International Journal of Life science & Pharma Research

ETHNOBOTANICAL USES OF MEDICINAL PLANTS: A REVIEW

MEGHENDRA SHARMA[1] AND ASHWANI KUMAR[2]

[1]Department of Science and Technology, Government of Rajasthan, SAT com office, IGPRS Campus, JLN Marg, Jaipur 302004.
[2]Department of Botany, University of Rajasthan, Jaipur 302004.

ABSTRACT

Ethnobotany is a distinct branch of natural science dealing with various aspects such as anthropology, archaeology, botany, ecology, economics, medicine, religious, cultural and several other disciplines. Ethnobotany is usually defined as anthropological approach to botany. There are several methods of ethnobotanical research and those relevant to medicinal plants are archaeological search in literature, herbaria and the field studies. Recently ethno-botanical studies have gained importance during recent years. In the present paper ethnobotanical studies have been conducted on some plants of Rajasthan.

Keywords: Traditional medicines, WHO, tribal people, Rajasthan, Herbal Medicines.

INTRODUCTION

1. Harshberger in 1895 coined the term ethnobotany to indicate plants used by the aboriginals. It included the study and evaluation of plant-human relations in all phases and the effect of plant environment on human society. Subsequently Schultes (1962) defined, ethnobotany as "the study of the relationship which exists between people of primitive societies and their plant environment". Ethnobotanical studies have been conducted in different parts of India like Morni and Kalesar (Ambala-Haryana) (Jain, 1984), Tharus in Kheri district, U.P. (Maheshwari et al., 1980) Bhoxa tribe of Bihar and PauriGarhwal districts, U.P. (Maheshwari and Singh, 1984). Upadhyay et al (2010) carried out ethnomedicinal and ethnopharmaco-statistical studies of EasternRajasthan. Ethnobotanical studies on *Cassia* spp. have also been carried out (Sharma et al, 2012a and 2012b). Farnsworth(1990) studied the role of ethnopharmacology in drug development in India Plants have been used by tribals and local people for cure of various diseases. As most of the diseases of modern society are life style disease and the use of herbal medicines can overcome such problems (Kumar 2000). More over several difficult diseases have problem related with vitality, diabetes, memory loss, could be cured effectively by use of herbal medicine, which is generally not possible by the Allopathic medicines. Upadhyay et al (2008) ;Saini et al(2010); Sharma and Kumar (2011)Sharma and Kumar (2012)have conducted studies on Ayurvedic crude drugs for cure of digestive diseases, leprosy, skindiseases, malaria and paralysis. However, there is no systematic documentation of this information the present papers attempts to review the information.

SURVEY REGION

Although Aravalli hill range does not pass through Jaipur but the hills of Jaipur distinct members of the

North Aravalli ranges. The range on the north-eastern side belongs to the Alwar hills while those in the east belong to the Lalsot hills. The main peaks in the district are Manoharpura (747 m), Jaigarh (648 m) etc.

VEGETATION

The vegetation of the area has been classified as "scrub jungle". Plants which can either adapt themselves to high temperatures or to low temperatures and discouraging conditions of soil and rainfall can be found. The trees are commonly lacking, shrubs are the dominant perennials, most of which form thickets e.g. *Crotalaria burhia*, *Leptadenia pyrotechnica*, *Saricostoma pauciflorum* and *Zizyphus nummularia*. This perhaps is the reason for a very low percentage of tree species.

THE TRIBALS

Tribals are the oldest ethnological groups which live far away from the civilized world. They prefer to live in forested areas, follow primitive customs and occupations, profess primitive religions, have common language and social culture, are economically dependent on each other. About 500 tribal communities are representing 7.76 per cent of the total population of the country. It is spread over 19 per cent of the total area of the nation. The total tribal population of Rajasthan state is 5,474,881 which is 12.44 per cent of the total population of this state. The tribals of Rajasthan constitute 8.07% of the total population of tribals in India. Several tribes inhabited in the state of Rajasthan, namely – 'Bhil', 'Bhil-Meena', 'Garasia' 'Damor', 'Dhanaka',, 'Kathodia', 'Meena', 'Patelia' and 'Saharia'. Besides these, there are some nomadic, semi-nomadic tribes and denotified communities also. Nomadic tribes are 'Banjara', 'Gadia–Lohar' and 'Kalbelia', whereas semi-nomadic tribes are 'Rebari', 'Jogi' and 'Masani'. 'Bori', 'Kanjer', 'Sansi', 'Bhat' are included in denotified communities. On the basis of distribution of various tribes the state can be divided into four different zone. Different zone/districts of Rajasthan.

