



Ethnobotanical survey of important plants used to treat various diseases in Bharatpur district of Rajasthan, India

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Abstract

Ethnobotany deals with the study of plants which are being used to treat various illnesses since ancient times. The knowledge of medicinal plant is utilized by Indian people at large scale. Plants are being considered to be effective against specific disease and are used by native people. In the current investigation, we conducted a survey on medicinal plants in Bharatpur district of Rajasthan. Different native tribes were interviewed for the study which use those plants for therapeutic purposes. A list of 25 plants were prepared of which various parts (such as leaves, stem, bark, roots, seeds, fruits, and flowers) are considered against mild to severe complications. On the basis of the results, isolation and identification of biologically active compounds might be approached by researchers and pharmaceutical industries.

Keywords: ethnobotany, medicinal plants, complications etc

Introduction

Ethnobiology is the study of biological features in relation to race, people, or cultural groups. The study of human populations' direct interactions with the plants and animals in their surroundings is known as ethnology. Despite the tremendous advancements in science in the modern day, man still looks to culture and way of life, which have their own origins and histories.

J.W. Harshberger used the term "ethnobotany" in 1896 to describe the study of plants that were traditionally utilised by indigenous people. Stephen Power invented the phrase "aboriginal botany" in 1875 to characterise the study of all kinds of the vegetative world that the indigenous people of Australia employed for various purposes, including medicine, food, textiles, clothing, ornaments, and so on. Since Harshberger, the meaning of the term "ethnobotany" has undergone a process of change and development that is parallel to the formation and development of the science as a whole. For this reason, ethnobotany has been defined as the study of the relationship that exists between people from primitive societies and their plant environment (Schultes, 1962; Jain, 1976) [3, 2].

It is well acknowledged that ethnobotany is an important component of research and development. It is possible to mention a significant number of examples where indigenous knowledge was applied to generate plant products that are today used by the modern civilised world. The findings of the research that has been done up to this point have made it clear that there is a significant opportunity for these societies to make a more extensive use of plants, particularly in regards to the issues that plague mankind, such as hunger and health (Gaoue, 2017) [4].

As a result of the presence of a large number of ethnic groups with a long history and a wide variety of plant life, India is one of the countries with the most extensive ethnobotanical knowledge. There are over 50 million people who belong to over 550 different tribal communities. The majority of these people live in the forest, hills, and other naturally remote areas. They are referred to as "Adivasi" in Hindi (Original Settlers, Aboriginal Indigenous, Vanvasi, forest inhabitant etc.). Since ancient times, people have relied on plants as a method of disease prevention and treatment. In India, it is estimated that thousands of plant species possess therapeutic properties, and from ancient times, people have been using different sections of various medicinal plants to treat certain illnesses using a practise that involves the use of multiple medicinal plants. According to Purohit and Vyas's estimations, there are around 70,000 plant species that have been put to use in some kind of herbal medicine at some point in history. The ancient Indian practise of Ayurveda is sometimes referred to as the "science of life." It has been practised for almost 5000 years, making it the most time-tested and holistic medicinal practise now in existence. This system may be traced all the way back to the Vedas, most specifically the Atharvaveda. Ayurveda, often known as Ayurvedic medicine, is a form of complementary and alternative medicine that originated in India (Chopra and Ananda, 2003) [1].

In the current investigation, we conducted a survey for ethnobotanical study of various medicinal plants which are being used to treat various diseases since ancient times in Bharatpur district of Rajasthan, India which is the place of various tribes such as Banjara, Gadolia-Lohar, Kalbelia, Sikligar, Kanjar, Sansi, and Bagri.

