

Survey of Ethnobotanical Medicinal Plants Used by the People of District Guna, Madhya Pradesh, India

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ABSTRACT

The documentation of the biodiversity and its traditional, as well as medicinal uses by the ethnic communities, have assumed priority due to the misuse and rampant loss of biodiversity, the emerging threats of biopiracy and the increasing patent wars on bioresources. Since, the medicinal plants are very important for the production of various drugs because thousands of years ago, these plants are used by our forefathers for the treatment of various diseases. Therefore, now a day, these medicinal plants are used for the production of various drugs as well as to cure various diseases. Though there are a good number of publications on ethnobotany on particular and different tribes but the present studies were carried out to explore the vascular plant diversity and investigate the ethnomedicinal potential and their conservation status in the villages of Guna district, Madhya Pradesh, India. In this research survey, only medicinal plant, their local names and their medicinal uses were interviewed and presented. The information was obtained from local informant i.e. Vaidhays, Hakeems and Ayurvedic Practitioners etc. having knowledge about medicinal plants. The paper deals about some medicinal plants used by the Bheel primitive tribe of Guna district, Madhya Pradesh, India. The paper enumerates 25 medicinal plant species belonging to eighteen families used by Bheel tribes for curing various ailments among human beings and animals.

Key-words: Ethnobotany, Medicinal Plants, Tribes, Ethnomedicinal, Multidisciplinary science

INTRODUCTION

Ethnobotany is a multidisciplinary science defined as the interaction between plants and people. The relationship between plants and human cultures is not limited to use of plants food, clothing and shelter but also includes their use for religious ceremonies ornamentation and health care ^[1].

In the past, ethno-botanical research was predominately a survey of the plants used by villagers but modern ethnobotany concerned with documentation, description and explanation of complex relationships between cultures and (uses of) plants: focusing primarily

on how plants used, managed and perceived across human societies (e.g as food; as medicines; in divination; in cosmetics; in dyeing; as textiles; in construction; as tools; as currency; as clothing; in literature; in rituals and in social life ^[2].

The fundamental structure of ethnobotanical research is to examine the dynamic relationship between human populations, cultural values and plants recognizing that plants permeate materially and metaphorically many aspects of culture and that nature is by no means passive to human action but interacted with each other. Evidence shows that people who have lived in one locality for a long time have rich sets of knowledge about and cognition of plants and local ecology.

Some other researchers ^[3] induced a tentative research on the social and cultural values of ethnobotany. To document the secret uses of plants, Ethnobotany has become an important part of our world. Recent studies of tribal knowledge of plants are an imperative fact of ethno-botanical research; people healed themselves

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with traditional medicines and ancient remedies from time immemorial^[4,5].

Human beings have found remedies within their habitat, and have adopted different strategies depending upon the climate, phyto-geographic and faunal characteristics, as well as upon the peculiar culture and socio-structural typologies^[6]. Most of such information is passed on the following generations by traditional healers through oral communication and discipleship practice^[7]. Moreover, the World Health Organization (WHO) has reported that about 80% of the world population relies on traditional medicine to cure ailments^[8] and about 84% of India depends on the traditional system of health care^[9].

Today the field of ethnobotany requires a variety of skills: botanical training for identification and preservation of plant specimens, anthropological training to understand the cultural concepts around the perception of plants, linguistic training, at least enough to transcribe local terms and native morphology because the native healers are often reluctant to accurately share their knowledge with outsiders^[10].

Today, nearly 74% of pharmacologically active plant-derived components were discovered. Currently, people of Asia and India are utilizing plants as part of their routine health management^[11]. In 2003 at the 32nd session of UNESCO, the convention for safeguarding intangible cultural Heritage was adopted in Paris, in which it was stated for the first time that knowledge and practices concerning nature and the universe and part of our cultural heritage, means that ethnobotany, ethnobiology, folk medical and pharmaceutical knowledge and now recognized as being inextricable components of culture and therefore worthy of being protected and sustained^[12].