I. **First Zone:** In this zone the districts of southern areas are included. These districts are Banswara, Dungarpur, Udaipur and Chittorgarh where 'Bhils' and 'Damors' are residing.
II. **Second Zone:** It includes Sirohi and Pali districts where 'Garasia' is the dominating tribe.
III. **Third Zone:** It has Jaipur, Sikar and Alwar districts where 'Meena' tribes reside dominantly.
IV. **Fourth Zone:** In this zone Tonk, Bundi, Jhalawar and Kota districts are included where 'Bhil' and 'Meena' form the dominating tribal population.

The Meena population (3,68025) found majority in Jaipur district and also in other tribal population e.g. 'Bhil', 'Kalbelia', 'GadiaLohar', 'Banjara', 'Kanjar', 'Sansi' and 'Bauria' found in minority. Several wild plant species are used by tribals as fodder.

ETHNOBOTANICAL USES

The large number of plants are use by tribals in making the music instruments.

I. Mythological Plants

Majority of the people belonging to tribal population believe in traditional superstition. They have strong faith in tree-spirits, evil eye and magics. Tree worship was possibly the earliest and the most prevalent form of religion. Tribals are basically religious hence trees are treated by them as Gods. At the same time they feel that these trees basically fulfill their lives requirements and life is incomplete without them. So the trees are indispensable for the survival of the tribals. Tribals of Jaipur district worship all the God and Goddesses of Hindu religion along with number of local deities. These deities are associated with a number of plant species. During the present survey 16 plant species have been recorded to be scared and auspicious, important one being of genus *Ficus* and *Acacia. Aegle marmelos*and *Ocimum sanctum* being sacred. Some of these plant species have also been reported from tribal areas as well. Tribals use various articles made from vegetable origin, which are believed to have the power of scaring them from evil spirits and counteracting dominion influence of various kinds of evil spirits. Another class of charms believed to have mystic powers are Talismans which confer goodluck for the wearer. Frequently small cases (*Tabaiz*) made of silver, copper and brass, while some tiny bags made of black cloth are hung round the neck or

fastened on the arm for this purpose. They contain an odd assortment of articles namely two and half grain of *Oryza sativa*, two and half grain of *Vigna munga, V. radiata,* two and half grain of *Hordeum vulgare,* two and half flower bud of *Clove* and a piece of *Cuscutareflexa*. For "*Jhada*" purpose, 13 plant species have been recorded from the areas, these are employed for physical and psychic problems of the tribals for various superstitious rites to ward off evil eyes and evil spirits, 26 plant species were recorded.

Folk medicine

Descriptions of trees and flowers are found profusely in folk songs and there are songs of worship of plants. Religious songs have references to offering of flowers and fruits. Folk songs in praise of Bamboo (*Bambusa vulgaris*Schard. ex. J.C.Wendl), Basil (*Ocimum sanctum* Linn.), and Amaltas (*Cassia fistula* Linn.) are sung, believing these plants are the abode of severalGods and Goddess(Agarwal, 1997). A few trees such as *Santalum album*, held sacred by Hindus. Dried inflorescence of *Prosopis cineraria* Linn. (Khejiri) is held sacred by the Vaishnavas. *Achyranthes aspera* Linn.(Chirchiri) is used scared payees in Rajastan desert. The use of palas (*Butea monosperma* O.Kuntze.) for dying clothes are common in folk songs. In Bengali songs, references are made for decorating the walls of houses with straws of rice (*Oryza sativa* Linn.) and several flowers. Pharmacognostical and antibacterial effects of different extracts of *Euphorbia hirta*L**.** and *E. tirucalli* L. have been studied **(**Upadhyay et al., 2010a, 2010b) Palas (*Butea monosperma* O. Kuntze.), Kachnar (*Bauhinia variegata* Linn.), and Mahua (*Madhuca indica* Gmel.) etc bear flowers and fruits which are offered to Gods and Goddess to invoke blessings for the fulfiliment of wishes (Matiyani, 1957). In Bundelkhand, at the time of the festival of Mamulian girls decorate the spiny, green branches of Babul (*Acacia arabica*Willd.) with colourful flowers. They offer various fruits to the trees for the fulfillment of their wishes (Sankrityayan and Upadhyaya, 1960). Certain trees like Basil (*Ocimum sanctum* Linn.), Palas (*Butea monosperma*O.Kuntze.), Sandal wood (*Santalum album* Linn.) find a prominent place in songs sung in religious rites. On auspicious occasions, such as birth of babies, thread ceremonies, marriages and other religious functions, all have associations with mandaps made from bamboo (*Bambusa vulgaris* Schard. ex. J.C. Wendl) and plant culms, the paintings of floors with sandal (*Santalum album* Linn.) and the decoration of doors with mango leaves. In thread ceremonies Palas (*Butea monosperma* O.Kuntze.) is an essential item (Uppadhyaya, 1960). Thus, from the very ancient times, Indian folk life has not only been including trees, plants and flowers as members of their own family but has also found in them the image of God (Jain, 1958). It is for this reason that the songs, tales and other expressions are replete with deep affection for trees and plants.

