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# Botanical knowledge in Indian traditions: Indigenous plant classification and uses

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## Abstract

India maintains one of the richest botanical traditions in the world, to which the plants are not just biological or biological objects: they are cultural, medicinal, ritual, and ecological. The paper will discuss the way native and traditional people in India use plants, how they categorize plants, give them names, and use plants in various ways, including medicine, food, agriculture, ritual, and conservation. Instead of being Linnaean, most of the Indian traditions employ folk taxonomies based on morphology, habitat, taste, potency, seasonality, utility, and sacred association. This kind of system of classification can be found in tribal ethnobotany, Ayurveda, local folk healing and sacred grove traditions. The paper is a synthesis of the current ethnobotanical literature and official records to examine the form and roles of native plant knowledge. It states that the conventional classification systems are contextual, adaptive, and empirical, and they allow communities to define useful species, regulate harvesting, and biodiversity conservation. The article also demonstrates that indigenous knowledge is still essential to primary healthcare, food security and climate resilience particularly in forested and rural areas. Nevertheless, the erosion of this knowledge has occurred because of habitat loss, shifting livelihoods, market forces and generational discontinuity. Indian institutional reaction, such as Botanical Survey of India, the National medicinal plants board and the traditional knowledge digital library show some attempts in documentation, conservation and protection of intellectual property. The article ends with the conclusion that native botanical knowledge cannot be regarded as just folklore, but as an advanced knowledge system that can contribute to the governance of biodiversity, sustainable development, and plural health future in India. In addition to the latter, conducting a cost-benefit analysis is also essential to determine the extent of the benefits and costs linked to the proposed modification. Besides the latter, a cost-benefit analysis should also be carried out to identify the scope of benefits and costs associated with the proposed change.

**Keywords:** Ethnobotany; Indigenous knowledge; Folk taxonomy; Medicinal plants; India

## 1. Introduction

The development of botanical knowledge in India has been a consequence of a long-term process of interaction between communities and landscapes. Through forest, farm, sacred grove and domestic garden, man has known, named, categorized, and consumed plants in his subsistence and healing, in his ritual and in his management of the environment. This wisdom is shared in classical traditions like Ayurveda and through oral culture in the tribal elders, healers, pastoralists, forest-dwelling and rural women. In this respect, ethnobotany offers a significant paradigm of cognizing the way cultural communities proceed to structure knowledge about plants and use it in their daily lives. Bureau of Botanical Survey of India 2013 (n.d.).

Formal scientific taxonomy is different in approach but may not be more complex than indigenous plant classification. Folk systems tend to cluster plants according to their appearance, flavour, smell, location, ritual value, medicinal effect, or time of the year. A study by ethnobiologist, Brennt Berlin on ethnobiological classification defined that traditional societies usually classify forms of living in systematic and rational taxonomies and not random naming (Berlin, 1992).

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This principle is reflected in Indian local names, which make a distinction between edible and poisonous species, cooling and hot herbs, forest and field plants, cultivated and wild taxa, and sacred and ordinary vegetation. Ayurveda also categorizes plants by pharmacodynamic properties rasa, guna, virya, vipaka and karma with showing an internally consistent pattern of medical assessment (Government of India, Department of AYUSH, 2001).

The usefulness of indigenous botanical knowledge is not a historical thing, but something contemporary. The official records show that India encompasses over 7,000 species of plants with medicinal uses in folk and documented system of medicine, with a significant proportion of medicinal plant demand still being fulfilled through the wild sources (National Medicinal Plants Board [NMPB], 2026). Simultaneously, in other areas of the country, including Mizoram, Kerala, Assam, and Karnataka, ethnobotanical studies indicate that state plant knowledge continues to have a critical role in healthcare, food security, and biodiversity preservation (Ralte *et al*., 2024; Kalita *et al*., 2024; Thattantavide and Kumar, 2024). This paper explores the nature of the classification of plants and the purposes of these knowledge systems as well as why it is important to preserve them to ensure the ecological and cultural future of India.

### *Research Objectives*

- To examine the principles underlying indigenous plant classification in Indian traditions.
- To analyse the medicinal, nutritional, ritual, and ecological uses of plants in indigenous communities.
- To compare folk and Ayurvedic classification systems with modern botanical taxonomy.
- To assess the role of indigenous plant knowledge in biodiversity conservation and livelihood resilience.
- To identify major threats to the continuity of traditional botanical knowledge in India.

### *Hypotheses*

- Indigenous plant classification systems in India are systematic, experience-based, and functionally comparable to formal taxonomic reasoning in their local contexts.
- Communities with stronger traditional botanical knowledge exhibit more diversified plant use for medicine, food, and environmental management.
- Documentation and institutional recognition of indigenous plant knowledge contribute positively to biodiversity conservation and protection against knowledge misappropriation.

