cleomaceae

Local name - Safed bagro, Karalia, Hulhul

Ethnomedicinal Uses

- The decoction of seeds is given orally in cough, cold and fever.
- Bhils believe that leaf-juice when dropped in the ears, it is very effective to cure intermittent fever-locally called 'Tihalia or Otagia'.
- They also rub the leaves in rheumatic pains and headache.
- Garasia tribe eat fresh leaves to cure intestinal ulcer and take orally 5-10 gm seed powder with cold water daily after dinner for three days to cure painful piles and for removing intestinal worms.

- The tribals eat the vegetable of leaves to cure night-blindness and apply the seed powder on the eyes to improve eye-sights.
- Leaf extract is poured in the ear to cure earache.
- The paste of fresh leaves is applied locally to cure skin diseases.
- Seed powder is used to improve eye sight.
- Patient suffering from scorpion bite is made to smell the pieces of hulhul root seven times.

3. *Clerodendrum phlomidis* Linn.

Family - Verbenaceae

Local name - Arni, Yerna, Anni

Ethnomedicinal Uses

- Bhils apply leaf-juice on the male sex organs to cure syphilis.
- The decoction of fresh roots is also given by them orally to cure gonorrhoea and to the children to cure measles.
- The Garasia tribals mix the twigs of this plant with the fodder of their cattle suffering from diarrhoea and worms.
- They also apply non-edible seed oil to their hairs as a hair tonic.
- The Saharia and Damor tribals take about 50 gm leaves and boil them in 250 ml water till it is reduced to one-fourth. Now the decoction is filtered and little sugar is added to it before taking orally thrice a day for two days to cure pain of joints.
- However, the Bhils prepare a sweet called 'Laddoo' with seed powder, ghee and flour of *Sorghum bicolor* (Jowar) and give to the patients of rheumatism.
- They also apply leaf-juice on the pimples and wounds.
- Two tea spoon mixture of powder of dried roots and leaves is taken twice a day for 15-20 days to cure body swelling and bodyache.
- Paste of leaves is bandaged on swollen part of the body whereas in eczema and other diseases it is applied locally and 1/4th cup of juice of leaves is also taken orally.
- The fresh leaves are tied over the eyes in ophthalmia.
- The paste of root is applied locally in snake-bite as antidote whereas the decoction of roots is taken orally by the tribals as demulcent in gonorrhoea and obesity.
- Dried shoot powder of *Clerodendrum phlomidis* and leaf powder of *Azadirachta indica* are fried in purified butter and paste is prepared. This paste is applied locally by the tribals once a day for seven

days to cure eczema.

4. *Echinops echinatus* Roxb.

Family - Asteraceae

Local name - Oont-kanti, Oont-katalo

Ethnomedicinal Uses

- The Garasia and Bhil tribals apply root powder mixed with gum of *Acacia senegal* (Kumatio) to destroy lice, ticks and to heal up the wounds of cattle.
- Decoction of roots is placed in the navel of women for easy and quick delivery by the Garasia tribe in Jodhpur district.
- Saharia tribals take orally the infusion of plant with Jaggery (Gur) to cure cough, hysteria, dyspepsia and seminal debility.
- Kathodi and Dhanka tribals, however, boil the pieces of roots in milk and drink the latter for sexual vigour.
- Bhils take orally the extract of roots to cure cough and cold.
- The tribals apply the root paste on the body in fever.
- The Kathodi tribes give infusion of leaves and inflorescence in the morning for seven days to the barren ladies to induce fertility.
- They also put inflorescence on fire and inhale fumes through mouth to cure teeth infection.

5. *Leucas aspera* (Willd.) Spreng.

Family - Lamiaceae

Local name - Goma

Ethnomedicinal Uses

- The plant is used traditionally as an antipyretic. Medicinally it has been proven to possess various pharmacological activities like antifungal, antioxidant, antimicrobial, antinociceptive and cytotoxic activity
- Warmed leaves are applied locally on painful swelling, whereas leaf paste is applied locally on various skin diseases like eczema, warts etc.
- The inflorescence is massaged by the tribals on forehead to cure headache and migraine.
- Poultice of warmed leaves is applied locally in abdominal pain and gastric complaints.
- Leaf paste is applied locally in leprosy while root paste is used in hemicrania.
- The smoke of whole plant is inhaled by the tribals to cure chickenpox.
- Leaves are considered useful in chronic rheumatism, psoriasis and other chronic skin eruptions.

- Bruised leaves are applied locally in snake bites.

6. *Mimosa hamata* Willd.

Family - Mimosaceae

Local name - Jinjani, Jinjania, Liptti, Bander-Ki-Rakhi

Ethnomedicinal Uses

- The Garasia and Bhils tribes take about 5 gm of seed powder with buffalo milk during night for seven days to cure sexual weakness in males.
- Saharia tribes apply fresh juice of leaves to check bleeding from the wound and ulcer.
- Kathodi tribals, however, take orally the leaf juice in diarrhoea and dysentery.
- The criminal tribes especially Kanjar, give the leaf juice with goat milk to the children to cure bronchitis.
- Mixture of flower powder of *Mimosa hamata* and powder of bunch of sterile flowers of *Mangifera indica* is given to women in leucorrhoea and menorrhagia.

