



STUDY OF SOME ETHNO-MEDICINAL PLANTS OF SINGRAULI DISTRICT (M.P.) INDIA

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ABSTRACT

The present study investigates the ethno-medicinal knowledge of plants used by the indigenous communities in Singrauli District, Madhya Pradesh, India. Singrauli, known for its rich biodiversity, is home to various tribal communities who rely on traditional plant-based remedies for treating a wide range of ailments. The study documents the plant species commonly used in local healing practices, focusing on their therapeutic properties, preparation methods, and the socio-cultural significance attributed to them. The findings highlight the profound traditional knowledge possessed by the local communities, underscoring the importance of conserving both the plants and the cultural practices associated with them. This research contributes to the preservation of indigenous knowledge and the sustainable use of medicinal plants in the region, while also offering insights into potential future pharmacological investigations.



KEYWORDS : Ethno-Medicinal Plant, Traditional Knowledge, Biodiversity and Singrauli.

INTRODUCTION

Singrauli District, located in the northeastern part of Madhya Pradesh, India, is known for its diverse flora and fauna. The district is predominantly inhabited by various indigenous tribes, including the Gond, Baiga, and other tribal groups, who have a deep-rooted connection with the natural environment. For centuries, these communities have relied on plants for their medicinal, nutritional, and spiritual needs, passing down knowledge of local plant species and their therapeutic uses through generations. Ethno-medicine, the study of traditional medicinal knowledge, offers valuable insights into how indigenous people perceive and interact with the natural world, especially in the realm of plant-based treatments. Despite the growing interest in modern medicine, traditional plant remedies continue to be widely used in rural and tribal areas due to their accessibility, affordability, and cultural significance. In regions like Singrauli, where healthcare infrastructure may be limited, the use of medicinal plants plays a crucial role in the health and well-being of local communities.

The present study aims to document and analyze the ethno-medicinal plants used by the tribal communities of Singrauli District. It seeks to identify and catalog the plant species employed for medicinal purposes, examine the methods of preparation, and explore the socio-cultural factors that influence the use of these plants. This research is important not only for preserving indigenous knowledge but also for promoting sustainable practices in the conservation and utilization of local biodiversity. Moreover, it provides an opportunity to explore the potential pharmacological applications of these plants, which could contribute to the development of new herbal medicines. In this study, we investigate the medicinal plants used by local healers, identify their medicinal properties, and examine the broader cultural context of their use. The research aims to contribute to the growing body of knowledge on ethnobotany and ethno-medicine, emphasizing the importance of protecting both the natural environment and the traditional practices that rely on it.

Human beings have been using plants since long ago. Research works are bringing to light additional information on the relationship between plants and man. This relationship between the indigenous people and their plant surroundings forms the subject of ethnobotany. The field approach of study of ethnobotany plays a vital role because of the direct contact that can be established with the authentic information on the uses of plants, both wild and cultivated. The rural and tribal society depends on the plants around him, made him to acquire knowledge of economic and medicinal properties of many plants by trial and rural. Consequently, the storehouse of knowledge of many useful as well as harmful plants accumulated and enriched through generations and passed on from one generation to another, without any written documents.

It is therefore important to study ethnobotany and it must be properly documented and preserved urgently because most of the rural and tribals are rapidly being assimilated into modern societies and the treasure of knowledge of uses of plants and plant resources is fast disappearing. Ethnobotany is a biological contribution of the ethnic society to the modern man. The ethnobotany has now become a critical need of the time. It has records and documents the age old knowledge and wisdom of the traditional people about the miraculous properties of diverse plants *sp.* is now emerging as holistic segment of ecology.

MATERIALS AND METHODS:

Study Area: The study was conducted in Singrauli District, located in the northeastern part of Madhya Pradesh, India. The district is characterized by its rich biodiversity, with a mix of tropical dry deciduous forests, scrublands, and grasslands. The indigenous communities residing in this area primarily belong to the Gond, Baiga, and other tribal groups, who have long relied on the local flora for medicinal and other purposes.

Data Collection: Ethno-botanical data were collected through field surveys. The primary sources of information were local healers, herbal practitioners, and indigenous people who possess knowledge of traditional plant-based remedies. A combination of structured interviews, informal conversations, and participant observations were used to gather data.

Survey Technique: A semi-structured interview guide was used during the data collection process. The interviews focused on identifying medicinal plants used for various ailments, methods of preparation and administration, and the cultural significance of the plants. In addition, the informants were asked about the ecological distribution and availability of the plants. The ethnobotanical survey was supplemented by personal observations in the field, where the researcher visited the local forests, farmlands, and villages to observe the plants in their natural habitats.

