



Original Research Paper

Erosion of Ethnobotanical Knowledge: Drivers, Consequences and Conservation Strategies-A Systematic Review

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ABSTRACT

Ethnobotanical knowledge, encompassing the traditional understanding of plant diversity and its utilization for food, medicine, agriculture, rituals and ecosystem management, represents an invaluable component of humanity's biocultural heritage. However, this knowledge has undergone rapid erosion during the past few decades owing to socio-economic transformation, globalization, urbanization, biodiversity loss, environmental degradation, migration, language extinction and changing healthcare practices. The present review critically synthesizes published literature to examine the major drivers responsible for the erosion of ethnobotanical knowledge, its ecological and socio-cultural consequences, and strategies for its conservation. Literature published between 1990 and 2025 was retrieved from Web of Science, Scopus, Google Scholar, PubMed, ScienceDirect and relevant reports of the World Health Organization (WHO), Convention on Biological Diversity (CBD), UNESCO, IPBES and the Ministry of AYUSH. The reviewed evidence indicates that the decline of indigenous knowledge is closely associated with reduced intergenerational knowledge transmission, shrinking natural habitats, commercialization of biological resources, declining indigenous languages and inadequate policy support. Loss of ethnobotanical knowledge not only threatens cultural identity but also undermines biodiversity conservation, primary healthcare, food security and sustainable resource management. Strengthening community participation, systematic documentation, legal protection of traditional knowledge, integration into formal education, conservation of biological resources and evidence-based validation of traditional practices are essential for safeguarding this valuable heritage. The review emphasizes that conserving ethnobotanical knowledge should be considered an integral component of biodiversity conservation and sustainable development.

Keywords: *Ethnobotany, Indigenous Knowledge, Traditional Ecological Knowledge, Biodiversity Conservation, Biocultural Diversity, Traditional Medicine, Knowledge Erosion.*

1. INTRODUCTION

Ethnobotany is the scientific study of the relationships between human societies and plants, encompassing the traditional knowledge, beliefs and practices associated with plant resources. Since Harshberger (1896) formally introduced the term *ethnobotany*, the discipline has evolved into an interdisciplinary science integrating botany, anthropology, ecology, pharmacology, conservation biology and indigenous knowledge systems. Traditional plant knowledge has

played a fundamental role in human civilization by providing food, medicine, fibre, fuel, construction materials and cultural identity for thousands of years. India represents one of the world's richest repositories of ethnobotanical knowledge because of its remarkable biological and cultural diversity. The country harbours four global biodiversity hotspots and is inhabited by more than 705 Scheduled Tribes and numerous ethnic communities possessing extensive knowledge of local plant resources. Traditional knowledge has been preserved through oral transmission and documented in classical Indian

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literature, including the Vedas, Charaka Samhita, Sushruta Samhita, Vrikshayurveda and other indigenous texts. The pioneering work of S.K. Jain established ethnobotany as a recognized scientific discipline in India and stimulated systematic documentation of indigenous plant knowledge.

Traditional knowledge contributes substantially to primary healthcare, particularly in developing countries where medicinal plants remain an important source of healthcare. According to the World Health Organization (WHO), traditional medicine continues to play a significant role in healthcare delivery globally, and many countries are integrating evidence-based traditional medicine into their health systems. Recent WHO strategies further recognize the importance of indigenous knowledge, biodiversity conservation and scientific validation of traditional medical systems (World Health Organization).

Despite its immense ecological, cultural and medicinal significance, ethnobotanical knowledge is declining rapidly throughout the world. Globalization, modernization, industrialization, changing lifestyles, migration, formal education systems, market-oriented economies, habitat degradation, climate change and the erosion of indigenous languages have substantially reduced opportunities for the transmission of traditional ecological knowledge. Simultaneously, the decline of biodiversity has reduced access to many culturally important plant species, thereby weakening traditional resource management systems. UNESCO and IPBES have emphasized that indigenous and local knowledge forms an essential component of biodiversity conservation and sustainable ecosystem management (UNESCO).

Although numerous studies have documented individual aspects of ethnobotanical knowledge loss among indigenous communities, comprehensive reviews integrating the socio-cultural, ecological and policy dimensions of knowledge erosion remain limited. The present review therefore synthesizes available scientific evidence to identify the principal drivers responsible for the erosion of ethnobotanical knowledge, evaluate their implications for biodiversity conservation and sustainable development, and discuss evidence-based strategies for safeguarding traditional knowledge systems.

2. METHODOLOGY

The present study is a systematic literature review based exclusively on published scientific literature and internationally recognized institutional reports. Relevant publications published between 1990 and 2025 were identified through searches of Web of Science, Scopus, Google Scholar, PubMed and ScienceDirect using combinations of keywords including ethnobotany, traditional ecological knowledge, indigenous knowledge, knowledge erosion, biocultural diversity, medicinal plants, traditional medicine, language loss, biodiversity conservation and knowledge transmission. In addition,

Journal of Animal Environment, Vol. 18, No. 2s, Spring 2026 reports and policy documents published by the World Health Organization (WHO), Convention on Biological Diversity (CBD), UNESCO, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Food and Agriculture Organization (FAO), National Biodiversity Authority (India) and the Ministry of AYUSH were examined.