## 2. Literature Review

Ethnobotany scholarship is no longer simply a list of useful plants, but it is now also the study of how various communities conceive and arrange biological knowledge. Berlin (1992) showed that ethnobiological classification within a traditional society is likely to take cognizable hierarchical and cognitive principles. His work comes in particularly handy in interpreting Indian cases where folk names and categories of use often directly correspond to morphology, salience and utility. Instead of being considered as unstructured indigenous knowledge, ethnobotanical studies are gradually considered as a scholarly local science.

Ethnobotany has been a significant topic of scientific description in official institutions in India. One of the main goals that is mentioned by the Botanical Survey of India is the survey and documentation of traditional plant knowledge. Through the All India Coordinated Research Project on Ethnobiology, the ethnobotanical work in various regions reported of 7,500 medicinal plants and 3,900 edible plants signifying the massive size of the people-plant knowledge systems in the nation (BSI, n.d.). This implies that indigenous knowledge is not peripheral but central to the knowledge of the plant diversity in India.

This picture is supported by recent field studies. Ralte *et al*. (2024) employed the indigenous population of the western Mizoram and reported 124 ethnomedicinal plant species under 112 genera and 60 families. Their analysis revealed that one of the most noticeable was herbs and leaves and their most frequent preparation technique was decoction. These outcomes demonstrate that indigenous knowledge of plants is species-dense and methodologically precise. In a similar manner, according to Kalita et al. (2024), informant consensus and use values are high in Assam, which proves that medicinal use of plants is not arbitrary in any way, but rather socially justified in local healthcare.

The connection between botanical knowledge and food security is particularly dominant in tribal societies. Thattantavide and Kumar (2024) surveyed 111 varieties of plant species belonging to the Mullu Kuruman tribe of Wayanad, Kerala, and indicated that two-thirds of the surveyed species were consumed as food and more than a quarter of them were utilized as medicine. Their work is significant as it can define the knowledge of plants not only as the therapeutic heritage but as the ability of the plants to resist the climate and be more adaptable to the agricultural needs.

In this respect, the indigenous classification systems represent multifunctional systems: they assist communities to distinguish among the species in terms of their edibility, seasonal availability, nutritional purpose, and medicinal action.

Plant knowledge has another literary branch, which associates it with conservation. The sacred groves in India are often referred to as sources of medicinal and culturally valuable plants. It has been observed that sacred landscapes conserve rare, endemic and ethnobotanically important species due to the weak pressure of extraction due to customary rules, taboos and ritual authority. Bhagwat and Rutte (2006) stated that sacred groves possess great potential of biodiversity management, and subsequent reviews also accentuated their strengths in being the interface between cultural belief and ecological conservation.

Knowledge protection has also emerged as a big issue. The Traditional Knowledge Digital Library was established to ensure the misappropriation of Indian traditional medicinal knowledge is not practiced and to eliminate language barrier that previously barred patent examiners in the discovery of prior art. The CSIR states that the TKDL has translated over half a million formulations and practices utilizing many international languages in an innovative Traditional Knowledge Resource Classification system (CSIR, n.d.). This phenomenon demonstrates how indigenous and classical knowledge may be replicated to contemporary legal and informational infrastructures without rejecting their initial epistemologies.

Overall, the literature indicates three general findings: Indian indigenous botanical knowledge is systematic; it continues to be a primary habitual in medicine, food, and ecological adaptation; and its sustainability is limited to the continuity of communities and ethical institutionalization.

## 3. Methodology

The research design adopted in this paper is qualitative and review based. It combines research provided by ethnobotanical case studies, government publications, and theoretical literature on which ethnobiological classification is based. There are three levels of material on which the analysis is based:

- Theoretical works in folk taxonomy and ethnobotany.
- Indian communities in Mizoram, Kerala and Assam: empirical research.
- Institutional materials covering conservation and classification and knowledge-protection efforts.

It is an interpretive and not a statistical approach. It contrasts the ways the various traditions categorize plants and the ways the categorization influences utilization. Special consideration is made to the repeated principles of classification: morphology, habitat, utility, pharmacological action, sacredness, and seasonal supply. This was then synthesized around four distinct analytically focused axes, namely classification, use, conservation, and contemporary challenges.

### Plants Classification in Indian Traditions

The Indian traditions have varied knowledge systems that classify plants. Plants may be classified into trees, shrubs, herbs, climbers, grasses, tubers, weeds, sacred species, edible greens or medicinal herbs at the folk level. These categories are sensory and pragmatic. They help to make quick discoveries in the daily environment and are usually action-oriented: what to eat, what not to eat, what to worship, what to prescribe. This correlates with the argument expressed by Berlin that folk taxonomies are results of repeated human activities of biologically significant differences (Berlin, 1992).