The herbal medicine occupies a central position from the ancient times to present day. The ethno-botanical pharmacology is as old as man himself. In India, first record of plant medicine was compiled in Rigveda between 4500-1600 BC and Ayurveda 2500-600 BC. In the late 1970s ethno-botany introduced as a science in China, but the deep-rooted ethno-botanical knowledge in Chinese culture can be traced back to very ancient times. The vast literature on Chinese Materia Medica, agriculture and horticulture is proof of this history^[13]. Similarly, the Unani system in subcontinent like Pakistan is very popular^[14].

In India there are many traditional systems of medicine, namely Ayurveda, Siddha, Unani, Homeopathy and Allopathic are distinguishing. Ethnomedicine is an area of research that deals with medicines derived from plants, animals or minerals and used in the treatment of various diseases and ailment based on indigenous pharmacopeia, folklore and herbal charm. The use of plants for medicinal treatment dates back to 5000 years. Over 2500 plants species are officially recognized for medicinal purposes while over 6000 plants are estimated to be explored in traditional, folk and herbal medicine^[15].

In India much literature relevant to ethno-botany can be traced in the Vedic literature, Charak and Shusruta and Charak Samhita appeared as the most important works. Very little organized work had been done until about twenty years ago. Several workers have been investigated the ethno botany of northern, southern and central India. India has a rich diversity of flora and fauna due to an immense variety of climate and altitudinal zones coupled with varied ecological habitats. Diversity refers to total variability within all the living organisms and ecological complexes with which it exists^[16-23].

Among different types of forests, the tropical dry deciduous forest occupies the largest area in Central India Madhya Pradesh including newly formed Chhattisgarh state possess largest forest area in the country^[24]. Due to increasing developmental work and other causes, the forest area in Madhya Pradesh like other states has been depleted quantitatively and qualitatively.

Madhya Pradesh literally means "Central Province", and is located in the geographic heart of India, between latitude 21.2°N - 26.87°N and longitude 74°02' - 82°49' E. The state straddles the Narmada River, which runs east and west between the Vindhya and Satpura ranges; these ranges and the Narmada are the traditional boundaries between the north and south of India. Among different types of forests, the tropical dry deciduous forest occupies largest area in Central India^[25].

Madhya Pradesh is home to a large tribal population, who has been largely cut off from the mainstream development. This makes Madhya Pradesh one of the least developed states in India, with an HDI (Human Development Index) value of 0.375 (2011), which is well below the national average^[26]. The ethnic people

residing in different geographical belts of Madhya Pradesh depends on wild plants to meet their basic requirements and all the ethnic communities have their own pool of secret ethno-medicinal and ethno pharmacological knowledge about the plants available in their surroundings^[27-30].

Due to changing life style, extreme secrecy of traditional healers and negligence of youngsters, the practice and dependence of ethnic societies in folk medicines is in rapid decline globally, therefore, ethno-botanical exploitation and documentation of indigenous knowledge about the usefulness of such a vast pool of genetic resources are deliberately needed^[31-34].

Recently due to unplanned developmental programs, increasing modern healthcare facilities and impact of modern civilization in this area, natural resources, as well as traditional knowledge and tribal cultures are depleting rapidly at an alarming rate. Therefore, it is urgent to explore and document this unique and indigenous, traditional knowledge of the tribal community, before it diminishes with the knowledgeable persons.

Further, documentation of indigenous and traditional knowledge is very important for future critical studies leading to sustainable utilization of natural resource and to face the challenges of biopiracy and patenting indigenous and traditional knowledge by others.

Therefore, we selected several villages of tribes of Guna district for ethno-medicinal investigation because this area is very rich in phyto-diversity and tribal population.

The current study area is Guna district present in M.P. It extends between latitude 23°53' N and 26°06' N and longitude 76°48'30" E and 78°16'70" E. It is the administrative district of Madhya Pradesh and is located on the banks of Parbati River. Guna district of Madhya Pradesh is the gateway of Malwa and Chambal. It is located on the north-eastern part of Malwa Plateau. The western boundary of the District is well defined by Parbati River. Parbati is the main river flowing along the western boundary touching Rajgarh District of Madhya Pradesh, and Jhalawarh and Kota Districts of Rajasthan. Towns Shivpuri and Kota are located in north and the cities Vidisha, Bhopal, and Rajgarh lie to the South. The eastern boundary of district defines by Sindh River. The average altitude of the district is 482 meter above mean sea level.

