

ETHNOMEDICINAL TREASURE OF TRIBAL RAJASTHAN

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Abstract

The state of Rajasthan, situated in the north-western part of India is endowed with wide and varied range of medicinal flora. The population of the state is predominantly rural and tribal having considerable knowledge about plants and their medicinal utility owing to their constant association with forest environment. The knowledge about plants gathered by these tribals through trial and error over the course of centuries is being kept secret and is passed on from generation to generation by the tribal medicineman. Study has been carried out to collect informations about traditional use of plant by rural, tribal and other ethnic communities of Rajasthan. Based on the field surveys and knowledge obtained from villagers and tribals, medicinal plants used for the treatment of various diseases in folk tradition of the state have been enumerated.

Introduction

The relation of man with its surrounding vegetation is age old and the use of plants for his multipurpose need dates back to centuries. Because of sheer necessity, man has been using plants and their products for food, clothing, shelter and above all for alleviating diseases. The curative properties of plants, learnt by ancient people, perhaps after several attempts of trial and error, empirical reasoning and even by experimentations and observations, have become part of the ethnomedicinal traditions. All ancient cultures of the world have evolved their own medicinal lores and practices to take care of their health problems. Such health care practices were all culturally, socially and environmentally closer to the masses and were systematically recorded and incorporated into pharmacopoeias of many eastern cultures like India, China and Arab that later became the materia medica of the traditional medicine. India's ancient culture contained a veritable mine of health care with outstanding information about medicinal plants. Ayurveda, the oldest recorded system of medicine in India is concerned with the principles of health and attaining long healthy life. 'Charak Samhita', the oldest medicinal treatise of the country, is a veritable storehouse of medicinal plants. Various systems like Ayurveda, Unani, Tibetan and Homeopathy have

been utilizing plants for their respective preparations in the treatment of human sufferings and have now assumed a great importance owing to the side effects of synthetic drugs. Tribal and other ethnic communities in different parts of India continue to depend on traditional plants for relief from illness and suffering and they have elaborated their own traditional herbal cure. However, many of these cures are often kept as guarded secrets and passed on from generation to generation. Hence, it is important to discover this hidden and secret treasure of the flora. Study was therefore, undertaken to unravel the traditional uses of plants by tribal communities of Rajasthan and the present communication embodies information relating to some common folk lore claims prevailing in Rajasthan.

Climate and Vegetation of Rajasthan

Geographically, Rajasthan is the third largest state of India situated between 23°-3' and 30°-12' N latitude and 69° 30' and 78° 17' E longitude. The geographical area of the state is divided by Aravalli hill range into two main physiographic regions, the western 2/3 sandy arid plain and eastern 1/3 having hilly tract, plateaus and plains. The climate of Rajasthan varies from arid to sub-humid. The western part of the state, called as the Indian Thar Desert, consists of either dry undulating plain of

hardened sand or rolling plain of loose sand, forming shifting sand dunes of longitudinal and transverse types. The climate of this region is very harsh with lot of variations. The mean maximum temperature during the summer is 40°C which at times crosses 50°C mark (Bhandari, 1978). Rainfall is very poor and erratic varying from 100-450 mm from north-west to eastern districts of arid areas. There are no close canopied forests in this region. Presently the forest area in this region is only 2.41% of the total geographical area extending from western Indo-Pak border to the dry deciduous mixed forest of the Aravalli hills and the south-eastern plateau. These forests are in severely degraded conditions and are bereft for vegetation (Singh & Shetty, 1977; Srivastava, 1977). The eastern zone largely constitutes the plains, deeply buried or exposed pediment plains or undulating rocky plains, valleys and the Aravalli range. The region receives rainfall between 50-80 cm and is comparatively fertile and productive with variable and dense mixed deciduous forests (Anon., 1987). The state is endowed with a wide range of vegetation which can broadly be categorised into two distinct groups, viz., the arid vegetation and the semi-arid and humid vegetation (Jain, 1972). Flora of the state provides considerable number of useful and promising species of medicinal importance (Shetty & Pandey, 1979; Sharma, 1980; Tiwari, 1979).

