

## Ethnobotany: Traditional and Sustainable Contributions of Plants to Human Life

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DOI : <https://doi.org/10.5281/zenodo.18639370>

### ARTICLE DETAILS

#### Research Paper

Accepted: 21-01-2026

Published: 10-02-2026

#### Keywords:

*Ethnobotany; Medicinal*

*Plants; Traditional*

*Knowledge;*

*Sustainability;*

*Biodiversity; Rural*

*Communities*

### ABSTRACT

Ethnobotany is an interdisciplinary science that explores the relationship between plants and human societies, with particular emphasis on their traditional, cultural, and sustainable uses. Since ancient times, plants have served as vital resources for food, medicine, shelter, rituals, and environmental balance. The traditional knowledge of plant use, preserved by rural communities and tribal societies, continues to play a significant role in healthcare and sustainable living. Medicinal plants, in particular, represent an invaluable source of natural remedies for a wide range of human and animal diseases. Different plant parts such as roots, stems, leaves, flowers, fruits, and seeds are used in the treatment of ailments including diabetes, jaundice, asthma, piles, dengue, fever, and gastrointestinal disorders. A comprehensive ethnobotanical survey conducted in Amethi district of Uttar Pradesh revealed the presence of about 50 species of medicinally important plants, traditionally utilized by local people and healers. These practices not only highlight the richness of biodiversity but also reflect sustainable approaches to health and livelihood. However, increasing urbanization, pollution, and habitat destruction pose significant threats to these valuable resources. Therefore, conservation, documentation, and promotion of indigenous knowledge are essential to ensure the longevity of ethnobotanical heritage. The study emphasizes the importance of traditional plant-based practices for sustainable development and human well-being.



## Introduction

The present ethnobotanical study has been conducted in Kadunala wetland Forest Area, located in Amethi District of Uttar Pradesh, which lies in the northern part of India. This region is characterized by its rich natural biodiversity and is inhabited by rural and tribal communities who have a long-standing tradition of using medicinal plants for healing purposes. The residents of these rural areas largely rely on herbal remedies to treat various diseases such as diabetes, jaundice, knee pain, fever, tuberculosis, respiratory infections, anemia, heat stroke, diarrhea, and chickenpox, among others.

Since ancient times, Vedas (traditional healers) and local tribal people have depended on the natural flora for their medicinal needs. These communities have traditionally treated themselves and their families using locally available herbs, demonstrating a profound connection between humans and plant-based healing systems. Herbal plants in this region are rich in bioactive compounds, which allow the local people to utilize them for primary healthcare, rooted in Ayurveda, home remedies, and ethnobotanical practices forms of traditional knowledge passed down through generations.

Kadunala wetland Forest area and the surrounding rural zones of Amethi District are known for their rich diversity of medicinal plant species, many of which are endemic or semi-endemic to the region. However, this knowledge remains largely undocumented and is preserved orally among the older members of the community. The increasing pressure of deforestation, urbanization, overexploitation of natural resources, and declining forest cover pose significant threats to the preservation of this traditional ecological knowledge.

With rising environmental challenges such as water scarcity, extinction of plant species, and loss of wildlife, urgent steps are needed to document and protect this traditional wisdom. Ethnobotanical research not only aids in the conservation of plant biodiversity but also enhances awareness about the sustainable use of forest resources among the local population. Additionally, the decline in traditional knowledge due to modernization makes it imperative to study and safeguard this invaluable cultural and ecological heritage.

The present study aims to promote awareness among the local communities of Amethi District regarding the significance of medicinal plants and to document the indigenous knowledge associated with their use. It focuses on the Ayurvedic properties, usage practices, identification methods, and historical significance of these plants, emphasizing their role in traditional healthcare and sustainable conservation.