**Table 1** Comparison of Plant Classification Systems in India

| System | Basis of Classification | Example Logic | Main Function |
|---|---|---|---|
| Folk/Indigenous | Form, habitat, utility, ritual status, season | Edible tubers, sacred trees, fever herbs | Daily use, local transmission |
| Ayurvedic | Rasa, guna, virya, vipaka, karma | Heating/cooling, digestive effect, therapeutic action | Diagnosis and treatment |
| Modern Botanical | Morphology, reproductive traits, genetics, nomenclature | Family, genus, species | Scientific identification and standardization |

Ayurveda provides a more codified yet an experience-based classification. The Ayurvedic Pharmacopoeia of India classifies medicinal plants according to botanical name and retains traditional terms such as synonyms, rasa (taste),

guna (qualities), virya (potency), vipaka (post-digestive effect), karma (action), preparations and action (Government of India, Department of AYUSH, 2001). Thereby, a plant is not defined by what it is, but what it does in the body. This utilitarian approach is like folk medicine.

These systems are different, but not mutually exclusive. In practice, local healers often use folk names, Ayurvedic categories, and botanical identities interchangeably depending on audience and purpose.

**Plants In the Indigenous Community**

The Indian traditions of using plants are stunningly numerous. The most documented is medicinal use. In Mizoram, ethnomedicinal use was known in 124 species and decoctions and leaves were most common (Ralte *et al*., 2024). The community knowledge of Assam exhibited therapeutic specialization with species like *Zingiber officinale* and *Azadirachta indica* having a high use value and high fidelity to ailments (Kalita *et al*., 2024).

Food use is also of great importance. The Mullu Kuruman study has recorded 111 plants, the majority of which are consumed as food, and the importance of the plants in nutrition, dryland agriculture, and climate stress resistance (Thattantavide and Kumar, 2024). This kind of knowledge erases the contemporary disciplinary divisions: a plant can be food, medicine, fodder and ritual material at the same time.

Plants are also used ritualistically and ecologically. Sacred groves preserve culturally significant species by traditional limitations of harvesting, grazing and mining. These practices are successful in forming micro-reserves in the hands of communities where the ethnobotanical knowledge and biodiversity support each other (Bhagwat & Rutte, 2006). There is also official ethnobotanical reportage of plant usage in India, where there is extensive non-medical use of plants, including edible, fiber-yielding, fodder, and pesticidal plants (BSI, n.d.).

**Table 2** Major Indigenous Plant Use Domains in India

| Use Domain | Typical Examples | Knowledge Basis |
|---|---|---|
| Medicine | Fever, skin disease, digestive disorders, wounds | Symptoms, preparation method, dosage |
| Food | tubers, leafy greens, wild fruits, grains | Seasonality, edibility, nutrition |
| Ritual | Sacred trees, worship plants, grove species | Taboo, myth, community identity |
| Agriculture | Fodder, natural pesticides, soil indicators | Observation, experimentation |
| Livelihood | Herbal trade, non-timber forest produce | Market familiarity, harvesting skill |

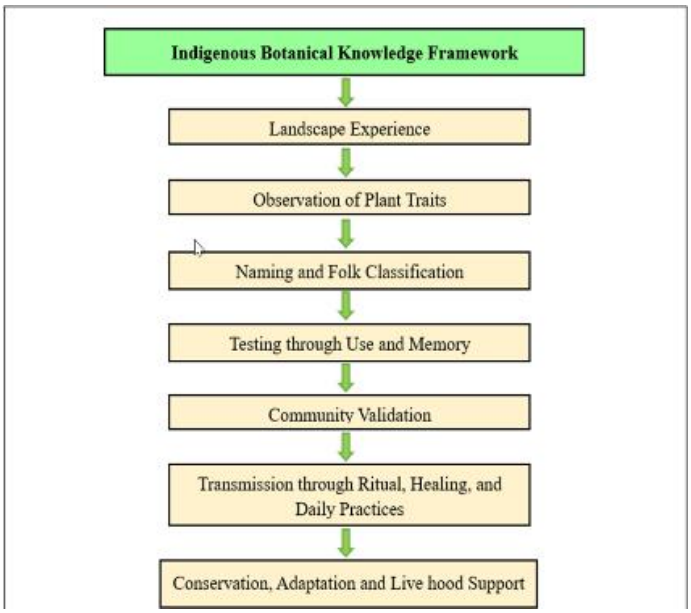


**Figure 1** Indigenous Botanical Knowledge Framework

This workflow is conceptual, showing how classification and use are embedded in social learning rather than isolated technical knowledge.