The Tribal People

The population of the state is predominantly rural and tribal constituting more than 50% population of the state. The main occupation of these communities is farming and livestock rearing. Tribal communities like Kalbelia, Boari, Raibari, Nut, Mina and Bhils are residing mainly in the north-western part of the state. The status of knowledge about ethnomedicines among these communities is scanty and merely 50 plants have been found to have ethnomedicinal uses. In remaining part of the state, the major inhabiting tribes are the Mina, Bhils, Bhil Mina, Damor, Damaria, Sehariya, Sehria, Sahariya and the minor tribes are Dhanka, Tadvi, Tetariya, Valvi, Kathodia or Katkari, Naikda or Nayaka, Koli Dhor, Tokre Kali, Kolcha, Patelia Kokna, Kukni and Kukna. Most of these tribes with primitive living

conditions have a direct and daily dependence on the natural resources for food, medicine, shelter, household goods, fodder, manures, etc. Due to constant intimacy with immediate vegetational environment, tribals have accrued considerable knowledge of plants and their medicinal utility. They are highly secretive about the knowledge passed on to them from their ancestors' experience in the course of centuries and are most unwilling to reveal their medical practices due to suspicion and exploitation. The present study is therefore, conducted to collect information about use of plant drugs by rural, tribal and other ethnic communities of the state. During field survey interactions were made with villagers, tribals and local medicinemen of the respective area for gathering informations on various plant drugs used by them to treat different ailments and their mode of administration. Repeated queries were also made to ascertain and verify the collected data.

Ethnomedico-Botanical Works

Floristic composition of Rajasthan has attracted the attention of many botanists and ecologists and some notable contributions have been made by various workers on survey and documentation of natural resources including medicinal flora of the state. Bhandari (1974) gave an account of plants used as famine food of the desert. Sketchy description of plants used by tribals have been given by Audichya *et al.* (1983). Herbal medicines of forest origin used by Bhils were described by Joshi (1981). Shekhawat and Anand (1984) also published an ethnobotanical profile of the Indian desert. Ethnomedicines of specific tribal localities have also been published by some workers, viz., Singh and Pandey (1980) highlighted the medicinal plant lore of the tribals of eastern Rajasthan, ethnobotanical lore of Banswara District by Misra and Billore (1983) and medico-ethnobotany of Mount Abu and Udaipur District, by Sebastian and Bhandari (1984a & 1984b). Problem specific studies were also conducted. Joshi (1991) recorded the herbal drugs used of the treatment of Guinea worm by tribals of southern Rajasthan. Billore and Audichya (1978) described tribal way of family planning through herbal contraceptives. Joshi and

Joshi (1992) indicated the prospect of traditional drugs from ethnobotanical heritage of Rajasthan for fertility regulation. Tribal remedies against snake bite and scorpion sting were published by Joshi (1993). Khan and Chaghtai (1986) gave an account of anti-cancer plants of Banswara District.

Ethnomedicines

Over 370 species of plant belonging to different families are known to contribute drugs in the ethnomedicine system of Rajasthan. Various diseases or conditions for which plant drugs are used are of common availability and are occurring within the vicinity of the villages. Twenty seven most commonly used plant drugs account for about 30% of the total remedies. These constitute the major number of home remedies and are used for more than one ailments. Medicinal plants mostly used by tribals and ethnic communities are listed and arranged below alphabetically by their botanical names, local name, and details of treatment.

Abrus precatorius (Chirmi)

The decoction of leaves is applied in leucoderma. Half boiled seeds of the plant are given with milk to the pregnant women and children as a tonic.

Abutilon indicum (Kanghi)

A lotion prepared from the leaves is applied on the affected part in cases of rheumatism. Leaves being rich in mucilage, used as demulcent tonic also.

Acacia nilotica (Desi-Babool)

Bark of the tree is used to cure asthma and bronchitis. Flowers, pods and gum-resin of the tree are largely used as a tonic in diarrhoea and dysentery. Pods after soaking in cow's milk, dried in shade, pounded and mixed with sugar are taken with milk in cases of sexual impotency. The decoction of boiled thorns is taken against joints pain. A poultice of leaves is used for eye sore. A paste of burnt leaves in coconut oil is used as an effective ointment for itch.

Acyranthus aspera (Apamarg)

Dried leaves are burnt to produce smoke which is inhaled by the patient to provide instant relief in bronchial asthma. Seeds are used in hydrophobia. Root is chewed twice daily to cure pyorrhoea and to strengthen teeth. In case of intermittent fever 10 g of leaves are taken with 100 g fresh curd once daily for five days.