Cosmetic uses

Since early age plants have served for human adornment for the millenia and people have been using various kinds of herbs to maintain their beauty. The study revealed that the use of plants as herbal cosmetics is prevalent among the tribal communities and represent not only a part of their ethnic culture but also witness the use of plants in their regular health care practices since ancient times. All kinds of skin and hair problems are frequently treated through external application of the herbal preparations in the form of paste, powder, lotion, body massage oil and hair oil. Every individual of tribal community is able to provide some sort of information about the herbs used as cosmetics. During survey, 29 plant species were recorded, which are used for cosmetic purpose by the tribals of this area. These plant species used by the tribal communities for solving common beauty problems *viz*. skin management, hair management. The most common plants recorded are *Curcuma longa, Vitex negundo, Ocimum sanctum, Sesamum indicum* and flour of *Cicer aritinum.* Flowers are universally used as ornaments in tribal areas, worn in the hair or strung as garlands. Various kinds of seeds are used for adornment purpose by tribal people. Fruits of various plant species are also used as adornment of their domestic animals. Tribals also use plant fibers, commonly worn on human limbs and serve as strands of string beads. In addition to decoration, adornment is often regarded as having amuletic powers or is used as social diacritical marks.

Every plant existing on this planet has

economic qualities either edible, medicinal or commercial (Kaushik, 1988). The plants used in cosmetics donot merely enhance beauty but have definite medicinal value also (Sharma, 1979). Sandal (*Santalum album* Linn.), turmeric (*Curcuma domestica*Valeton.) and other plants are used in the formation of a paste for improving the complexion of a bride.Paste of sandalwood (*Santalum album* Linn.) and shikakai (*Acacia concinna* DC.Vern.)is used for marking on the forehead. Brides use sandal (*Santalum album* Linn.), rose (*Rosa damascene* Mill.) to perfume their body. *Acacia concinna* DC.(Vern.Shikakai); Pods are blended into shampoo and hair cleanser with *Sapindus mukorossi* Gaertn Vern. Ritha to promote hair growth and to stop hair splitting, falling and dandruff.

Plants in Fabric Printing

The pink city Jaipur, is also known for its excellent block printing, throughout the world. Sub-towns, like 'Sanganer' and 'Bagru', of the district developed into a printing centre in last centuries. Their subtle colourways and stylized floral and other motifs were developed to meet the needs of a selected and elite clientele. The "Chhipa" community of the district carried out this block printing work from ancient times. The colours are prepared from plant materials and prepared blocks of local flora and fauna as designs from locally available specific woods. For the preparation of various dyes, 9 plant species have been recorded, while 6 plant species recorded for making wooden blocks and 25 plant species recorded for making various motif and floral designs, which also represent the flora of this district. In these designs one can clearly identify the leaves of *Azadirachta indica, Aegle marmelos, Ficus religiosa* etc., flowers and fruit of *Datura metel*, fruits of *Mangifera indica* and seeds of *Elaeocarpus sphaericus* and *Coriandrum sativum*.