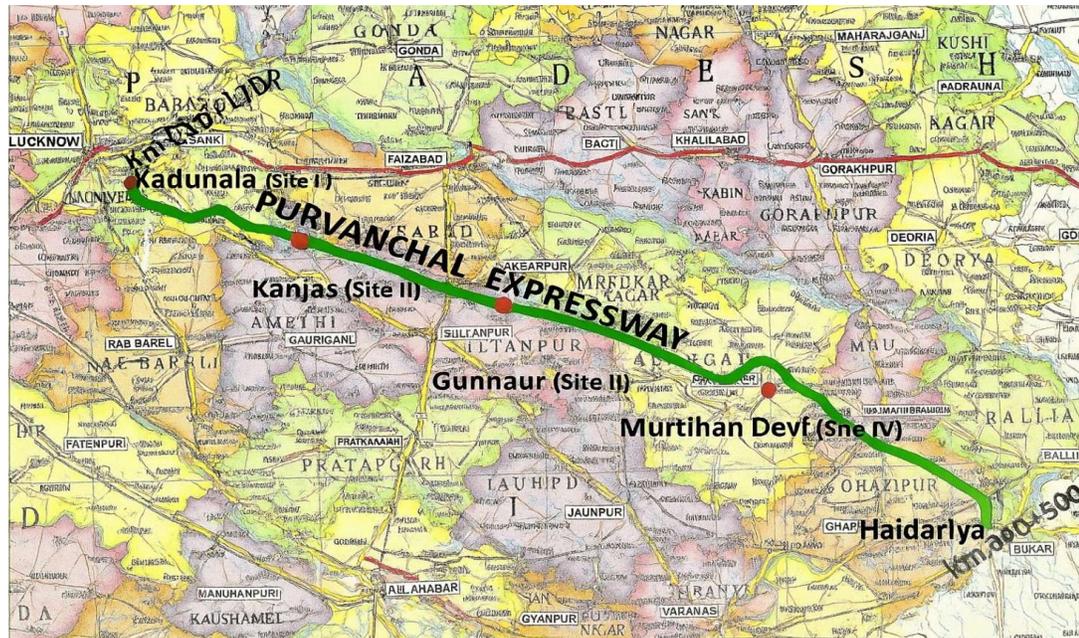
## Study Region

This research was conducted in the Kadunala wetland forest area of Amethi district, situated in the eastern part of Uttar Pradesh, India. The district falls under the Ayodhya Division and is geographically positioned between 26° 9' to 26° 30' north latitude and 81° 30' to 82° 15' east longitude, covering an area of about 3,063 km<sup>2</sup>. It is bounded by Sultanpur to the north and east, Pratapgarh to the south, and Rae Bareilly to the west. Gauriganj, the district headquarters, holds both historical and geographical importance and is well-connected by road and rail along the Lucknow–Varanasi highway, serving as a major hub for trade and communication. The district lies within the fertile Indo-Gangetic plains, with predominantly alluvial soils favorable for agriculture, and experiences a subtropical climate characterized by three distinct seasons—summer, monsoon, and winter—with an average annual rainfall of 850–1,100 mm.

The Kadunala wetland forest is an ancient and ecologically significant landscape, covering 391.92 hectares, officially declared a Reserved Forest in 1955 by the Government of Uttar Pradesh. The forest is traversed by the Kadunala stream (locally called Naiya Nala), which originates from Rail Lake in Tiloi tehsil. Flowing through forest blocks 1 to 4, the stream stretches for about 4 km before merging with the Gomti River near Gajanpur village. This hydrological system sustains the wetland ecosystem, supporting a rich diversity of flora and fauna.

Ethnobotanically, the Kadunala region serves as a living repository of traditional medicinal knowledge. The forest and its adjoining villages, such as Kadunala and Kanjas, harbor a wide range of herbal plant species including *Ocimum sanctum* (Tulsi), *Azadirachta indica* (Neem), *Withania somnifera* (Ashwagandha), *Tinospora cordifolia* (Giloy), *Moringa oleifera* (Drumstick), *Andrographis paniculata* (Kalmegh), *Eclipta alba* (Bhringraj), *Terminalia chebula* (Harad), *Terminalia bellirica* (Baheda), *Phyllanthus emblica* (Amla), and *Acacia nilotica* (Jangli Babul). These species are widely utilized in traditional medicine systems, particularly Ayurveda and folk healing practices, by local communities and traditional healers (Vaidyas).

The sustainable use and conservation of these medicinal plants by villagers reflect a long-standing plant–people relationship, where biodiversity is deeply intertwined with cultural heritage and local healthcare practices. As illustrated in Figure 1 (Map of Study Sites), Kadunala and Kanjas together form a vital ethnobotanical landscape within Amethi district, representing both ecological richness and the preservation of indigenous medical knowledge.



**Fig. 1:** Highlight and pin point of the Study Area.

## Material and Methods

A comprehensive ethno botanical survey was conducted in selected rural areas of Amethi district to explore the structure of local community groups, the distribution and usage of medicinal plants, and the role of traditional knowledge in everyday life. The primary objective was to document the degrees and forms of indigenous medicinal practices still prevalent in these communities.

Regular field visits were undertaken to the selected villages, where ongoing traditional healing practices and the cultural use of local flora were systematically observed and recorded. Ethno botanical data were collected through semi-structured interviews with key informants, including traditional healers, elderly residents, and local herbal practitioners. Direct field observations complemented these interviews to ensure accuracy and context-based understanding.