Adhatoda vasica (Adusa)

Crushed seeds with onion are used as a poultice for boils. Leaves and roots are used in cough and cold.

Ailanthus excelsa (Arru)

Stem bark in the dose of 3-4 g is given with 'Old Gur' twice daily in cases of constipation. 10-15 ml fresh juice of stem bark is given for 3-5 days which gradually treats diarrhoea and dysentery of prolonged duration.

Argemone mexicana (Satyanasi)

Whole plant juice is used in the treatment of dropsy. Leaf juice is applied on eye corners in the morning and before bed to cure eye inflammation and conjunctivitis. Seed oil is used externally for skin diseases. Juice of the plant rubbed on the affected part of the body to relieve rheumatic pain.

Bauhinia racemosa (Seta)

Decoction of bark is used in diarrhoea and dysentery. Paste made by grinding the bark of Sated variety of the plant in rice water is applied on the affected part twice daily for a week in case of scrofula. The decoction of leaves is used to relieve headache in malarial fever.

Boerhavia diffusa (Punarnavan)

Roots are used in the treatment of jaundice. Crushed and boiled roots are also useful in nightblindness.

Calotropis procera (Akara)

Powdered roots are taken orally in cough and asthma. Milky juicy is rubbed over affected part of the body for relief in joint pain. Tender branches are used as tooth brushes to cure pyorrhoea and strengthening gums.

Cleome gynandra (Safed bagra)

Green leaves are crushed and applied on skin to cure blisters. The vapours arising out of the boiling water containing seeds of the plant are inhaled as a cure for cough. Green leaves are used as an antidote for rheumatism.

Cleome viscosa (Handi bagra)

The pulp of the plant is used in plague and fever. The juice of the leaves is used in ear ache.

Commiphora wightii (Guggul)

Inhalation of burnt guggulu, (the oleo-gum resin exuded from the plant) is a common practice in chronic bronchitis cases. Gum resin, in the dose of 2 g daily taken for 3-4 months regularly, helps in reducing heart ailments.

Convolvulus microphyllus (Shankhahuli)

Leaves are ground to fine powder and 10 g of it is given every day for one year as an effective treatment of diabetes. Infusion of the plant is used as a brain tonic.

Corchorus depressus (Chamkas)

Shade dried and powdered plant material is taken with goat's milk in sexual impotency and the cover-up is reported in about one week. Infusion of leaves are used in liver disorders.

Cuscuta reflexa (Amer-bel)

Decoction of stem is used in Jaundice. A cloth piece soaked in warm extract of stem is tied on affected part in case of displacement of knee cap.

Cyperus rotundus (Motha)

The root-tuber are used in various stomach disorders. Rhizomes are ground and applied externally on the affected part in case of scorpion-sting. They are also used in dysentery. Rhizomes of the plant alongwith stem pieces of Giloy (*Tinospora cordifolia*) and dried ginger (5 g each) are boiled in 250 ml of water and the decoction so prepared is given in the dose of 10 ml thrice daily for 6-7 days for as a treatment of malaria.

Euphorbia caducifolia (Thor)

The milky juice is used as a cure for coughs, applied to the skin in case of blisters and is also used in ear-ache.

Psoralea corylifolia (Baochi)

Seeds are used in skin diseases particularly in leucoderma. Seeds are ground and taken with honey for a month to purify blood.

Sarcostemma acidum (Khir-khimp)

Roots of the plant are ground and applied to the affected part of the body in case of snake bite. Infusion of roots are also taken in dog bite cases.

Solanum nigrum (Makoi)

Crushed leaves are used as an application for boils and in some chronic skin diseases. Decoction of the plant is used in chronic enlargement of liver.

Solanum surattense (Ringni)

Boiled fruits with salt are used in cough and asthma especially for children. Roots are also used in the cases of chest pain. Roots of white flower variety are used to increase fertility in women. The smoke of dried fruits is taken in to remove the worms from teeth.

Tecomella undulata (Rohira)

The bark of young branches is used for the

treatment of syphilis. Seeds are used against abscess.

