# STUDY OF THE ETHNOMEDICINAL PLANTS OF BASSI AREA OF DISTRICT CHITTORGARH, RAJASTHAN

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## Abstract-
The state of Rajasthan is much talked about when it comes to the ethnomedicinal plants which can be used in the Indian medicine system. Rajasthan is truly rich in floral heritage and is the area wise largest state in the country. Almost 80% population of this state is rural and out of this about 50% population consists of different tribal communities. The long association of tribal people with the forests has helped the society to gather information regarding the types of flora which are found in this state and their utility of different purposes, taking the medicinal utility in special consideration. Its importance lies in the fact that still the use of many medicinal plants is unknown outside the restricted community of these tribes and thus their proper management as well as their well planned exploitation is less talked about for economic and health development in this area. This paper aims at studying the different species of ethnomedicinal plants that are found in the particular area of village Bassi in the Chittorgarh district of Rajasthan.

***Keywords- Ethnomedicinal plants, flora, tribal communities, Bassi, Chittorgarh, Rajasthan.***

## I. INTRODUCTION
In India, Rajasthan is the area wise largest state and seventh largest state in terms of population. It is situated in the north-west of the country. The state covers a total area of around 342,240 square kilometers, out of which 11% is covered by forests. Its geographical location is latitude between $23^o$ 3’ and $30^o$ 12 N and longitude between $69^o$ 30’ and $78^o$ 17 E. The major part of the state comprises of sandy arid plains, The Thar Desert and rest of the part i.e. the eastern Rajasthan comprises of fertile regions and the huge Aravali mountain ranges. The soil in the desert plains of the state is loamy and the eastern part of the state has alluvial soil which supports good forests and agricultural crops. The average annual rainfall in the state is around 525-675 mm, and the annual precipitation varies from 13 mm to 1766 mm[1]. Out of the total area of the state, forests cover about 11 percent i.e. around 37,638 square kilometers and thestate is especially rich in biodiversity which has a great economic importance.

Rajasthan has about 33 districts under it, and one of the major districts among them is the district Chittorgarh. The district Chittorgarh is situated in the south of Rajasthan and on the river banks of two rivers i.e. Gambhiri and Berach. The district has an altitude of about 394 meters above the sea level and experiences an average rainfall ofabout 90 cm [2]. The other main rivers flowing through this area include Chambal, Jakham, Banas, Berach, Gambhiri, Gungali, Wagon etc. The district has its geographical boundaries with other districts like Bhilwara in the north, Pratapgarh and Neemuch (M.P) in the south, Nathdwara and Udaipur in the west and the entire Madhya Pradesh state in the east. It has a total area of around 10856 square kilometers [6].

Chittorgarh is also famous for a number of historical places as well which are quite significant and are major tourist spots. The famous fort of Chittorgarh is a World Heritage Site and is situated on a hilltop and is of its own kind in the country. Some other places include Nagri, Barolo, Vijaya Stambh, Kirti Stambh, Padmini's Palace, Rana Kumbha Palace, Meerabai Temple, Bhainsrorgarh Fort etc. The place is also well known for its fairs and festivals like Jauhar Mela (which is the biggest Rajput festival and is celebrated to commemorate the jauhar of Rani Padmini), Meera Mahotsav (for Meera Bai, the reverent follower of Lord Krishna and a Rajput princess), Maharana Pratap Jayanti (for a great warrior Maharana who was an epitome of heroism, pride, valor and patriotism), Gangaur (the most important festival of Rajasthan in which Goddess Gauri is worshipped by the womenfolk), the Rang-Teras which is a tribal fair in which the farmers pay honor to Mother Earth and to rejoice the harvest of wheat [6].

The great history of this place is colored in red and is written in Blood and Sacrifice. The history of the place has imprints of the great Maharana Pratap, and the values which the great Rajputs cherish and are willing to die for anytime. The district is also rich in terms of biodiversity. The area falls under the IVA-Sub humid Southern Plain Agro-ecological zone. The chief food crops in this area in the Kharif season are Maize, Pulse and Sorghum; and wheat, gram and oil seeds in the Rabi season. In some parts, paddy is also grown [2] and in others areas where the black soil is found, cotton and opium are also cultivated.