Plant Dyes

Dyes are also obtained from flowers of *Butea monosperma* O. Kuntze. (Palas), *Caesalpinia sappana* Linn.(Bakam) and leaves of *Tectona grandes*. Red dyes from *Caesalpinia coriaria* Willd. (Divi-divi.). Indian ink is prepared from the bark and leaves of *Terminalia catappa* Linn. Blue dyes from leaves of *Indigofera tinctoria*Linn.(Neel) and the root of *Petrocarpus santalinus* Linn. (RaktaChandan) (Jain, 1997).

Soil conservation

Traditionally some plants are kept on the fields by farmers as they know their potential benefits through generations. Khejiri(*Prosopis cineraria* Linn.) is most common tree in the Thar desert of Rajasthan. They are grown all over the crop fields. Crops like millets, moth (*Phaseolus aconitifolius* Jacq.),Currybeans (*Phaseolus lunatus*Linn.), moong (*Phaseolus mungo*Linn.) leaves and oil seeds grown well in combination with it. Recent researches indicate that it brings up moisture and nutrients from underground soil for crop grown above. The leguminous plants or trees in field also fix nitrogen by nitrogen fixing bacteria in the root nodules and green manure to the soil by their leaf fall.

Other uses

Aonla, AonlaMewarBawul, BawulMarwar: Here plants are used to distinguish Mewar from Marwar. English rendering would be *Cassia auriculata* Linn. Characterizes Mewar, whereas *Acacia nilotica* Indica. Characterizes Marwar. Raja Bheem used the names of plants to distinguish his own land from that of his enemies in Rajasthan. He stated that

"Wherever the Aonla (*Cassia auriculata* Dell.) put forth its yellow blossom, the land is of right ours; we want nothing more, let them enjoy their stunted Babuls (*Acacia nilotica* Indica.), their Kureels (*Capparis decidua*), the aak (*Calotropis procera*) but give us our sacred Peepal (*Ficus religiosa* Linn.) and the Aonla of the border." [English rendering by Todd, (1829)]. Leaves of *Trigonella foenum - graecum* Linn. (Methi) are placed with clothes to protect them from insects. Oil used as luminant and cooking medium is obtained from seeds of *Derris indica* Benth. (Karanja). Being fragrant, Sandal (*Santalum album* Linn.) and wood is burnt in temples. Twigs, wood, bark of *Indigofera oblogifolia*, *Acacia niloticaspp.* and *A. indica* are used for brushing teeth. The vegetable lime used in Ceylon in betels is obtained by burning the bark of *Terminalia alata* Heyne. ex.Roth. (Asan, Sain, Saj). Charcol of *Acacia catechu*Willd. (Katha)is used in iron smelting. The stem of *Abrus precatorius* Linn. (Chrimiti) is used by jewellers to increase adhesion

while soldring delicate ornament Leaves of *Bauhinia racemosa* Lam. (Mawal, Ashta) and *B.vahlii* Wight. andArn. (Mahul) are used. Cooling screens in hot weather are prepared from *Alhagi pseudo-alhagi* Linn.(Javasa). *Pterocarpus marsupium* Roxb. (Bijsal) (Papilionaceae) provides gums useful for medicines and industries. The local tribal usually collect gums for contractors. A number of timbers are used for making instruments particularly *Pterocarpus marsupium* Roxb. (Bijsal) (Papilionaceae) and *Terminalia alata* for drums.

DISCUSSION

Ethnobotany, in totality, is virtually a new field of research, and if this field is investigated thoroughly and systematically, it will yield results of great value to the ethnologists, archaeologists, anthropologists, plant-geographers and pharmacologists etc.Theherbal medicine alsosuitstothesocialand culturalneedsofthepeople andinfluence the patient'sphysical, mentalandemotional statesas well.Theherbaldrugsprepared withthetraditional methods through slow grinding and mixing processes conserves all the natural substances within it in the 'naturally balanced form' without losing any essential component and maintains the activity and purity of the drug. The presence of several essential components in the 'naturally balanced state' is perhaps the very basis which accounts for the minimal side effects of herbal drugs. They are being tested since time immemorial and proved to have side benefits in place of adverse effect generally produced by synthetic and chemical based harmful products. A number of plants may be processed in cosmetics which are in great demand in India and abroad likely. Perhaps the outstanding example, at least in modern times of the use of the literature is the huge compilation of all anti-tumour plants, cited in old texts and local folk medicine from all over the world for screening purpose at Cancer Chemotherapy National Service Center (CCNSC). Our ancient literature can also be tapped for information on medicinal plants. It is estimated that nearly one third of about 15,000 higher plant species in India are used by the tribals and poor people. No authentic record of any kind except a few archaeological sculptures of Mohenjo-Daro is available from the prevedic period in this country. But, Rigveda and Atharvaveda, which date back to 2000 to 1000 B.C. are our oldest Vedic literature resources. They contain valuable information regarding medicinal plants of that period. Thus, from the very ancient times, Indian folk life has not only been including trees, plants and flowers as members of their own family but has also found in them the image of God. It is for this reason that the songs, tales and other expressions are replete with deep affection for trees and plants.Edaphic factors influenced the Laws one content of *Lawsoniainermis* L. (Singh, et al., 2010): *Adhatodavasica* Nees have been found as Putative HIV-Protease inhibitor (Singh et al, 2010) .Thus plants have potential medicinal uses but their contents may be influenced by edaphic and climatic factors which need further investigations.