Peer-reviewed articles focusing on ethnobotanical knowledge, traditional ecological knowledge, indigenous knowledge systems, biodiversity conservation and traditional medicine were included in the review. Publications lacking scientific methodology, duplicate records, non-English articles without accessible translations and reports with insufficient bibliographic information were excluded. The selected literature was critically analyzed and organized into thematic categories, including historical development of ethnobotanical knowledge, drivers of knowledge erosion, ecological and socio-cultural consequences, policy issues and conservation strategies. Since this investigation is a qualitative evidence synthesis based on published literature, no primary field survey, interviews or statistical analyses were conducted.

3. REVIEW OF LITERATURE

Ethnobotanical knowledge has received increasing scientific attention over the past four decades because of growing concerns regarding biodiversity loss, cultural transformation and the sustainability of indigenous knowledge systems. Earlier ethnobotanical investigations primarily emphasized the documentation of medicinal plants used by indigenous communities, whereas contemporary research increasingly addresses the dynamics of knowledge transmission, resilience of traditional ecological knowledge and the socio-economic drivers responsible for knowledge erosion.

Harshberger (1896) formally introduced the concept of ethnobotany and highlighted the importance of studying interactions between humans and plants. Subsequently, numerous investigations across Asia, Africa and Latin America demonstrated that indigenous societies possess sophisticated knowledge of plant taxonomy, ecology, medicinal properties and sustainable resource management. In India, systematic ethnobotanical research expanded substantially under the leadership of S.K. Jain, whose pioneering documentation of tribal plant knowledge established the foundation for modern Indian ethnobotany.

Research conducted by Zarger and Stepp (2004) demonstrated that intergenerational transmission is fundamental for maintaining ethnobotanical knowledge and that disruption of traditional learning processes significantly reduces plant knowledge among younger generations. Similarly, Reyes-García and colleagues showed that socio-economic transformation, market integration and modernization

contribute to declining traditional ecological knowledge within indigenous communities.

Ramírez-Sosa (2007) emphasized that globalization and modernization have accelerated the disappearance of traditional plant knowledge in many developing countries, particularly where oral traditions predominate. Hanazaki et al. (2013) further reported evidence of a "shifting baseline syndrome" in ethnobotanical research, whereby successive generations gradually lose awareness of historical plant diversity and traditional resource use.

Biro et al. (2014) investigated threatened plant species in Central Europe and concluded that declining traditional ecological knowledge adversely affects biodiversity conservation because indigenous communities often possess unique information regarding species ecology and sustainable harvesting practices. Tang and Gavin (2016), through a global synthesis of traditional ecological knowledge studies, demonstrated that knowledge erosion is strongly associated with formal education, economic development, migration and changing livelihoods.

Recent reviews have shifted attention from merely documenting ethnobotanical information to emphasizing its conservation. Luczaj (2023) argued that descriptive ethnobotanical investigations remain indispensable because traditional knowledge is disappearing faster than it can be scientifically documented. Simultaneously, international organizations including WHO, UNESCO and IPBES have recognized indigenous knowledge as an essential component of biodiversity conservation, ecosystem resilience and sustainable development, advocating systematic documentation, equitable benefit-sharing and integration of evidence-based traditional knowledge into national conservation and healthcare policies (World Health Organization).

Although substantial progress has been made in documenting ethnobotanical knowledge, the available literature reveals important gaps. Most investigations are geographically localized, focus primarily on medicinal plants, and seldom integrate socio-cultural, ecological and policy dimensions of knowledge erosion. Comprehensive evidence syntheses examining the multiple drivers, consequences and conservation strategies for ethnobotanical knowledge remain relatively scarce. The present review addresses this gap by integrating findings from global and Indian literature to provide a comprehensive assessment of the erosion of ethnobotanical knowledge and evidence-based strategies for its conservation.

4. KEY DRIVERS OF THE EROSION OF ETHNOBOTANICAL KNOWLEDGE

The erosion of ethnobotanical knowledge is a multidimensional process driven by interacting socio-cultural, ecological, economic and institutional factors. Traditional knowledge systems have evolved over centuries through close interactions between indigenous communities and their surrounding

Journal of Animal Environment, Vol. 18, No. 2s, Spring 2026 environments. However, rapid socio-economic transformations during the last few decades have disrupted these interactions, resulting in a progressive decline in traditional plant knowledge. The principal drivers responsible for this erosion are discussed below.