The place is rich in diversity of ethnomedicinal plants as well, which are used by the local people as well as the government and the administration for personal use as well as the economic development of the area.

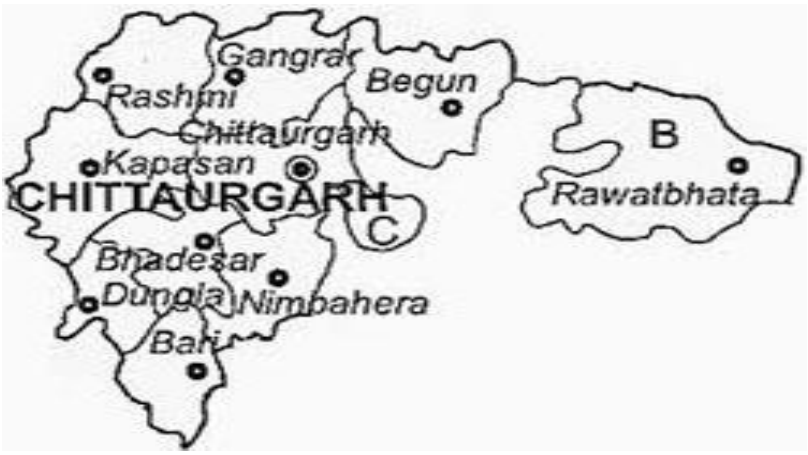


Fig. 1. Map of District Chittorgarh
*Source:* Final REIA Begun (2015) [3]

In this paper, the aim is to study all the plants which are of medicinal value, found in the particular area of village Bassi, which comes under the tehsil of Chittaurgarh in the district Chittorgarh.

For gathering the knowledge regarding this, Raj et. al (2021) analyzed the usage of Xerophytic medicinal plants for child health care in the age group of 0 to 12 years by the rural people of Taranagar tehsil in Churu district of Rajasthan [8]. The medicinal plants found in the studies belonged to Solanaceae, Asteraceae, Amaranthaceae, Cucurbitaceae, Euphorbiaceae and Liliaceae families and were often administered in the form of powder, decoction, paste or extract of the plant part. Similarly, Rathore et. al (2021) undertook a study on the traditional wisdom and potential of the community conserved areas of Jhalawar district of Rajasthan. The study area was found to be habited majorly by the tribes like Meena, Kanjar, Banjara, Bheel, Sahariya and others, who are diversified in terms of culture and the plants used by them for healthcare needs. In total around 26 tree species were identified [9]. Also, Meena et. al (2019) conducted an ethno-botanical survey on the Bhil tribe in and around the areas of Aravali Hills in the Pali district of Rajasthan. About 74 different plant species belonging to 66 different species and 43 families for different ailments of the human body were found [12]. Some of the common diseases that were addressed included asthma, digestive problems, paralysis, skin diseases and others.

It has been found that the medicinal usage of these plants is known to the local villagers and the native people of the place and is used by them in day to day life. Some of these plants are even used for commercial purposes by the local administration. But knowledge about some less used species of plants is still known only to the tribal peopleand in their restricted communities. Thus, the present paper is an attempt towards preparing an index of all the ethnomedicinal plants which are prevalent in this area along with their usage and other details. This would help the chemists and pharmacologists to undertake research in this direction so that more such plant species can be used for commercial purposes[5]. Also, it would be helpful for layman, government, local administration and other private agencies and will also help to accelerate development in the area.

## II. METHODS AND MATERIAL

### 2.1 Study Area

The study area considered in this paper is the Bassi village in Chittaurgarh tehsil of district Chittorgarh, Rajasthan. The village belongs to Udaipur division. It is situated 403 meters above sea level. Village Bassi is situated 24km towards east from district headquarter and 21km from Chittaurgarh [14]. Bassi is surrounded by Chittargarh tehsil towards south, Begun tehsil towards east, Suwana tehsil towards north and Rashmi tehsil towards west. The total geographical area of village is 1511 hectares. This village has a total population of about 11,700 people consisting of about 2362 houses [4].