MATERIALS AND METHODS

The plants specimens collected from the area were classified on the basis of their overall utility in the study area. Information on the plants used for infectious diseases of folklore origin was obtained during the ethnobotanical survey of Guna district. The surveys were conducted from April 2011 to March 2013 using ethnobotanical and Participatory Rural Appraisal (PRA) methods. The ethnobotanical information was collected through interviews of the inhabitants, herd's men, Vaidhyas, Hakims, plant collectors on the basis of age and gender group of the area. The information includes regarding plant usage are medicinal, fuel, timbers, fodder, fruits, vegetables, condiments, spices, plants used as ornamental, fences, dyes and poisonous plants. Information obtained from the healers during field-walks (particularly plant names and ailments treated) was later verified in evening meetings with the herbal healers, Headman and any member of the tribal community who wished to be present. The data obtained regarding plants use from the area was checked and compared with the available literature and hence reconfirmed. These informations were arranged according to their indigenous uses and are presented in tabulated form. The dependence of the local population on plant resources, their ethno-medicinal and cultural aspects as well as their conservation status was also documented. The inventory for various uses includes voucher number, scientific names, local/common names, family, habitat, habit, Part used, flowering and fruiting season.

The purpose of the survey was clearly explained and consent obtained for dissemination of the knowledge both nationally and internationally. With the exception of only a few plants, the healers declined to have the exact formulations and dosages published on the ground that this could damage their professional interests.

The plants are arranged alphabetically by their generic and specific names followed by synonyms, name of family, vernacular, English, Sanskrit and regional names, distribution, brief description of systematic account, flowering and fruiting, habitat ecology, material examined (voucher specimen number), parts used, folk uses from own field observation.

RESULTS

In this study, we focused mainly on medicinal plants reported by the local people i.e. Vaidhays, Hakeems, Ayurvedic Practitioners and tribal inhabitants, in and around the study area for their medicinal uses. In the

present investigation, sixteen medicinal plants were collected from the area of survey, authenticated from a registered institute and identified from the relevant literature. Medicinal plant species of the area have been enumerated in the Table 1.

Table 1: Traditionally used medicinal plants in various areas of Guna district

S. No.	Scientific Name	Local Name	Family	Part Used	Medicinal Value
1	<i>Accacia catechu</i>	Khair	Fabaceae	Stem, Gum	Stem used in preparation of cart wheel and 'Data'. It is used to prepare the musical instrument. Dry gum (commonly known as kattha) is used as a flavoring agent in 'Paan' chewed after meal
2	<i>Acacia nilotica</i>	Babul	Mimosaceae	Bark, Twigs	Bark is useful in malaria fever. Bark ash is used in skin diseases and piles with karanz oil. Tender twigs are used as tooth - brush
3	<i>Aegle marmelos</i>	Bel	Rutaceae	Leaves, Fruits	The tree is sacred to the tribes. Ripe fruits eaten raw. Unripe or half ripe pulp of fruits is boiled and is given in diarrhoea. Pulp of ripe fruits mixed with water for making 'Sharbat' acts as soothing agent. Tender leaves are used to prepare 'Chutney'
4	<i>Allium cepa</i>	Pyas	Liliaceae	Bulb	Fresh juice of onion bulb is applied externally on boils to help ripen them, break them and evacuate pus, also applied hairs 2-3 times a day for 10-20 days for growth of healthy hair
5	<i>Allium sativum</i>	Lahson	Liliaceae	Bulb	About 3 cloves of garlic are rubbed 3 times a day regularly for 5 days is very useful to regenerate hairs on the area of baldness appearing suddenly (Alopeciaerate)
6	<i>Aloe vera</i>	Gwarpata	Liliaceae	Leaves	Cut a fresh leaf and scratch its mesophyll by knife, a jelly like substance appears. It applies directly upon wounds and burned skin
7	<i>Annona squamosa</i>	Sitaphal	Annonaceae	Fruits, Seeds	Ripe fruits are eaten. Paste of seeds is prepared in water and it is administrated twice a day for killing maggot's wounds of cattle
8	<i>Azadirachta indica</i>	Neem	Meliaceae	Whole Plant	The twigs are used as chew sticks or indigenous tooth brushes. Dry rachis collected by girls and tied with thread to prepare toy broom during play. If more fruit appears in tree and it remains healthy and ripen than it is sign of good season for agriculture. Dried stem is used as fuel. Ripe fruits are eaten. To confirm whether the snake that had bitten the person was poisonous or not this plant is used. For this, leaves are chewed the person and if it is test less than the snake if declared to be poisonous. Leaves are used as a mosquito replant
9	<i>Bauhinia racemosa</i>	Gwiar	Fabaceae	Stem, Flowers	Stem is used for making 'Ada', 'Dhosari'. A pinch of dried powdered flowers with honey recommended for diarrhoea and vomiting
10	<i>Bombax ceiba</i>	Semal	Bombacaceae	Flower, Seed	Young flowers are used as vegetable. Silk cotton used for stuffing cushions, pillows and mattresses. Crushed seeds mixed with wheat flour given to livestock for stomach disorders