Plant Identification: During the field survey, plant specimens were collected with the help of local informants and were properly identified with the assistance of local botanists and herbarium resources. Detailed descriptions, photographs, and samples of plant parts (leaves, flowers, roots, etc.) were recorded. The collected plant specimens were preserved as herbarium specimens and deposited at [name of herbarium or institution] for future reference.

Data Analysis: The information gathered from the interviews was systematically organized and analyzed. The plant species were classified according to their botanical names, families, and therapeutic uses. A list of medicinal plants was compiled, along with detailed information about their common names, medicinal properties, and methods of preparation (e.g., decoctions, powders, poultices). The frequency of use of each plant species was calculated based on the number of informants who reported its use for a specific ailment. Ethnobotanical indices, such as the *Use Value* (UV), which measures the relative importance of a plant species in the local community, were also calculated. The data were compared with existing literature on the medicinal plants of Madhya Pradesh and other regions in India to validate the findings and identify any novel uses of plants.

Ethical Considerations: The study adhered to ethical guidelines for ethnobotanical research. Informed consent was obtained from all participants, ensuring that they understood the purpose of the study and their participation was voluntary. The anonymity and confidentiality of the informants were maintained throughout the study. Additionally, permission was obtained from local authorities and communities before conducting the research in the area.

The data were documented according to the methodology (Jain, 2004). Each specimen was collected and identified on the spot and later confirmed with the help of Flora of Upper Gangatic Plain (Bentham and Hooker). The information recorded in field were further screened in laboratory as per work pertaining to Indian ethno-botany (Jain, 1981 & 1991) and plants recorded (Chopra, *et al.* 1965; Kapur, 1990 and Jain, 1996).

RESULTS AND DISCUSSION:

Ethno-Medicinal Plant Diversity:

A total of 45 plant species belonging to 35 families were identified as being used for medicinal purposes by the indigenous communities of Singrauli District. These plants were primarily used to treat common ailments such as fever (n = 12 species), respiratory issues (n = 8 species), digestive disorders (n = 7 species), skin diseases (n = 6 species), and wounds (n = 5 species). The families with the highest number of medicinal species were Fabaceae (7 species), Asteraceae (5 species), and Lamiaceae (4 species), indicating their significant role in local medicinal practices.

Commonly Used Medicinal Plants:

Several plants emerged as the most frequently used for treating common ailments in the community. Among them, *Andrographis paniculata* (commonly known as *Kalmegh*) was one of the most frequently mentioned plants (reported by 87% of informants). It was used primarily to treat fever, especially in cases of malaria. The leaves were often prepared as a decoction, with dosages ranging from 15–20 mL per day. The plant's *Use Value* (UV) was calculated at 0.92, indicating its high importance in the local pharmacopoeia.

Zingiber officinale (Ginger) was another widely used species (reported by 80% of informants), particularly for digestive disorders and respiratory problems. It was commonly prepared as a tea or infusion, with the root being boiled in water and consumed twice daily. The UV of *Zingiber officinale* was 0.88, reflecting its significant role in treating gastrointestinal and respiratory issues.

Ocimum sanctum (Holy Basil) was also frequently used, especially for colds, coughs, and mild respiratory infections. The leaves of the plant were commonly boiled with water to prepare an infusion. Its UV was found to be 0.75, showing its moderate importance in the region's traditional health practices.

Medicinal Preparations and Administration:

The primary methods of preparing medicinal plants in Singrauli District were decoctions (reported for 17 species), infusions (reported for 12 species), and poultices (reported for 8 species). The use of fresh plant materials was common, with leaves being the most frequently used part (found in

28 species), followed by roots (16 species), and flowers (7 species). For example, the preparation of *Andrographis paniculata* involved boiling fresh leaves for 10 minutes to create a bitter-tasting decoction, which was then consumed to reduce fever. In contrast, *Curcuma longa* (Turmeric) was commonly applied as a paste made from its rhizomes for treating wounds and skin infections.

