Ethnobotanical survey of medicinal plants from Baran District of Rajasthan, India

Rishikesh Meena\textsuperscript{a} and Ashwani Kumar\textsuperscript{b}\textsuperscript{*}

\textsuperscript{a}Department of Botany, Govt. J.D.B. Girls PG college, Kota-324 007, Rajasthan, India
\textsuperscript{b}Department of Botany, University of Rajasthan, Jaipur-302 004, Rajasthan, India

\textbf{Article history:}
Received 18 August 2012
Accepted 16 September 2012
Available online 27 December 2012

\textbf{Keywords:}
Ethnomedicine, Baran district, Rajasthan

\textbf{Corresponding Author:}
Ashwani Kumar
Professor Emeritus
E-mail: ashwanikumar214@gmail.com
Tel: +91 141-2654100
Mob: +91 946166310

Rishi Kesh Meena
Lecturer
E-mail: rishi_1180@yahoo.com

\textbf{Abstract}
The aim of present survey is to identify and document the plants, used amongst the indigenes of Baran district from Rajasthan, India. The ethnobotanical exploration study presents the folk medicinal uses of certain plants by tribes of Baran district. The plant species are used as herbal medicines for the treatment of various ailments and healthcare. The information on medicinal uses of plants is based on the exhaustive interviews with local physicians practicing indigenous system of medicine, village headmen, priests and tribes folks. Due to overgrazing, encroachments, unsustainable utilization and other developmental activities in the regions, several persistent medicinal plant species are on the verge of extinction. Due to lack of awareness and research on these groups of plant in this area, people of this region are unaware of the wealth of this heritage. The survey provides a veritable source of information for traditional medical practitioners and medicinal plant researchers and help in developing strategies for future conservation.

\textbf{Citation:}

\section{1. Introduction}
Plant and plant products have augmented human culture since time immemorial. Perhaps, ethnobiology is the first science that originated with the evaluation or existence of man on this planet. Natural products as medicines, although neglected in the recent past, are gaining popularity in the modern era. On a global scale, the current dependence on traditional medical system remain high, with a majority of world’s population still dependent on medicinal plants to fulfill most of their health care needs. Today, it is estimated that about 64\% of the global population remain dependent on traditional medicines (Farnsworth, 1994; Sindiga, 1994).

Nearly 8000 species of plants were recognized as of ethnobotanical importance (Anonymous, 1994). The age-old tribal knowledge of plant is an important aspect of ethnobotanical research. The tribal tracts are the storehouse of information and knowledge on the multiple uses of plants. Over the last century, ethnobotany involved in to scientific discipline that focuses on the people-plant relationship in a multidisciplinary manner, incorporating not only collection documentation of indigenous uses but also ecology, economy, pharmacognosy, public health and other disciplines. Presently, ethnobotany has become increasingly valuable in the development of health care and conservation programs in different parts of the world. Study of literature in hand suggests that little attention has been paid on ethnobotanical study of Baran district of Rajasthan.
Baran district (25° 50'N and 76° 30'E) is in the South-estern part of the State of Rajasthan, India, South Asia. Baran was carved out of erstwhile Kota District on 10th April 1991. The district got the name from the town Baran which is also the district hqts. The district has an area of 6955.4 km², and a population of 12,23,921. Growth Rate- 19.80 sex Ratio- 926 Literacy- 67.38 population density per km² 175 (2011 census). It is bounded on the north and east by Madhya Pradesh state, on the south and southwest by Jhalawar district of Rajasthan, and on the west and northwest by Kota district of Rajasthan. The district has eight tehsils, Anta, Atru, Baran, Chhabra, Chhipa Barod, Kishanganj, Mangrol, and Shahabad. Dense forest areas in which various tribes like Kanjar, Bheel, Shahria and Meena are living in majority, cover the major part of district. Among these, the Shahria and Bheel tribe are the per suit of therapeutic uses of plants.