11	<i>Brassica compestris</i>	Rai, Sarso	Brassicaceae	Seeds	The seed oil is applied daily after washing hair as tonic, enhances hair growth, prevent dandruff and hair falling
12	<i>Butea monosperma</i>	Dhak, Palash	Fabaceae	Flowers, Stem	Stem used in preparation of seed drill. Dried branches are used as fuel. Wood considered sacred and used performing 'Havana' and also for making sacred utensils. Flower buds are used as vegetable. The colors obtain by boiling flowers. It is used in 'Holi'. Gum 'Lakh' in the bark of this plant is used in making the bangles
13	<i>Cajanus cajan</i>	Tur	Fabaceae	Leaves, Pod	Ripe but green pod is used as vegetable. Leaves are chewed and blow into eye for curing iritis in eyes. Leaves and broken pods are used as fodder for cattle
14	<i>Calotropis procera</i>	Madar	Asclepiadaceae	Branches, Leaves, Flowers, Latex, Whole Plant	In the storage of dry fodder a twig of it kept to protect fodder from the harm caused by mouse. It is grown on field boundaries as a field fence and soil binder. Roasted corona is given orally twice a day for a week to cure cough. Latex applied to remove thrown from legs
15	<i>Cannabis sativa</i>	Bhang	Cannabinaceae	Leaves, Stem	The leaves brushed and smoked by people. The leaves and stem is crushed and made into a powder mixed with ghee or oil to make paste and extract is obtained to cure diarrhea, skin diseases, cholera, rheumatism, wormicide and narcotic drugs
16	<i>Capsicum annum</i>	Lal Mirch	Solanaceae	Fruits	Dried ripe fruit powder is as spices. Dried ripe fruit powder is pressed on dog bite. When snake entered in house at that time smoke of dried fruit created to keep away. Unripe fruit is directly eaten with 'Roti' or 'Chapatti' used as a salad. Toward of evil eyes (Nazar) and spirits on children and cattle, its dried ripe fruit powder along with mustard seeds are waved around their bodies and put on burning coal to keep away the evil eyes effects
17	<i>Datura stramonium</i>	Datura	Solanaceae	Leaves, Fruits	The leaves and seeds are dried for making powder then extract is prepared and is mixed with oil or ghee to make paste and is used to cure intoxicating asthma, teeth pain, loss of hair, anti-dandruff, antiseptic and narcotic drugs
18	<i>Diospyros melanoxylon</i>	Tendu	Ebenaceae	Leaves, Fruits	The leaves and fruits are used to treat for the diarrhea, cholera, dysentery, intermittent fever, bleeding gums, bronchitis, cough, pneumonia and syphilis
19	<i>Euphorbia hirta</i>	Dudghi	Euphorbiaceae	Leaves, Fruits	It is used for purgative and digestive, decoction given in gout juice is used for nerve troubles and dropsy, also applied to warts and skin infection
20	<i>Madhuca indica</i>	Mahuwa	Sapotaceae	Flowers, Fruits	Flowers and fruits are eaten raw or cooked. Flowers and fruits are raw materials of the local liquor
21	<i>Mentha longifolia</i>	Pudina	Lamiaceae	Leaves, Stem	An extract, decoction or paste of plant is used in asthma, cough, rheumatism, indigestion and diarrhea. The powder of leaves is dipped in tea daily for 1-2 weeks time to cure gastroenteritis. Leaves are also used for making 'Chutney'. The oil of leaves is used for headache
22	<i>Opuntia dillenii</i>	Cactus	Cactaceae	Roots	Poultice of crushed stem is applied on wounds. 1 or 2 flower bud is burned in Kanda (a fuel of cow dung) and mashed properly; filtrate with honey is given to children during 'Cucur-khanshi'