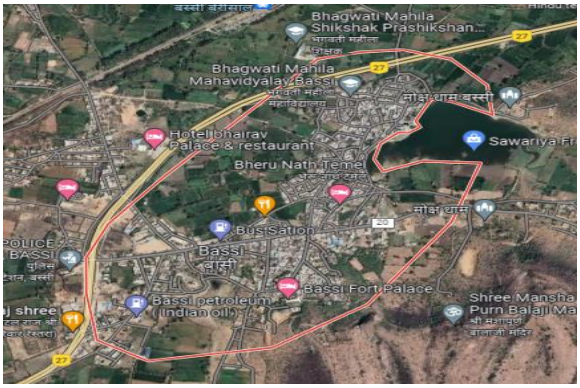


Fig. 2. Satellite Map of Village Bassi

*Source:*Bassi Village, Chittaurgarh Tehsil, District Chittorgarh [4]

This village has a large variety of plant species which are of medicinal importance.

### 2.2 Data Collection

The data for the study has been collected based on the literature of different authors like Ravikumar et. al (2022), Raj et. al (2021), Indoria et. al (2020), Lawan et. al (2020), Shah et. al (2019), Deora et. al (2018) and others. From the study, we have come across some of the species of the ethnomedicinal plants that are found particularly in the Bassi village of district Chittorgarh in Rajasthan. Some of these plant species have been discussed in the table below along with their scientific names, common names, medicinal usage and the plant part that is being used for various ailments.

### 2.3 Data Analysis

Secondary method of research has been used in his paper. The relevant information related to the selected field was searched in the Google Scholar by using the important keywords. From the search results, the related literature required for the study has been identified. This helped in collecting the data regarding some of the prevalent ethnomedicinal plants found in the study area and some additional information related to them like their biological names, local names, their part being used and the diseases on which they were found to be effective.

## III. RESULTS AND DISCUSSION

### 3.1 Medicinal Plants of the study area

Although a large number of different species of flora have been reported in the area of study i.e. the village Bassi, but we have studied some 30 species of these medicinal plants that are used in different forms for treatment of different types of ailments and diseases and some of the related studies have been quoted here.

Ravikumar et. al (2022) studied the medicinal plant diversity in Rajasthan. It led to a new report, the collection of Tribulus ochroleucus (Maire) Ozenda & Quezel (Zygophyllaceae) in the north-westernpart of the state. It is usually found to grow in grey brown desert soil which is when mixed with red and yellow soil [7].

Indoria et. al (2020) studied different spices and their use by the local people and the tribal communities of Rajasthan. The authors conducted a survey and gathered data related to around fourteen spices that belonged to twelve different families [10]. They presented the information in the tabular form consisting of their scientific names, common names, and the part of the plant that can be used for the intended purpose and their health benefits in district Chittorgarh.

Some of these species of spices included garlic, cardamom, mustard, chilly, coriander, turmeric, mint etc.

Lawan et. al (2020) analyzed the role of traditional herbs and other medicinal plants in timely and proper management of some commonly occurring diseases. Around 80% of the world's total population relies on the traditional system of medicine for health care which is used both in allopathic system of medicine and Ayurveda. Also, some of the herbal medicines are even effective in treatment of pandemics like SARS-CoV of 2013 or MERS-CoV of 2012 i.e. influenza and dengue. The medicinal plants like Kalmegh and Licorice can even be used in the treatment of influenza virus [11].

Soni et. al (2020) conducted phyto-chemical investigation in some of the medicinal plants found in the Sitamata Wildlife Sanctuary of Rajasthan. These medicinal plants are the three tuberous plants namely Arisaema tortuosum, Chlorophytum tuberosum and Curculigo orchioides [16]. These plants were analyzed for both primary and secondary metabolites in different months around the year. In this, the total contents of sugars, crude protein and phosphorus, and total contents of alkaloids and phenols were examined. In A. tortuosum, in the month of September, the quantity of crude protein and total alkaloids were found to be highest while in the month of July, the quantity of phosphorus and total phenols were found to be highest. In the other two species of tuberous medicinal plants, in the month of July, all the values like that of crude protein, phosphorus and total alkaloids were at its peak. From the results, it was concluded that the month of July is the most suitable month for harvesting tubers in this area.

Shah et. al (2019) conducted study on the ethno hypoglycemic food plants used by the tribal of the southern part of Rajasthan. These foods help to maintain the balance between healthy nutritional stuffs and the toxicants present in the body. There are many foodstuffs which can regulate the glycemic loads of the body either by bursting out the low sugar loads or by de-routing glucose indices. Around 32 such food plants were found. Some of these are Psidium guajava, Feronia limonia, Syzygium heyneanum, and others [13].