Tephrosia purpurea (Jhojhra)

A decoction of the plant is used against a disease locally known as Dhamasia (cough with black phlegm). It is also used as blood purifier.

Tribulus terrestris (Gokhru)

Infusion of fruits are used as a remedy for impotency. Fruits are taken in the form of infusion for the treatment of kidney diseases and urinary troubles.

Vitex negundo (Nirgundi)

Fruits are given to the patient of gout and rheumatism. Leaves are applied on rheumatic swellings.

Zizyphus nummularia (Ber)

Roots of the plant are chewed for relief in jaw-ache and its extract is used in diarrhoea. Stem bark is helpful in curing sore/choked throat and impaired voice.

The above mentioned plant drugs have multiple uses and form the core group of home remedies utilized by various ethnic communities. Various categories such as trees, shrubs, climbers, herbs, etc., and almost every part of a plant is put to use in different medicinal preparations. A large variety of drugs exist which are sought for health problems related to climate and season like cough and cold, fever, abdominal complaints, accidental problems like cuts, wounds and burns, bites of venomous animals, Guinea worm, water borne diseases like diarrhoea and dysentery, etc.

Abdominal complaints: The fruit pulp of *Aegle marmelos* (Bel) is used in constipation. Pulp of the fruits of *Cassia fistula* (Amaltas) with sugar is given in constipation. The fruits of *Cordia gharaf* (Gundi) are used in constipation. Fruits of *Helicteres isora* (Maiorphali) are boiled with mustard oil and this oil is used externally in spasmodic stomach pain.

Abscesses: The leaves of *Lycium barbarum* (Morali) pounded and mixed with ghee are applied to cure abscesses. Seed paste of *Linum usitatissimum* (Alsi) is applied externally on affected part twice daily.

Asthma and Bronchitis: The plant *Acalypha indica* (Khokli) are used in bronchitis and asthma. The plant (*Evolvulus alsinoides* (Phooli)) are smoked in chronic asthma.

Antidote to Snake-bite/Dog-bite/Scorpion-sting: Pedicels and thalamus of mature fruits of *Cucurbita moschata* (Mitha Kaddu) are used as an antidote to scorpion-sting. Roots of *Elaeodendron roxburghii* (Jamrassi) are used as an antidote to snake-bite. The plant *Hopea dichotoma* (Ramjetta) and whole plant of *Polycarpaea corymbosa* (Dholiphuli) are used as an antidote against venomous snake-bite.

Blisters/Boils and Sores : The fragrant gum-resin exuded from the bark of *Boswellia serrata* (Salai) is used in the form of ointment for the treatment of sores and skin eruptions. The leaves of *Maytenus emarginata* (Kanker) are burnt and mixed with ghee to form an ointment which is used to heal sores. Leaf juice of *Portulaca meridiana* (Lunki) is applied in blisters and boils. Root paste of *Amaranthus spinosus* (Kantabhaji) is applied around boils and carbuncle for easy and speedy burst.

Blood purifier: Dried and powdered plant of *Enicostema hyssopifolia* (Chhota chirayata) is used with honey as blood purifier. Fruits of *Maytenus emarginata* (Kanker) are used as blood purifier.

Cuts and Wounds: Roots of *Eclipta alba* (Bhangra) is applied externally as antiseptic to wounds. A paste of roots and leaves of *Elephantopus scaber* (Hatiphata) is externally applied to cure wounds and bruises. Juice of whole plant of *Lepidagathis cristata* (Anugha) is applied on the injury or bruises. Leaves of *Sida cordata* (Dhabi) are pounded and applied on cuts and bruises. A paste of the plant *Tridax procumbens* (Gorakh mundi) is applied for healing cuts and wounds and to stop bleeding by immediate clotting of blood.

Diabetes: Young fruits of *Coccinia grandis* (Tanduri) and flowers of *Cassia auriculata* (Anwal) are used in diabetes. The leaves of *Gymnema sylvestre* (Gurmar) temporarily destroy the taste of sugar and are useful in the treatment of diabetic cases. Seeds of *Mukia maderaspatana* (Ankophor) are taken in cases of diabetes.

Diarrhoea and Dysentery: The fruit pulp of *Aegle marmelos* (Bel) is used in chronic diarrhoea. Leaves of *Desmodium triflorum* are used as a remedy for diarrhoea and dysentery. Seeds of *Wrightia tinctoria* (Bhakar-Aak) are used in amoebic dysentery.