23	<i>Ricinus communis</i>	Arandi	Euphorbiaceae	Whole Plant	It is grown on field boundaries as a wind breaker. Roasted leaves are bandaged on head to relief headache. Remove juice from older leaves to rub on body and sleep in closed room to cure fever. Seed oil used as a laxative
24	<i>Saccharum officinalis</i>	Ganna	Poaceae	Stem	Cotton plug is poured in mixture of Jaggery (commonly known as 'Gur'), ghee and water and a drop of it given orally to new born baby. Jaggery is prepared from the stem of this plant. Liquor is prepared by fermentation and distillation of jaggery
25	<i>Tinospora cordifolia</i>	Giloe	Menispermaceae	Stem	3-4 ml extract of stem is taken orally twice a day for a week to cure fever. For the cure of jaundice a necklace of small pieces of its stem is worn.

DISCUSSION

In the present ethno botanical survey provides medicinal values of the medicinal plants used by the district Guna to cure various diseases and ailments. The twenty five mentioned plant species belong to eighteen families. Most of the plant species are wild and few of them are cultivated and used as spices, vegetables, and medicines. As per the survey, we can conclude that there are so many medicinal plants available in our surrounding which are too much beneficial for health purpose and can provide easy source for phonological studies. It also shows that the district Guna has a great diversity of medicinal plants with different medicinal properties. The traditional knowledge of tribal communities in Guna district has high ethno botanical importance. They utilize numerous plants and their various parts viz, roots, leaves, stems, flowers and fruits in various ways for the medicinal purposes because medicinal plants and their extracts have immense potential for the management and treatment of various diseases as well as the phytomedicines that are used by the local people for various diseases are cheap and easily affordable.

In India, tribal herbalist used dozens of plant species for the treatment of conjunctivitis, diabetes, fever malaria, leucorrhoea, whooping cough and hepatitis^[34]. It is quite interesting that many of the plants identified as anti diabetic in Bellary district, Karnataka, India are sacred species. Several people use the leaves of *Aegle marmelos* and *Vitex nigundo*, flowers of *Senna auriculata*, *Leucas aspera* and *Hibiscus rosa-sinensis* for prayer during certain auspicious occasions and consume them in little quantity as prasada (food graced by God) irrespective of their age, sex and health conditions^[35].

The alcoholic extract isolated from the leaves of *Colderia procumbens* has analgesic activity^[36] and methanol extract of *Azema tetracantha* is used in the form of ointment as well as injection to heal wound^[37]. A comprehensive list of 125 plants species, ranging from herbs to trees, commonly used by the local people of India for the treatment of various ailments. Current botanical and local names, brief morphological description are provided for the species which belongs to 22 genera and 17 families^[38].

An extensive ethno-pharmacological survey of the Kheri district forests in Uttar Pradesh, India in 1995 and provide first-hand information on folk medicine prevalent among the local populations. A total of 101 plant species belonging to 89 genera and 54 families were found to be commonly used in the area by local medicine men (Khar Vaidyas) as folk drugs and also reported 169 widely accepted folk recipes along with their mode of application and therapeutic dosage^[39]. Some researches of the Pakistan conducted an ethno medicinal study in the remote Hindu-kush-Himalayan valleys of Utror and Gabral, during which 36 common folk medicinal recipes of the area were documented. The indigenous methods of medicinal plants collection and their further procession were also explored^[40].