REFERENCES

1. Farnsworth, N. 1990. The roleof ethnopharmacology in drug development. In : Bioactive compoundsfrom plants, (D.J. Chadwick andJ.Marsh, eds.).JohnWiley and SonsPublisher.NewYork.pp2-21.
2. Jain, S.P. 1984. Ethnobotany of Morni and Kalesar (Ambala-Haryana). J. Econ. Tax. Bot. 5 :809-813.
3. Maheshwari, J.K., K.K. Singh and S. Saha. 1980. Ethnomedicinal uses of plants by Tharus in Kheri district, U.P. Bull. Medico-ethnobot. Res. 1 :318-337.
4. Maheshwari, J.K. and J.P. Singh. 1984. Contribution to the ethnobotany of Bhoxa tribe of Bihar and PauriGarhwal districts, U.P. J. Econ. Tax. Bot. 5 :251-259.
5. SainiM.L,SainiR, RoyS and Kumar,A (2008) Comparative pharmacognostical andantimicrobial studies of *Acacia* species (Mimosaceae). Journal of Medicinal PlantsResearchVol.2:378–386.

6. SharmaS and Kumar A (2011) Studies on growth and physiology of some medicinal plants: improving growth and productivity of medicinal plants. Lap Lambert Academic Publishing , Germany pp 357.

7. Santosh Sharma and Ashwani Kumar (2012) Pharmacognostical studies on medicinal plants of semi-arid region. Prime Research Medicine . 2(3): 505-512.
8. Sharma, S., Roy, S., Raghuvanshi R.K., Kumar, A., (2012a). *Cassia fistula* L. and *Cassiaoccidentalis*L.: Plants of Traditional Medicines. The Journal of Ethnobiology and Traditional Medicine. Photon 117 156-161.
9. Sharma, S., Roy, S., Raghuvanshi R.K., Kumar, A., (2012b). Ethnobotanical studies on some medicinal plants: *Cassia* spp. The Journal of Ethnobiology and Traditional Medicine.Photon 117: 162-166.
10. Schultes, R.E. 1962. The role of ethanobotanist in search for new medicinal plants.Lloydia 25 (4) : 257-266.
11. Upadhyay B., Parveen, . Dhaker,A.K and KumarA. (2010)Ethnomedicinalandethnopharmaco-statistical studiesof EasternRajasthan,India *Journal of Ethnopharmacology*,129(1,4):64-86.
12. Singh, K.P., Upadhyay, B., Prasad, R. and Kumar, A. (2010): Screening of *Adhatodavasica*Nees as Putative HIV-Protease inhibitor.Journal of Phytology Phytopharmacology2, 78–82.
13. Upadhyay, B., Dhaker, A.K., Singh, K.P. and Kumar, A. (2010): Phytochemical Analysis and Influence of Edaphic Factors on Lawsone Content of *Lawsoniainermis*L. .Journal ofPhytology Phytochemistry2, 47–54.
14. Upadhyay, B., Singh, K.P. and Kumar, A. (2010a): Pharmacognostical and antibacterial studies of different extracts of *Euphorbia hirta*L. .Journal of Phytology 2, 55–60
15. Upadhyay, B., Singh, K.P. and KumarA.(2010b):Ethno-medicinal, phytochemical and antimicrobial Studies of *Euphorbia tirucalli*L. .Journal of Phytology 2, 65–77.