Sharma et. al (2019) also conducted a research on the diversity of medicinal plants in the Aravalis, under the Rajasthan state. The Aravalis consists of as many as 13 wildlife sanctuaries, out of which alone 10 are in Rajasthan. The 3 protected areas are also confined to the region which is at the junction of Aravalis and Vindhyas. Also, the Forest Department of the Rajasthan along with the Foundation for Revitalization of Local Health Traditions, Bangalore, made a list of 39 species from the state [17]. Out of the 16 hotspots of medicinal plants, the 6 major locations include Phulwari, Sitamata, Kumbhalgarh, Mt. Abu., Balaram Ambaji and Jassore sanctuaries are all in the state of Rajasthan. The authors also revealed that the southern part of Aravalis is comparatively richer than northern and central Aravalis in terms of plant diversity.

Deora et. al (2018) studied the traditional healthcare and nutritional practices followed in the mother child healthcare system in tribal areas of Rajasthan like Banswara, Chittorgarh, Dungarpur, Pratapgarh and Udaipur having tribes like Bhil, Meena, Garasia, kathodia and others. Around 55 different plant species which belong to 52 genera and 35 different families were identified and documented for treatment of different ailments in mothers and children after the birth and up to the age of five years [14]. The parts of plants which can be used for nutritional purposes during the lactation period of mothers and for the improvement of status of health in mother as well as the child were also identified.

Mathur et. al (2018) reviewed the medicinal plants found in Rajasthan that have anti-diabetic activity. Some of these plants that are used by tribal include Acacia nilotica i.e. Babul or kikar, Argemone Mexicana i.e. Satayanasi or Pili Kateli, Capparis deciduas i.e. kair, Catharanthus roseus i.e. Roase periwinkle, Datura inoxia i.e. Dhatura, Morus alba i.e. white mulberry, Pterocarpus marsupium i.e. Indian kino tree, Tinospora cordifolia i.e. giloy, Tridax procumbens i.e. Rukhari, Xanthium strumarium i.e. Aadha-shishi and others [15].

**3.2 Parts of the plants being used for various diseases**

Plants are harvested for the purpose of preparation of traditional medicines from different parts of the same plants and are administered in different forms for curing different diseases. In some cases, the roots, stems, barks, leaves, fruits, rhizomes, seeds and even the whole plantis used for preparing the traditional remedies.

TABLE 1: Ethnomedicinal Plants with their Biological Names, Medicinal uses and part being used

| **Plant's Biological Name** | **Local Name** | **Medicinal Usage** | **Plant part used** |
|---|---|---|---|
| 1.Ficus religiosa | Peepal | Used in ulcers, diseases of vagina and uterus, diseases of blood and heart and urinary discharge. | Root, Root Bark, Fruit, Seed and whole plant |
| 2. Tinospora cordifolia | Giloy | Used in fever, jaundice, diabetes, leucorrhoea, general disability and skin diseases. | Stem |
| 3.Azadirachta indica | Neem | Used for blood and skin diseases, leprosy, ulcers and ophthalmia. | Bark, Leaf and Flower |

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| 4.Aegle marmelos | Bel Ptra | Used for treatment of chronic diarrhea and dysentery and as an anti-oxidant. | Leaf. Fruit, Bark, Roots and Seeds |
| 5. Impereta cylindrical | Dab | Used for urinary tract infections, fevers, for nose bleed and jaundice. | Root, Flower and Leaf |
| 6. Allium sativum L Liliaceae | Garlic | Used against skin diseases and its paste in bone fractures | Bulb |
| 7. Acacia nilotica | Babool | Used in asthma, diarrhea, dysentery, diabetes, joint pains, sexual impotency and urino-genital disorders. | Bark, Gum, Thorns and Pods |
| 8. Zingiber officinale Rose. Zingiberaceae | Ginger | Used in heart diseases, asthma, and throat | Rhizome |
| 9. Cassia Fistula | Amaltas | Used for skin diseases, leprosy and constipation. | Leaf, Fruit and Bark of stem |