In Madhya Pradesh, the indigenous knowledge system of herbal practice is still very rich and available among the tribal community of Jhabua district. The establishment of modern medicinal health centers is in progress in many rural areas that may gradually change the existing pattern of indigenous knowledge system of health care^[26]. In 2010, they also reported that the traditional knowledge of tribal communities of Jhabua district has high ethnobotanical importance. They utilize numerous

plants and their various parts, viz., roots, leaves, plant latex, bark, tubers and seeds in various ways^[41].

During the survey plant and plant parts are used for medicine in Alirajpur to treat different diseases have been explored. Analysis of the data revealed that root and leaves are mostly used for various disease followed by fruits, seeds, bark and whole plant. The number of plant species used by the tribe for curing some of the important and common diseases, shown in the parenthesis are digestive problem, cough, uterus displacement, leucoderma, tuberculosis, white discharge, scorpion bite, pneumonia, increase sexual vigor, male impotency, menorrhoea, increase memory, abortion, diabetes and sexually weakness. The plants used are found growing and are available in the vicinity and in many cases are immediately available as therapeutic. Different plants species were used in each treatment. *Butea monosperma* (Lam.) Taubert. were the common plant species are used by the tribal of the region to treat scorpion bite. Traditional healers from the region provided plant remedies to humans and livestock health problems^[27].

Some other researchers also conducted an extensive folklore claims on some medicinal plants used by Bheel tribes of Guna district, Madhya Pradesh. A large number of plant species occur in tribal inhabited localities in Guna district. Looking at the intellectual property rights of indigenous people, documentation of such knowledge is necessary now a day^[29].

The people of Bheel community possess a vast knowledge regarding multifarious uses of plants. Besides medicinal uses, the tribes of the Guna district also have a vast knowledge about the other uses of plants. They possess a vast knowledge of the treatment of their cattle through herbs. The method of treatment is traditional and drugs are used in crude form only. They also possess a vast knowledge of other ethnobotanical uses of plants. In 2012 some researchers were to collect information on vegetable species used traditionally by tribal communities of District Guna, Madhya Pradesh. In the Guna district, there is a rich tradition in the use of vegetables as an herbal medicine for the treatment of many diseases^[28]. Therefore, we report the ethno medicinal plants of Guna district.

CONCLUSIONS

From the foregoing discussion, it is clear that tribal communities are basically wise, eco-friendly, and have a self-sufficient and self-reliant subsistence system. By and large, the Bheel and Sahariya who live in the rural areas are dependent fully on plants. Basically, Bheel and Sahariya are very special, very peculiar tribes of Guna district. As all other tribes have, these tribes have their own special feature and specialties. Deep study of their life, their daily routine, their houses, their occupation, their interest etc. reveals the fact that tribal communities are nature loving. They love nature and they are used to use natural sources in their daily routine. Agriculture and cattle-breeding are their main occupations. Plants are well incriminated with their life and looking in their annual agricultural calendar and daily routine proves the same facts. The results of a study of Ethnobotany among the tribal communities of Guna district give the salient features of their plant utilization and management strategies. They have a rich Ethnobotanical heritage that is however disappearing due to the rapid pace of acculturation, modernization and technological developments. Some Ethnobotanical studies have already been done. But no systematic Ethnobotanical study was available on the tribal communities and their habitat, therefore, it was considered important to make such a study.

Present study revealed that the local traditional healers of Guna district, Madhya Pradesh, India are rich in ethno-medicinal knowledge and majority of people rely on plant based remedies for common health problems like headache, body ache, constipation, indigestion, cold, fever, diarrhea, dysentery, boils, wounds, skin diseases, urinary troubles, fractures, round worms, etc. The survey also revealed that all the traditional healers have strong faith on ethno-medicines although they were less conscious about the documentation and preservation of ethno medicinal folklore and medicinal plants.

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CONTRIBUTION OF AUTHORS

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