These tribals live close to the forest and dependent on the wild biological resources for their live hood. They utilize various plant parts like root, bark, leaves, and fruits etc. to make themselves comfortable and prepare simple formulations with single plant or combinations of two or more plant resources, which are easily available. Ethnobotanical studies in Rajasthan have been carried out by Joshi, 1995; Singh and Pandey, 1998; Katewa and Guria, 1997; Katewa, 2009; Meena and Yadav, 2010; Sharma and Khandewal, 2010; Pareek and Trivedi, 2011; Sharma and Kumar, 2011. A perusal of the literature reveals that, although a lot of ethnobotanical work has been done in the Hadoti region but this was the first attempt in the selected areas of Baran district.

2. Materials and methods
Ethno botanical surveys were conducted from June, 2010–May, 2012 in tribal inhabitant forest localities of Baran district for recording first hand information regarding the therapeutic properties of wild plants in the area. Surveys were conducted in the selected areas at regular intervals of every three months. The plants were identified by using standard monographs and flora (Bhandari, 1990; Sharma, 1993) Ethnomedicinal information about the plants was collected on the basis of frequent interviews with local physicians practicing indigenous system of medicine, villagers, priests and tribal folks. Though ethnobotany provides several approaches in plant researches, here only the resources which help in aspect of medicinal plant-research are mentioned.

Local people collected plants with detailed information regarding their use during field trips. The proposed study was based on personal interview with tribal and backward people of various age groups residing in rural areas of Baran district. The field tours for ethnobiological survey were made at regular intervals in order to cover the tribal areas in different seasons to collect the ethnobotanical interesting species either in flowering or fruiting stage. The data obtained from different localities and villages was compared and cross-linked so as to ascertain their validity and integrity. Relevant information was also collected from secondary sources including research and review papers to supplement the interview and focus group data and to document different biological and cultural aspects of Baran district of Rajasthan.

2.1 Literature resources
Our ancient literature can also be tapped for information on medicinal plants. 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. which are our oldest Vedic literature resources, contain valuable information regarding medicinal plants of that period. Sharma (1968-69) enlisted 248 botanical drugs which are mentioned mainly in Atharvaveda and Rigveda. Singh and Chunekar (1972) published a glossary of such medicinal plants, which have been mentioned in Charak Samhita, Sushruta Samhita and Ashtanga Hridiyam.

2.2 Herbarium resources
Herbarium sheets and field notes have also proved to be a good source of ethnobotanical data. The most outstanding example of this type of research is of Dr. Altschul, who searched about 2.5 million plant specimens in Harvard University Herbarium and from these 5,178 useful notes of drugs and food value were recorded (Altschul, 1973). Detailed information regarding local names, parts used and mode of administration was recorded in field notebooks. The specimens were collected from the field and identified with the help of local/regional floras and deposited in the herbarium of Department of Botany, University of Rajasthan, Jaipur, India.
3. Results and discussion

India has been identified as one of the top twelve largest biodiversity centers in the world. This is because India occupies a vast area with great variations in climate, soil, altitude and latitude and it is the biggest repository of medicinal plants in the world. The traditional knowledge system in India is rapidly eroding and there is an urgent need to record all ethnobotanical information from the diverse ethnic communities before the traditional culture is completely lost. Often, tribe is exploited by modern societies and they are forbidden to use the forest resources.

The presence of such a large number of medicinal plants species indicates that the area has a very high diversity of medicinal plant species and is a site for various indigenous knowledge. This survey revealed that their tribals and their inhabitants of the area have sound knowledge about the uses of medicinal plants available in the region. Normally, tribal people are very conservative regarding providing information because of their common belief that if they disclose the property of the plant to a person outside of their clan, then the property of that plant will be lost forever. However, during this field study information gathered from local physician, bhopas, elderly birth attendants, wood cutters, shephards and headmen of community. Collected information was cross-examined at different places through different informants in different seasons.

Herbal medicines prescribed by tribal healer are either preparation based on single plant part or a combination of several plant parts cures diseases rapidly. Generally, fresh part of the plant is used for the preparation of medicine. When fresh plant parts are unavailable, dried parts are also used. The people are largely dependent on the traditional healthcare system. Traditional beliefs in the area also have their own unintentional role in conservation and sustainable utilization of medicinal plants. Hence, efforts must be taken to protect these species in this area by involving the local communities in preservation and conservation aspects (Herberg; 1993). The information gathered from the tribes of Baran district is useful for further research in the field of ethno botany, taxonomy and pharmacology.