7. *Moringa oleifera* Lamk.

Family - Moringaceae

Local name - Sanjna, Hargua, Sargua, Segu, Sahjan, Sainjna

Ethnomedicinal Uses

- The fresh roots and stem bark are crushed with little water and the paste is applied to the joints for relief in swellings, tumour and in rheumatic pain by Bhils.
- Bruised fresh leaves are mixed with lime and applied to the wounds caused by snake-bite and dog-bite by the nomadic tribe Kalbelia.
- In this region however, the bark powder mixed with the bark powder of *Azadirachta indica* is given orally for 2-3 days and their paste is applied on the spot of bite.
- Garasias give the extract of fresh leaves with goat milk and sugar in acute dyspepsia and without milk in acute diarrhoea.
- The leaves of plants are used to treat scurvy and catarrhal affection, paste of the leaves is applied externally on wounds.
- Flowers are tonic, diuretic, and cholagogue.
- The seeds are antipyretic. The oil extracted from seed is used to treat gout and rheumatism.
- The roots of the young tree and root bark are vesicant and rubefacient.
- The folks found that pods are made into vegetable and is useful in care of spleen disorders, diabetes and constipation.

- The Garasia tribe has found this plant quite beneficial in curing fever, stomachache in children and pain during menstruation. Mainly leaves, roots and bark of stem are used.
- In Siddha system of medicine, leaves are used to cure boils and abscess.

8. *Peganum harmala* Linn.

Family Zygophyllaceae

Local name - Harmal, Gandhiyo, Syrian Race

Ethnomedicinal Uses

- Garasia tribes inhale the smoke of the dry plant for relief in toothache.
- The decoction of leaves is given orally to cure rheumatism and seed powder is given orally to the children with water as a vermifuge against tape worm.
- The Garasias and Bhils make a paste of root and seed powder in mustard oil and apply on hair to kill the lice.
- Meena tribes boil the seeds in *Sesamum* oil (Til) and drop the latter in the ears to cure earache.
- The decoction of entire plant is considered as a strong abortifacient by Bhils and Garasia tribals and they use it only when the *Plumbago zeylanica* (Chitrak) and *Rhynchosia minima* (Kalta) are not available to them, since latter are rather soft and safe for causing abortion.
- Seeds contain harmaline, yageine and harmine alkaloids, so the plant and dried seeds are used as drug.
- It has narcotic, emetic and anthelmintic properties. It is used in the treatment of jaundice, fever and painful menstruation, colic pains gallstones, asthma, hysteria and rheumatism.
- Higher doses are toxic and cause nervous depressions. The alkaloids act as hallucinogen. It stimulates motor tracts of cerebrum and central nervous system. Experiments have confirmed bactericidal action of the drug.

9. *Sida cordifolia* Linn.

Family Malvaceae

Local name - Bal, Kungyi, Sahaderi, Bala

Ethnomedicinal Uses

- Bhil and Saharia tribes apply pounded leaves on cuts and take internally to cure diarrhoea of pregnant woman.
- Kathodi tribals prepare a paste of flowers and unripe fruits and take orally with water against

painful urination.

- Kathodi tribals also take the roots orally with sugar to cure the effect of sun-stroke.
- The seeds make general tonic for improving sexual strength.
- Decoction of roots is administered in fever.
- The powder of root bark (with milk and sugar, or singly) is given in certain disease of woman, such as leucorrhoea and in nervous diseases.
- Root juice is used for promoting healing of wounds.
- The bark of the root, with sesamum oil and milk is efficacious in curing certain types of facial paralysis.
- Seeds of the plant are considered useful in gonorrhoea and colic pains.
- The parts of its leaves are applied in ophthalmic diseases.

10. *Solanum surattense* Burm.

Family: Solanaceae

Local Name: Ringani, Bhurhingani

Ethnomedicinal Uses:

- Bhils smoke the dry fruits to cure cough.
- The extract of roots is taken orally to cure cough.
- Decoction of whole plant with *Ocimum sanctum* (Tulsi) juice is taken orally to cure cough and asthma.
- The Damor tribes smash 9-10 anthers or 2-3 flowers and take orally twice daily for 2-3 days to cure cough.
- The Roots are thoroughly washed in water and a paste of root-bark is prepared and applied on swollen part of testicles.
- Local tribals use the root powder with honey to eat for about a month after meal to the women to increase fertility and chances for early pregnancy.
- The plant if dipped in water overnight and decoction is given to the patients cures Syphilis.
- Leaves are applied as such to relieve muscular pain.
- The juice of leaves with black pepper is given to cure rheumatism.