Dental Problems: Roots of *Bidens biternata* (Ara-ka-jhara) are chewed for immediate relief in toothache. Roots of *Dicoma tomentosa* (Vajradanti) are used as tooth brushes and for curing pyorrhoea. Roots of *Salvadora oleoides* (Pilu) are used in dental diseases particularly to reduce toothache.

Dropsy: Decoction of the plant *Barleria prionitis* (Chapri) and ash of the leaves of *Hygrophila auriculata* (Ont-katela) is used in dropsy.

Ear-ache: Seeds of *Blepharis sindica* (Bhongri) are used as a cure for ear ache. Leaves of *Heliotropium echwaldii* (Kali-bui) are rolled and put inside the ear to cure ear ache.

Fever: Decoction of *Ocimum americanum* (Tulsi) leaves with 10-12 black pepper is given in case of malaria fever. Infusion of the plant *Phyla nodiflora* (Jal-butti) is used in fever. The whole plant of *Xanthium strumarium* (Chhota-gokhru) is used in long-standing cases of malaria.

Female disorders: Gum of *Butea monosperma* (Dhak) fried in ghee is given in the dose of 2 g twice daily for 15 days in case of backache and weakness caused after delivery. Flowers of *Prosopis cineraria* (Khejari) are pounded, mixed with sugar and eaten by women during pregnancy as a safe guard against miscarriage.

Guinea worm: A number of plant are being used in the state for the treatment of this disease. The remedies include application of leaf paste of

Pergularia daemia, *Calotropis* spp., *Datura* spp., *Aloe barbadensis*, root paste of *Gardenia turgida*, smearing latex of *Papaver somniferum* and *Euphorbia neriifolia*, fumigation by boiling/burning leaves of *Tectona grandis* and tying the warmed leaves of *Casearia tomentosa*, *Jatropha* spp., *Crataeva nurvala*, *Ricinus communis*, *Datura* spp. and oral administration of extract of *Salmalia malabarica*.

Gonorrhoea: The mixture of flower tops of *Acacia catechu* (Khair), cumins, milk and sugar is given in gonorrhoea. The tender leaves of *Acacia farnesiana* (Kikar), bruised in a little water, decoction of roots of *Clerodendrum phlomidis* (Arni) and the mucilaginous water produced from the fresh leaves of *Pedaliium murex* (Vilayati-gokhru) are used as a remedy for gonorrhoea.

Impotency: Powdered tuberous roots of *Curculigo orchoides* (Kali-moosli) are taken with milk as a tonic against impotency. The paste of roots of *Hemidesmus indicus* (Dudhi) is used early morning for twenty one days to cure impotency. The juice of the plant *Pedaliium murex* (Vilayati-gokhru) is taken as a tonic to regain the sexual vigourness. A paste of the whole plant of *Sida cordata* (Dhamni) with water and sugar is given in impotency for a month.

Liver problems: Entire plant of *Eclipta alba* (Bhangra) is used in hepatic enlargement. Ash of roots of the plant *Hygrophila auriculata* (Ont-katela) are used for the cure of jaundice.

Leucoderma: Seeds of the plant *Cleome vahliana* (Khira-mar) are used in leucoderma. A paste of seeds of *Vernonia anthelmintica* (Karejirigi) is used in leucoderma and other skin diseases.

Leucorrhoea: Infusion of dried leaves of *Euphorbia hypericifolia* (Dudheli) are used in leucorrhoea. Three pills made from 100 g of stem powder of *Euphorbia heyneana* (Dudhi) are taken early in the morning on empty stomach for three days continuously in case of leucorrhoea. Paste of the plant *Vernonia cinerea* (Sahdei) with little ghee is given in the dose of 10g once daily for 30-40 days as a treatment of leucorrhoea.

Nervous diseases: Whole plant of *Cardiospermum halicacabum* (Chirpota) are used in nervous diseases. A decoction of the fruits and leaves of *Centella asiatica* (Brahmi), on account of its cooling effects, is given in nervous diseases. Infusion of the plant *Convolvulus microphyllus* (Santari) is used as a brain tonic. Root paste of *Hemidesmus indicus* (Sugandhi) along with milk and sugar is taken in the morning time for 10 days to cure nervous disorders. Juice of the plant *Ipomoea aquatica* (Nali-ka-sag) is considered as emetic and it acts upon the nerves of stomach.