Materials and methods

The study area

The western Indian state of Rajasthan contains Bharatpur district as one of its many districts. The region known as Bharatpur District may be found in the eastern section of the state of Rajasthan. Its coordinates are as follows: 26°22' to 27°50' north latitude, 76°53' to 78.17' East longitude. The region covers an area of 5,066 km² in total. Which is equivalent to 1.48% of the district of Rajasthan's total land area. The climate can be described as hot and semiarid throughout the year. The majority of the area's entire land mass is used for agricultural purposes, making it an ideal location. The neighbourhood does not contain any forested areas. Because of the region's high temperatures and levels of humidity, the district's forest is dominated by tropical deciduous vegetation.



Fig 1: Map showing district Bharatpur in Rajasthan: The study area.

Ethnobotanical data collection

A search of traditional healers in the whole of the Bharatpur district was conducted with the prior permission of and referrals by the community leaders of each clan. We started our interaction with each prospective respondent by first explaining the aims and objectives of the project in order to solicit their consent and co-operation before any ethnobotanical data were gathered.

With the help of an interpreter, all discussions were done in Brij, the local language of the district. The ethnobotanical data for this research were gathered from altogether 20 traditional healers, and 4 herbalists/healers (2 female and 2 male).

On the basis of the collected information, the survey of plants was done mostly in keoladeo National Park, located at Bharatpur, Rajasthan.

Results and Discussion

In the field of drug development, ethnobotanical and ethnomedical knowledge has been shown to be one of the most trustworthy methodologies, and on the basis of this information, a number of active compounds have been isolated from plants (Carney *et al.*, 1999; Fabricant and Farnsworth, 2001; Ajibesin *et al.*, 2008) ^[5, 7, 6]. The rapid shift towards allopathic medicine, the overexploitation of plant resources, modern agricultural practises, cultural shifts within the community, the construction of new small dams, and the spread of housing colonies and modern

education all contribute to the destruction of not only the habitats of medicinal plant species but also the vanishing of traditional knowledge and medicinal plant species.

After the survey, a list of 25 plants was prepared. Different parts of various plants have been using to treat various life-threatening diseases by native people. The details of these plant parts and their uses are shown in table 1. These are higher trees, herbs, and shrubs. Some are weeds.

The results of this study and the information acquired on the traditional uses of plants demonstrated that rural people in the area that was researched use the plants to treat a variety of diseases. Traditional medicine is practised by people based on what they now understand about the system, and it is possible that people will employ this knowledge in the future even in more distant corners of the world. As a result of growing urbanisation, numerous plant species are in danger of extinction since their habitats are being destroyed. During the course of the study, it became clear that respondents were reticent to divulge the information that they possessed. They do not want to share this knowledge because it is what gives them recognition in society and because of this, they do not want to share it. It was discovered that, in many instances, some of this information had been lost during the process of passing on folklore from one generation to the next. The locals themselves stated that, in comparison to them, their forefathers possessed a significantly higher level of knowledge. The recent trend toward using herbal remedies on a global scale has resulted in increased strain being placed on the plant resources found in nature, while the industry itself is also rapidly developing. As a result, the findings of this survey will be useful for developing future conservation management plans for endangered medicinal plants. In addition, the local people must be involved in the process of coming up with solutions to problems and making decisions regarding conservation measures.

Table 1: The list of plants using by tribal people of Bharatpur district (Rajasthan) for various diseases.