<table>
<thead>
<tr>
<th>Name</th>
<th>Family</th>
<th>Local name</th>
<th>Official organ</th>
<th>Ailment</th>
<th>Traditional Preparation &amp; ethnomedicinal uses</th>
<th>Tribes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abutilon indicum L.</td>
<td>Malvaceae</td>
<td>Kanghi, Tala-Kunchi</td>
<td>Leaves</td>
<td>Diarrhoea</td>
<td>Crushed leaf powder with wheat</td>
<td>Bhil, Meena, Sahariya</td>
</tr>
<tr>
<td>Abrus precatorius Linn.</td>
<td>Leguminosae</td>
<td>Chirmi, Gunja</td>
<td>Whole plant</td>
<td>Wounds, polyurea, arthritis, fever</td>
<td>Used in healing, ear, abortifacient, polyurea and antifertility.</td>
<td>Meena, Sahariya</td>
</tr>
<tr>
<td>Acacia nilotica Willd.</td>
<td>Leguminosae</td>
<td>Babul</td>
<td>Whole plant</td>
<td>Burning, asthma, Body swelling</td>
<td>Leaves consumed orally as such and paste is applied to cure body swelling</td>
<td>Bhil, Meena, Sahariya</td>
</tr>
<tr>
<td>Achyranthes aspera Linn.</td>
<td>Amaranthaceae</td>
<td>Aandhi-jhara, Chirchita</td>
<td>Whole plant</td>
<td>Pneumonia, headache, earache</td>
<td>For headache, and earache.</td>
<td>Bhil, Meena, Sahariya</td>
</tr>
<tr>
<td>Adhatoda zeylanica Medic.</td>
<td>Acanthaceae</td>
<td>Adusa</td>
<td>Whole plant</td>
<td>Fever, jaundice, whooping cough, glandular tumors</td>
<td>Leaf and wood ashes mixed with honey used for cough and asthma; Juice mixed with juice of Feronia limonia cures nose bleeding</td>
<td>Bhil, Meena, Sahariya</td>
</tr>
<tr>
<td>Aegle marmelos (Linn.) Corr.</td>
<td>Rutaceae</td>
<td>Bel</td>
<td>Fruit, Root, Leaves</td>
<td>Pain, diarrhoea, fever</td>
<td>Leaf ash used to kill wound worms, ripe fruits in diarrhea, root bark used in fever</td>
<td>Bhil, Meena</td>
</tr>
<tr>
<td>Butea monosperma (Lam.) Taub.</td>
<td>Fabaceae</td>
<td>Dhok, Khakhra</td>
<td>Whole plant</td>
<td>Anthelmintic, astringent, dysentery, leucorrhoea</td>
<td>Stem paste is applied on the affected parts for cuts and wounds; Bark paste is</td>
<td>Bhil, Meena, Sahariya</td>
</tr>
<tr>
<td>Plant Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Disease/Effect</td>
<td>Application</td>
<td>Tribe(s)</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------</td>
<td>----------------------------</td>
<td>-----------------------------------------------------</td>
<td>-----------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Calotropis procera (Ait.) Ait.f.</td>
<td>Asclepiadaceae</td>
<td>Root, Leaves, Flower</td>
<td>Dysentry, cough, asthma, bronchitis</td>
<td>Decoction of root bark along with black pepper is used twice a day for 3 days for malarial fever</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Cordia dichotoma</td>
<td>Ebenaceae</td>
<td>Leaves, Stem</td>
<td>Pain, influenza</td>
<td>Leaf decoction with wheat husk and salt is taken to check congestion &amp; influenza.</td>
<td>Bhil, Meena</td>
<td></td>
</tr>
<tr>
<td>Datura metel</td>
<td>Solanaceae</td>
<td>Leaves</td>
<td>Sedative, cerebral depressant</td>
<td>Cure insunity, cerebral complications</td>
<td>Sahariya, Bhil</td>
<td></td>
</tr>
<tr>
<td>Desmodium gangeticum L.</td>
<td>Fabaceae</td>
<td>Leaves</td>
<td>Anti-inflammatory</td>
<td>Fresh leaf juice is applied on affected parts in scabies and rigworm</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Euphorbia nerifolia L.</td>
<td>Euphorbiaceae</td>
<td>Latex</td>
<td>Cough, asthma</td>
<td>Latex of plant giving with Piper betel leaf in asthma</td>
<td>Bhil, Meena</td>
<td></td>
</tr>
<tr>
<td>Jatropha curcas L.</td>
<td>Euphorbiaceae</td>
<td>Latex</td>
<td>Burns, eye disease</td>
<td>Used in uterus diseases, burns for increase eye sight and corneal opacity.</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Momordica dioica</td>
<td>Cucurbitaceae</td>
<td>Leaf, root</td>
<td>Hair tonic</td>
<td>Infertility in female, growth of hair and burns.</td>
<td>Bhil, Meena</td>
<td></td>
</tr>
<tr>
<td>Ocimum basilicum</td>
<td>Labiateae</td>
<td>Leaves</td>
<td>Eye disease</td>
<td>Juice of leaves is applied in eye disease.</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Pongamia pinnata</td>
<td>Leguminosae</td>
<td>Seed</td>
<td>Muscular disorder</td>
<td>Seed oil is rubbed on affected parts in joint-pain</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Solanum nigrum L.</td>
<td>Solanaceae</td>
<td>Whole plant</td>
<td>Fever, Jaundice</td>
<td>Fruits are eaten thrice in a day in jaundice</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Tridex procumbens L.</td>
<td>Asteraceae</td>
<td>Leaves</td>
<td>Wound-healing, leucorrhoea</td>
<td>Leaf paste is applied topically on cuts and wounds</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Withania somnifera (L.) Dunal</td>
<td>Solanaceae</td>
<td>Leaves, root</td>
<td>Fever, painful swellings</td>
<td>Rheumatism, asthma, bronchitis and abortifacient, pain, sexual potency and fertility.</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
<tr>
<td>Zizyphus mauritiana</td>
<td>Rhamnaceae</td>
<td>Leaves, Fruit</td>
<td>Cooling, scabies</td>
<td>Juice of the root bark is applied externally in rheumatism</td>
<td>Bhil, Meena, Sahariya</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion**