Nightblindness/Ophthalmia: Fresh flowers of *Adhatoda zeylanica* (Arusa) are used in ophthalmia. The extract of flowers and fruits of *Alangium salvifolium* (Akol) is used externally to cure eye-sore. In case of conjunctivitis, 2-3 drops of fresh juice *Cynodon dactylon* (Dubgrass, Dab) is applied in the eyes for 3-5 days. The leaves of *Suaeda fruticosa* (Lunki) are used as poultice to ophthalmia. Infusion of leaves of *Zygophyllum simplex* (Alathi) is applied to the eyes in ophthalmia.

Rheumatism: Seeds and leaves of *Caesalpinia bonduc* (Khar-konda) are used in rheumatism. Leaves and roots of *Cocculus hirsutus* (Bajer-bel) are used in rheumatism. The juice of tuberous roots of *Pueraria tuberosa* (Ghora-bel) with hot mustard oil is rubbed on affected part of the body. Powdered roots of *Trianthema govindia* (Bawra) with mustard oil are rubbed on the body in rheumatism.

Skin diseases: An ointment prepared from the grounded pods of *Acacia concina* (Ailah) is used in skin diseases. Juice of the plant *Portulaca oleracea* (Luni) is used as a remedy in skin diseases.

Swellings: Root paste of *Barleria prionitis* (Chapri) is applied on boils and glandular swellings. Leaves of *Calotropis gigantea* (Safed Aak) are applied on external swellings. Young leaves of *Ficus religiosa* (Peepal) with wetted wheat flour are applied on external skin eruption and swellings. Leaves of *Leucas aspera* (Goma) are crushed and applied on affected part of the body.

Syphilis: The plant *Tephrosia uniflora* (Biyani) is boiled in water and eaten. It is considered as a good

remedy for syphilis.

Tonic (general): Seeds as well as entire plant of *Blepharis sindica* (Bhongri), boiled with milk are taken as tonic. Roots of *Withania somnifera* (Ashwagandha) are also used as tonic.

Urinary troubles: Decoction of leaves of *Cadaba fruticosa* (Kodhab) are used to relieve urine obstruction. *Glinus lotoides* (Bakada) pounded and boiled in water is used as a remedy against urinary troubles. Fruits of the plant *Pedaliium murex* (Vilayati-gokhru) are used in the treatment of urinary disorders.

Conclusion

Traditional medicine continues to provide the health care needs of a vast majority of people all over the world. According to an estimate (WHO) more than 80% of the world population relies on traditional medical practices for primary health care needs. The importance of ethnomedicines has been realised by various sections of the society and the need to use herbal medicines in health care programmes is highly stressed (Singh, 1988). Ethnomedicinal studies have in recent years received much attention due to their wide local acceptability and clues for new or lesser known medicinal plants. Medicinal plants provide safe and efficient aids to health care and disease free life. Plant based drugs are preferred over the synthetic drug as the natural affinity allows total assimilation of a wide range of essential elements, developed by the growth organs of the plants, that are indispensable to human life. The present study reveals the richness of the ethnopharmacological resources of Rajasthan as indicated by the number of remedies. There is a great wealth of knowledge and practices regarding use of plants for therapeutic purpose in different parts of the state. The efficacies of these plants have been tried and tested by various communities since a long time.

Plants drugs used in tribal and other classical system of medicine deserves detailed studies. The efficacy and safety of most of the traditional remedies as well as those of lesser known or hitherto unknown remedies of the tribes are required to be

subjected to scientific verification particularly chemical investigations, pharmacological studies and clinical trials. The tradition of knowledge is valuable not merely as an indicator of plant to be screened but also equally important to evolve new methodological approach and strategies towards treatment and research. The information presented can prove to be invaluable as a starting point to provide leads for screening plants for therapeutic use and furthering the research on traditional medicinal plants for improving their quality and efficacy. It may also provide clue to various pharmaceutical industries and other organisations working for the development of new drugs. It will also provide access to specialists in search of natural products to be used in modern medicine.

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