| S. No. | Name of plant | Local name | family | Used part | Medicinal uses |
|--------|------------------------------------|---------------|----------------|----------------------|---|
| 1. | <i>Azadiracta indica</i> A. juss | Neem | Maliaceae | All plant parts | Anti-inflammatory, anti-oxidant, antidiabetic, anti-microbial, antimutagenic, anti-carcinogenic etc. |
| 2 | <i>Sida acuta</i> Burm. f. | Bal | Malvaceae | Roots | Neurological disorders, headache, diabetes, malaria, rheumatic problems, asthma etc. |
| 3 | <i>Calotropis procera</i> | Aak, akhra | Apocynaceae | Leaves | Sinus fistula, skin diseases, diarrhoea, jaundice etc. |
| 4 | <i>Ricinus communis</i> | Casor/ Arandi | Euphorbeceae | Seeds | Abdominal disorders, muscular pain, arthritis, menstrual cramps, insomnia, expulsion of placenta etc. |
| 5 | <i>Withania somnifera</i> | Ashvgandha | Solanaceae | Roots | Cancer, anxiety, microbial infections, neurodegenerative diseases, immunomodulation etc. |
| 6 | <i>Argemone maxicana</i> | Satyanashi | Pepaveraceae | Leaves, flowers | Skin diseases, jaundice, leprosy, microbial infections, malaria etc. |
| 7 | <i>Oscimum sanctum</i> | Tulsi | Lamiaceae | Leaves | Microbial infections, cold-cough, fever, hepatic problems, diabetes etc. |
| 8 | <i>Hemidesmus indicus</i> L. | Sariva | Asclepiadaceae | Roots | Skin disorder, leprosy, fever, asthma, urinary disorders etc. |
| 9 | <i>Abrus precatorius</i> | Chirmthi | Fabaceae | Leaves | Tetanus, rabies |
| 10 | <i>Hygrophila auriculata</i> | Kokilaksh | Acanthaceae | Seeds, roots | Jaundice, oedema, gout, kidney infections etc. |
| 11 | <i>Vitex negundo</i> | Nirgundi | Verbenaceae | Leaves and roots | Diabetes, cancer, microbial infection, inflammation etc. |
| 12 | <i>Acacia catechu</i> Willd. | Khair | Mimosaceae | Hartwood | Inflammation, free radical damage etc. |
| 13 | <i>Acanthospermum hispidum</i> DC. | Dokata, Kanti | Asteraceae | Leaves and flowers | Jaundice, malaria, vomiting, abdominal pain etc. |
| 14 | <i>Aegle marmelos</i> Correa. Bel | Bel | Rutaceae | Fruit, leaves | Fever, viral infections, bacterial infection, infertility, inflammation etc. |
| 15 | <i>Barleria cristata</i> L. | Bajardanti | Acanthaceae | Flower, leaves, stem | Toothache, inflammation, anaemia, snake bite etc. |

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| 16 | <i>Cassia fistula</i> L. | Amaltas | Caesalpiniaceae | Roots | Joint pain, migraine, chest pain |
| 17 | <i>Commiphora wightii</i> (Arn.) Bhandari | Guggal | Burseraceae | Stem | Arthritis, rheumatism, urinary disorders |
| 18 | <i>Crinum defixum</i> Ker-Gawl | Sukhdarshan | Amaryllidaceae | Leaves | Inflammation, ear pain |
| 19 | <i>Emblica officinalis</i> | Amla | Euphorbiaceae | Fruits | Inflammation, diabetes, microbial infections, free radical damage etc. |
| 20 | <i>Holoptelea integrifolia</i> | Papri | Ulmaceae | Stem bark | Swelling, skin diseases, digestive fire |
| 21 | <i>Tinospora cordifolia</i> | Gilody | Menispermaceae | Leaves, stem | Fever, malaria, jaundice, bone fracture, skin diseases, snake bite etc. |
| 22 | <i>Tribulus terrestris</i> | Gokhru | Zygophyllaceae | Whole plant | Chest pain, heart issues, skin diseases, kidney stone, low sperm count |
| 23 | <i>T. bellirica</i> (Gaertn.) Roxb. | Bahera | Combretaceae | Fruits | Hepatitis, bronchitis, piles, diarrhoea, cough, cold etc. |
| 24 | <i>Mucuna pruriens</i> Baker | Kaunch | Pepilionaceae | Roots | Male infertility, urinary problems, fever etc. |
| 25 | <i>Terminalia arjuna</i> | Arjun | Combretaceae | Stem bark | High Blood pressure, heart problems, diabetes etc. |
| 26 | <i>Hibiscus rosa sinensis</i> | Gudhal | Malvaceae | Flowers | To enhance hair growth |

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