## 4. Discussion

The data confirms the opinion that the indigenous botanical knowledge in India is systematic and adaptive. It is systematic since communities categorize plants based on constant principles like morphology, taste, potency, habitat and utility. The system is dynamic since these categories are sensitive to evolving environmental and survival factors. As an illustration, the Mullu Kuruman knowledge system associates plant diversity with food security and climate resilience and medicinal research in Mizoram and Assam demonstrates detailed therapeutic agreement.

The initial hypothesis is proven right: indigenous classification systems are not random and pre-scientific. They are cumulative, locally testable and structured. The second hypothesis is also proved, as in the communities with strong plant knowledge, the plant use is diversified in food, medicine, and ecological management. The third hypothesis is supported by the role of the institutions like BSI, NMPB, and TKDL as they document, standardize, preserve, and protect traditional knowledge against erasure or biopiracy. TKDL is particularly important as it changes the traditional medicinal formulations into a searchable classification system that is readable by global patent offices but still maintains the status of traditional knowledge as prior art.

Meanwhile, there are great tensions. Knowledge can be safeguarded through documentation; however, it can also become decontextualized when it is not interpreted and shared with communities. In a similar vein, scientific validation is appreciated but the minimization of plants to bioactive substances could be overlooking ritual, symbolic and ecological significances which are key to indigenous classification. A moderate stance should consequently not subjugate plural epistemologies, but one should not impose all knowledge on one scientific paradigm.

### 4.1. Difficulties and Future Projections

There are several threats to traditional botanical knowledge in India. The most short-term include the degradation of the habitat, excessive exploitation of wild medicinal herbs, market collection and the loss of oral intergenerational communication. According to NMPB, a major portion of the medicinal plant demand is still supplied by the wild plant resources, which strains the natural populations. Plant literacy might also be lost as younger generations abandon forests and agriculture as a livelihood.

The future policy should take four directions; community-based documentation, on the ground conservation using sacred landscapes and customary institutions, ethical research relationships with benefit sharing, and integration of indigenous knowledge into education and public health as it is relevant. The goal cannot be to museumize traditional knowledge; rather it should be maintained as a living and developing system.

## 5. Conclusion

The botanical knowledge in the Indian traditions is a complex combination of observation, classification, practice and a belief. Native peoples of India identify plants using folk taxonomies and medicinal logic systems that are systematic, place-based and survival-related and meaning-oriented. Plants are perceived in Ayurvedic pharmacodynamics in the tribal healthcare and sacred grove conservation in relation to their form, use, habitat, strength and cultural importance. In modern times, Mizoram, Assam, and Kerala studies reveal that the knowledge continues to be an important part of medicine, nutrition, and resilience. Elsewhere, organizations like BSI, NMPB and TKDL suggest an increasing acceptance of the fact that traditional botanical knowledge could have scientific, cultural, legal and ecological significance. The task that now lies before is to safeguard this knowledge without removing it out of society that has nurtured it. The classification of the indigenous plants in India must thus be known as a crucial intellectual heritage and an effective source of sustainable futures.

## Compliance with ethical standards

*Disclosure of conflict of interest*

No conflict of interest to be disclosed.

## References

[1] Berlin, B. (1992). Ethnobiological classification: Principles of categorization of plants and animals in traditional societies. Princeton University Press.

[2] Bhagwat, S. A., & Rutte, C. (2006). Sacred groves: Potential for biodiversity management. Frontiers in Ecology and the Environment, 4(10), 519–524.

[3] Botanical Survey of India. (n.d.). Ethnobotany. Government of India.

[4] Council of Scientific & Industrial Research. (n.d.). Traditional Knowledge Digital Library Unit (TKDL).

[5] Government of India, Department of AYUSH. (2001). The Ayurvedic pharmacopoeia of India (Part I, Vol. I).

[6] Kalita, M., Alam, S. M., & Jelil, S. N. (2024). An ethnobotanical study of traditionally used medicinal plants: Case study from Assam, India. Ethnobotany Research and Applications, 27, 1–25.

[7] National Medicinal Plants Board. (2026). Introduction. Ministry of AYUSH, Government of India.

[8] Ralte, L., Sailo, H., & Singh, Y. T. (2024). Ethnobotanical study of medicinal plants used by the indigenous community of the western region of Mizoram, India. Journal of Ethnobiology and Ethnomedicine, 20, Article 2.

[9] Thattantavide A., & Kumar A. (2024). Traditional ecological knowledge and medicinal plant diversity usage among the Mullu Kuruman tribes of Wayanad district of Kerala, India and its implications for biodiversity conservation in the face of climate change. Trees, Forests and People, Volume 16.