Special emphasis was placed on identifying specific medicinal herbs commonly used within the community. Each plant's use was validated either directly through demonstrations or indirectly through repeated cross-verification with multiple informants. This iterative verification process was employed to assess the reliability and authenticity of the information collected.

The recorded data includes vernacular plant names, plant parts used, methods of preparation, modes of administration, and therapeutic applications. The overall methodology aimed to preserve traditional



ethno medicinal knowledge while laying a foundation for further pharmacological and phytochemical research.

## Result and Discussion

The research sites shown in Figure 1 (Study Area Map) and the availability data presented in Table 1 revealed a total of 280 plant species belonging to 59 families, which were documented in the study (Table 2). Among the surveyed sites, Kadunala (Site I) recorded the highest number of plant species, followed by Kanjas (Site II), while Gunnaur (Site III) showed a moderate presence. In contrast, Murthihan Devi (Site IV) had a low diversity, and Chak Baher (Site V) recorded the minimum number of species. However, the percentage distribution of plant species at Sites I and II, as well as at Sites IV and V, was found to be similar.

Work was conducted at the following study sites:

- Kadunala (Site I)
- Kanjas (Site II)
- Gunnaur (Site III)
- Murthihan Devi (Site IV)
- Chak Baher (Site V)

Ethnobotanical knowledge sources indicated that Hakims and Vaidyas provided the maximum information regarding Ayurvedic practices, followed by the Mallah community, while sub-caste groups contributed the minimum (Figure 2). Approximately 2% of species were not available during the survey.

In Kanjas village, the total population is 2,629, consisting of 1,344 males and 1,285 females. The knowledge of herbal plants, their availability, and their distribution is deeply rooted in community life. These plants are commonly used for the treatment of diseases such as diarrhea, fever, cough, jaundice, smallpox, fatigue, diabetes, hypertension, dysentery, and leucorrhoea. Despite access to allopathic medicine, people in remote rural areas largely depend on traditional herbal remedies due to their easy

Availability, low cost, and cultural acceptance.

This study highlights that traditional knowledge of medicinal plants in Amethi district plays a crucial role in rural healthcare management. Preservation and documentation of this indigenous knowledge are



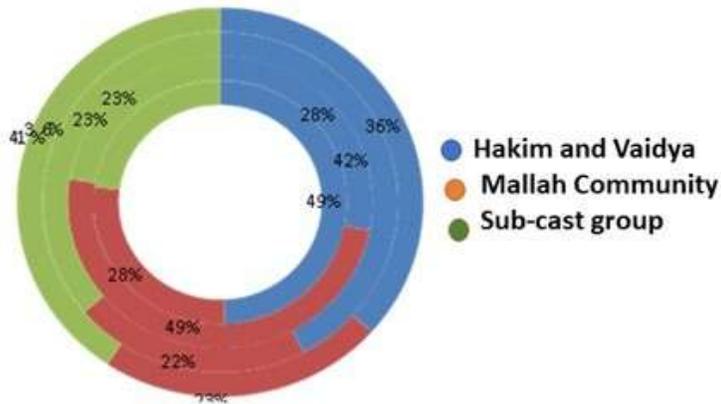
essential for ensuring its transmission to future generations, thereby strengthening the link between biodiversity, cultural heritage, and sustainable healthcare practices.

**Table 1:** Study of Particular site

Study Site and Availability of Plant Species			
Sites No.	Site Name	Number of Plant Species Available	Remark
1	Kadunala	Highest	Same percentage as Site 2
2	kanjas	Second highest	Same percentage as Site 1
3	Gunnaur	Moderate	-
4	Murtihan devi	Low	-
5	Chak Baher	Minimum	Same percentage as Site 4

**Table 2:** Totals Documented Plant Data

Total Documented Plant Data		
Sr.No.	Total Plant Species	Total Family
1	280	59



**Fig. 2:** Sources of Traditional Knowledge

**Conclusion**



This study documents the ethnobotanical diversity of the Kadunala region of Amethi district, highlighting its rich repository of medicinal and food plants. The continued dependence of rural communities and tribes on these species has helped preserve traditional knowledge across generations. In total, 180 herbal medicinal plants were recorded, reflecting their importance in primary healthcare, cultural practices, and ecological sustainability.

However, many species are now under threat due to climate change, deforestation, urbanization, and human interventions, which has led to the gradual decline of traditional knowledge systems. Therefore, the documentation, analysis, and validation of this knowledge are urgently required to ensure its preservation and recognition. Promoting awareness, encouraging younger generations to learn, and strengthening conservation practices can help safeguard both the biodiversity and the intellectual property rights of local communities who have nurtured this wisdom for centuries.

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