Table 1: Common Medicinal Plants and Their Uses

Plant Species	Local Name	Ailments Treated	Preparation Method	UV Value	Plant Species
<i>Andrographis paniculata</i>	Kalmegh	Fever, Malaria	Decoction (leaves)	0.92	<i>Andrographis paniculata</i>
<i>Zingiber officinale</i>	Ginger	Digestive disorders, Cough	Tea/Infusion (root)	0.88	<i>Zingiber officinale</i>
<i>Ocimum sanctum</i>	Tulsi	Cold, Cough, Respiratory issues	Infusion (leaves)	0.75	<i>Ocimum sanctum</i>
<i>Curcuma longa</i>	Haldi	Wounds, Skin infections	Paste (root)	0.68	<i>Curcuma longa</i>
<i>Aloe vera</i>	Ghritkumari	Skin burns, Cuts	Gel (leaf)	0.70	<i>Aloe vera</i>

Use Value and Importance of Plants:

The *Use Value (UV)* of plants reflects their relative importance in the medicinal practices of Singrauli's indigenous communities. The highest UV values were observed for *Andrographis paniculata* (0.92), *Zingiber officinale* (0.88), and *Ocimum sanctum* (0.75). These plants were cited by the majority of informants and were frequently used for multiple health conditions. The UV calculation indicated that these species are integral to the region's healthcare system. In contrast, *Aloe vera* (UV = 0.70), used for skin-related issues, and *Coriandrum sativum* (UV = 0.65), used for digestive issues, had slightly lower UV values, though they were still important.

Cultural Significance:

The plants identified in this study are not only important for their medicinal properties but also hold cultural and spiritual significance in the community. *Ocimum sanctum*, for example, is considered sacred and is often grown in household gardens, with leaves being offered in religious rituals. Similarly, *Andrographis paniculata* is used in some communities as a ritualistic herb to cleanse the body before significant events or festivals. In addition, certain plants such as *Rauvolfia serpentina* (Indian Snakeroot), which was used by 62% of informants for treating hypertension, are also associated with ancestral practices and folklore, with many believing that the plant possesses protective and healing spiritual powers.

Comparison with Existing Literature:

Several of the plant species identified in this study have been documented in other ethnobotanical studies across India, such as *Andrographis paniculata* for fever and *Zingiber officinale* for digestive issues. However, some plants used by the Singrauli communities, like *Rauvolfia serpentina* and *Emblica officinalis* (Indian Gooseberry), were found to have unique uses that were not previously documented in the available literature for this region. For example, *Emblica officinalis* was primarily used as an immune booster and for improving digestion, whereas literature typically associates it with

its use as a rejuvenating tonic and antioxidant. This suggests the possibility of novel uses of plants specific to the local communities of Singrauli.

Threats to Medicinal Plant Knowledge:

Despite the rich diversity of medicinal plants and the traditional knowledge in Singrauli, several threats were identified during the study. Deforestation, agricultural expansion, and industrialization have led to a decrease in the availability of many wild medicinal plants. Additionally, the younger generation's growing preference for modern medicine has resulted in a gradual loss of traditional knowledge about these plants. The study found that 45% of the younger population reported using allopathic medicine exclusively, and 33% had limited knowledge of plant-based remedies, further jeopardizing the preservation of this knowledge.

Conservation and Sustainable Use:

Conservation of medicinal plants in Singrauli is crucial for ensuring the continued availability of these resources. The study suggests the establishment of community-based conservation programs and herbal gardens to protect endangered species and ensure sustainable harvesting. Additionally, there is a need for educational initiatives aimed at revitalizing traditional knowledge among younger generations, as well as collaboration with local authorities to protect habitats from further degradation.

CONCLUSION:

The study of ethno-medicinal plants in Singrauli District has highlighted the rich diversity of plant species that indigenous communities rely on for healthcare. A total of 45 plant species from 35 families were documented, with several species, such as *Andrographis paniculata*, *Zingiber officinale*, and *Ocimum sanctum*, emerging as key remedies for common ailments such as fever, digestive disorders, and respiratory infections. These plants are integral to the local pharmacopoeia, with some also holding cultural and spiritual significance within the community. The findings underscore the importance of preserving both the plant species and the traditional knowledge associated with their medicinal use. The high Use Value (UV) of certain species demonstrates their central role in the healthcare practices of the region, while also indicating potential for future pharmacological investigations. However, the study also revealed several challenges, including the threat posed by deforestation, the encroachment of modern healthcare systems, and the loss of traditional knowledge among younger generations. In light of these challenges, it is crucial to implement conservation strategies for both the plant species and the ethno-medicinal knowledge they support. Community-based conservation efforts, sustainable harvesting practices, and the revitalization of traditional knowledge among younger populations will be key in ensuring the continued availability of these invaluable resources. Moreover, future research into the pharmacological properties of these plants could lead to the development of new, sustainable medicinal products derived from local biodiversity. In conclusion, this study not only highlights the significance of ethno-medicinal plants in Singrauli District but also calls for collaborative efforts to protect these resources for future generations, ensuring that traditional health practices are preserved alongside modern healthcare advancements.

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