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| 10. Butea monosperma lam | Palas | Used in night blindness, dysentery, stomach worms, piles, eye and skin diseases, and as a laxative | Root, Bark, Leaf, Flower and Fruit |
| 11. Curcuma longa L. Zingiberaceae | Turmeric | Used in anemia, helps in healing of itches, boils, ringworms etc. | Rhizome |
| 12. Ziziphus mauritiana | Ber | Used for ulcers, in pulmonary ailments, nausea, vomiting and abdominal pain and as a laxative. | Leaf, Root, Fruit, Seed and Flower |
| 13.Cenchrus ciliaris | Anjan | Used for kidney pains, tumors, sores and wounds. | Leaf |
| 14. Ficus benghalensis | Bargad | Used as an analgesic and anti-inflammatory, for ulcers and skin diseases. | Root, Leaf and Bark |
| 15. Euphorbia hirta | Badi Dudhi | Used in dysentery and diarrhea. | Leaf |
| 16. Ricinus communis | Arandi | Used for muscular injury without bleeding and headache. | Leaf and Seeds |

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| 17. Phyllanthus emblica | Aonla | Used for ulcers, bladder stones, bronchitis, ophthalmia and asthma | Leaf, Fruit and Seed |
| 18.Curculigo orchioides | Kali Moosli | Used for treatment of impotency, limb limpness, arthritis and diarrhea. | Root |
| 19.Diospyros melanoxylon | Tendu | Used in stomach disorders, for old wounds, urinary, blood and skin diseases and as a laxative. | Leaf, Bark and Fruit |
| 20. Opuntia dillenii | Nagphani | Used as an anti-oxidant, anti-inflammatory, anti-diabetic, anti-depressent and in acute liver injury. | Flower, Fruit, Leaf and Stem |
| 21. Tamarindus indica Leguminosae | Tamarind | Used in cases of paralysis, ulcers and inflammations. | Bark |
| 22. Parthenium hysterophorus | Gajar Grass | Used for fever, diarrhea, urinary tract infections, dysentery, neurologic disorders, and malaria. | Stem, Flower and Leaf |

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| 23. Sapindus mukorossi | Rishtak | Used for food poisoning, menstrual pains, distention of abdomen and Herpes. | Seeds |
| 24.Calotropis gigantean | Aak | Used for diarrhea, constipation, stomach ulcers, toothache, cramps and joint pains. | Bark and Root Bark |
| 25.Terminalia arjuna | Arjuna | Used for osteoporosis, peripheral neuritis, hairfall and as a heart tonic. | Stem Bark |
| 26.Saraca indica | Ashoka | Used for mouth ulcers, irregular periods, wounds, leucorrhoea and menorrhagia. | Stem Bark |
| 27. Eclipta alba | Bhringraja | Used for throat irritation, liver disorders, male infertility and chronic skin diseases. | Leaf and Whole plant |
| 28. Bacopamonnieri | Brahmi | Used for insomnia, anxiety, hair fall, acne and as a memory booster. | Flower and Whole Plant |

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| 29. Punica granatum L. Punicaceae | Pomegranate | Used as tonic for heart, stops nose bleed, in dysentery and diarrhea, and tones skin. | Fruit and Bark |
| 30.Coriandrum sativum L. Apiaceae | Coriander | Used on allergic areas and as a laxative. | Fruits and Leaf |

## IV. CONCLUSION

Rajasthan is one of the richest states in India when it comes to natural products and biodiversity. The state is well known for its flourishing flora as well as fauna. The countless species of flora in the state has put it on the path of economic development and resulted in boosting the standard of living of the people as well as the availability of first hand primary healthcare at a place. In this paper, we have undertaken the study to get in touch with the different species of plants which are of medicinal value in the particular region of the Bassi village which fall under the tehsil of Chittaurgarh, district Chittorgarh, Rajasthan. The recurring trend and need to move towards natural when it comes to healthcare has opened new spheres for ethnomedicinal plants in the country. Ayurvedic medicines and treatments are cost effective, handy and have minimal ill effects in the long run. But it is also true that many factors need to be considered while administering ayurvedic medicines. Despite the fact that these ayurvedic medicines are products of natural herbal materials, but incomplete knowledge about them and their unguided consumption can also lead to serious health issues [15]. Hence, a complete knowledge base regarding these types of plants should be drafted for their safe use by the people.

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