Ethnobotanical research can provide a wealth of information regarding both past and present relationships between plants and the traditional societies. Investigations into traditional use and management of local flora have demonstrated the existence of extensive local knowledge of not only about the physical and chemical properties of many plant species, but also the phenological and ecological features in the case of domesticated species. In addition to its traditional roles in economic botany and exploration of human cognition, ethnobotanical research has been applied to current areas of study such as biodiversity prospecting and vegetation management. It is hoped that, in the future, ethnobotany may play an increasingly important role in sustainable development and biodiversity conservation. In interaction either using single herb or mixture of more than one herb with the traditional areas of science, ethnobotany gives out several interrelated and interdisciplinary subjects link with ethnomedicine.
ethnoarchaeology, and ethnobryology, ethnoecology, ethnona"'
cotic, ethnopharmacology, etc. Most of plants having ethno botanic use have been c"'
categorized into rare and endangered. This lack of effort to sustain resources may result in their depletion from natural habitats. There is a great need to create awareness among the indigenous communities about endangering medicinal plants, if over exploited to meet market demand. We think that the present status of the economically and medicinally important plants of the study area needs to be determined in order to develop plans for their protection. Improved awareness of conservation issues are needed. Proper documentation of indigenous knowledge about the plants could be supportive in achievement of objectives. Local cultivation of medicinal plants and other economic species can play an important role in economic development of the area. For sustainable and long term conservation of natural resources of the area; there is a need to actively involve the quiescence of local people in evaluation, planning, implementation and monitoring processes as they are the best judges of the area.

The traditional knowledge with its holistic and systems approach supported by an experimental base can serve as an innovative and powerful discovery engine for newer, safer and more affordable medicines. This review is focused on the plants used in traditional medicine by the tribal communities of Baran district of Rajasthan and the future prospects for their further scientific investigation. Research on pharmacognosy, chemistry, pharmacology and clinical studies has been carried out on many traditional folk medicinal plants. The development of these traditional systems of medicines with proper studies will help to preserve this traditional heritage and rationally the use of natural products in health care without serious side effects.

References