Conclusion

This arid region of Rajasthan is a rich repository of genetic material of important ethnomedicinal plant wealth. Tribal communities have been using these medicinal plants as traditional medicines in herbal and folk remedies since long. There is an urgent need to create greater awareness amongst the population for protection and conservation of

these ethnomedicinal plants. These studies of ethnomedicinal aspects will be useful for further researches in the field of pharmacology, phytochemistry and pharmaceutical chemistry.

References

- Kapoor, B.B.S. and Ranga P. 2003. Herbal Plants of Rajasthan Desert used in Folk Medicines. *The Tradition International Quarterly*, 1 (2): 25-28.
- Kapoor, B.B.S. and Ranga P. 2005. Protection and Conservation of Herbal Diversity of the Rajasthan Desert. *International J. Bioscience Reporter*, 3 (1): 33-37.
- Kapoor, B.B.S and Ranga, P. 2008. Protection and Conservation of Medicinal Plant Wealth of the Rajasthan Desert. *Proceedings of National Seminar on Conservation and Utilisation of Natural Resources and their Role in Sustainable Development*. Organized by SML P.G.College, Jhunjhunu Oct. 18-19 2008, 96-99.
- Kapoor, B.B.S. and Prajapat R. 2010. Medicinal Trees of Shekhawati Region of Rajasthan Used in Folk and Herbal Medicines: *Proceedings*, National Seminar On Ved, Puran, Mahabharat Aur Ayurved Mai Aushadhy Padap : Upyogit Aur Prasangikta. Organised by Sanskrit Department, Dungar College , Bikaner, 22-23 October, 2010; 177-181.
- Kapoor, B.B.S, Lakhera, S. Mishra, R. and Acharya, S. 2010. Folk Medicinal Plants of Rajasthan Desert Used For Respiratory Disorders: *Proceedings*, National Seminar On Ved, Puran, Mahabharat Aur Ayurved Mai Aushadhy Padap : Upyogita Aur Prasangikta. Organised by Sanskrit Department, Dungar College, Bikaner. 22-23 October, 2010: 182-185
- Kapoor, B.B.S. 2010. Plants Conservation in Puran and Present Context : *Proceedings*, National Seminar On Ved, Puran, Mahabharat Aur Ayurved Mai Aushadhy Padap : Upyogita Aur Prasangikta. Organised by Sanskrit Department, Dungar College, Bikaner. 22-23 October, 2010: 165-168.
- Kapoor, B.B.S. 2011. Herbal Plants Used in Folk Remedies by Tribal Communities of Rajasthan : *Proceedings of National Seminar on Conservation of Indigenous Folk Medicinal Plants*. Organized by SML P.G. College, Jhunjhunu. February 3- 4, 2012: 7-8.
- Kapoor, B.B.S. 2012. Herbal Plants Used in Folk Remedies by Tribal Communities of Rajasthan : *Proceedings*, National Seminar on Conservation of Indigenous Folk Medicinal Plants. Organized by SML P.G.Colleg Jhunjhunu. February 3- 4, 2012: 7-8.
- Kapoor, B.B.S. and Kumar, S. 2013. Ethnomedicinal Plants of Barmer District, Rajasthan Used in Herbal and Folk Remedies. *Indian Journal of Pharmaceutical and Biological Research*, 1(3): 61-66.
- Kapoor, B.B.S. and Kishor, K. 2013 Some Ethnomedicinal Tree Species of Shekhawati Region of Rajasthan Used in Folk and Herbal Medicines. *Unique Journal of Ayurvedic and Herbal Medicine*, 1(1): 5-9.
- Kapoor, B.B.S. and Sharma, M. 2013. Ethnomedicinal Aspects of Some Medicinal Plants of Hanumangarh District of Rajasthan. *Unique Journal of Pharmaceutical and Biological Sciences*, 1(1): 7-9.
- Katewa, S.S. and Sharma, R. 2001. Ethnomedicinal observation from certain watershed areas of Rajasthan. *Ethnobotany*, 10: 46-49.
- Sharma, L.K. and Kumar, A. 2006. Ethnomedicinal and photochemical studies on some selected medicinal plants of Rajasthan. *Indian Journal of Environmental Science*, 1(10), 51-53.
- Sharma, H. and Kumar, A. 2011. Ethnobotanical studies on medicinal plants of Rajasthan (India) : A Review. *Journal of Medicinal Plants Research*, 5(7), 1107-1112
- Singh, J.P. Beniwal, R.K. Kapoor, B.B.S. and Yadav, N.D. 2002. Herbaceous Medicinal Plants of western Rajasthan. In: *Advances in Resource management of the Indian desert*. (Eds.) B.B.S. Kapoor, Ali, Mathur and Kaushik. Madhu Publications, Bikaner. pp 165-186.
- Singh, V. and Pandey, R.P. 1998. *Ethnobotany of Rajasthan*. Scientific Publishers, Jodhpur.