4.1 Modernization, Urbanization and Socio-cultural Change

Modernization and rapid urbanization are among the most significant factors contributing to the erosion of ethnobotanical knowledge. Expansion of formal education, industrialization, improved transportation, mass media and changing lifestyles have altered the dependence of indigenous communities on natural resources. Younger generations increasingly prefer modern occupations and urban employment over traditional livelihoods, reducing opportunities for learning indigenous plant knowledge from elders. Consequently, oral transmission of ethnobotanical knowledge has declined considerably in many traditional societies (Reyes-García et al., 2014; Tang & Gavin, 2016).

4.2 Decline of Intergenerational Knowledge Transmission

Ethnobotanical knowledge is primarily transmitted orally through observation, participation and apprenticeship within families and communities. Elderly healers, herbal practitioners and experienced community members have traditionally served as custodians of this knowledge. However, migration, nuclear family systems and reduced interaction between younger and older generations have weakened these traditional learning mechanisms. Several studies have demonstrated that younger individuals generally possess significantly less ethnobotanical knowledge than older community members, indicating a gradual interruption of knowledge transmission (Zarger & Stepp, 2004; Reyes-García et al., 2014).

4.3 Loss of Indigenous Languages

Indigenous languages are important repositories of ethnobotanical knowledge because they preserve local plant names, harvesting techniques, ecological observations and cultural practices. Language extinction frequently results in the simultaneous disappearance of traditional ecological knowledge embedded within linguistic expressions. UNESCO has identified language loss as a major threat to intangible cultural heritage, including indigenous knowledge systems. The erosion of indigenous languages therefore directly contributes to the loss of ethnobotanical knowledge accumulated over generations (Maffi, 2005; UNESCO, 2023).

4.4 Biodiversity Loss, Habitat Degradation and Climate Change

Ethnobotanical knowledge depends fundamentally on the availability of biological resources. Deforestation, habitat fragmentation, land-use change, mining,

infrastructure development and agricultural expansion have substantially reduced plant diversity in many regions. Climate change further alters species distribution, flowering phenology and ecosystem structure, affecting the availability of medicinal and culturally important plants. When plant species disappear or become inaccessible, associated traditional knowledge also declines because communities lose opportunities for their continued use and transmission. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recognizes the close relationship between biodiversity conservation and indigenous knowledge systems (IPBES, 2019).

4.5 Commercialization and Unsustainable Harvesting of Plant Resources

Growing commercial demand for medicinal and aromatic plants has increased pressure on wild plant populations. Unsustainable harvesting, illegal trade and excessive commercial exploitation have caused the depletion of several economically valuable species. Declining plant availability reduces the practical application of traditional knowledge and discourages younger generations from acquiring ethnobotanical skills. Sustainable harvesting and community-based resource management are therefore essential for conserving both biodiversity and associated traditional knowledge (Hamilton, 2004; Schippmann et al., 2006).

4.6 Changing Healthcare Practices

The widespread availability of modern healthcare services has significantly reduced dependence on traditional medicine in many regions. Although traditional medicine continues to play an important role in primary healthcare worldwide, increasing reliance on allopathic medicine has diminished the social status of traditional healers and reduced opportunities for transmitting medicinal plant knowledge. The World Health Organization has emphasized the importance of integrating scientifically validated traditional medicine into national healthcare systems to ensure its continued relevance (WHO, 2025).

4.7 Socio-economic Transformation and Changing Livelihoods

Economic development, market integration and livelihood diversification have altered traditional resource-use patterns. Communities increasingly depend on wage employment and commercial agriculture rather than forest-based subsistence activities. As traditional occupations decline, practical knowledge related to wild edible plants, medicinal plants, fibres and other biological resources is gradually abandoned. This transition has accelerated the erosion of ethnobotanical knowledge in many indigenous communities (Berkes, 2018).

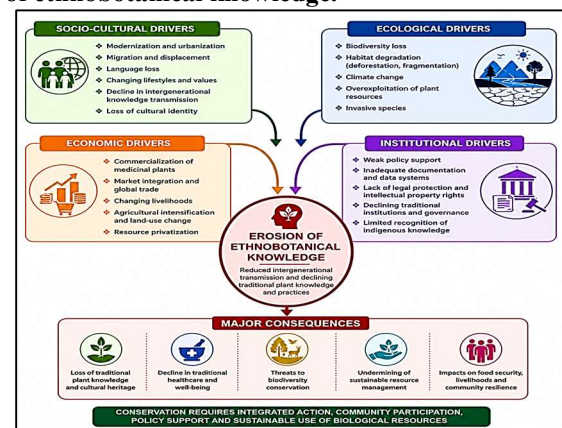
4.8 Inadequate Documentation, Policy Support and Legal Protection

A large proportion of ethnobotanical knowledge remains undocumented and is therefore highly vulnerable to permanent loss following the death of knowledgeable individuals. Although several international agreements, including the Convention on Biological Diversity and the Nagoya Protocol, recognize the importance of protecting traditional knowledge, implementation remains uneven. Limited documentation, inadequate policy support, weak institutional coordination and concerns regarding intellectual property rights continue to impede effective conservation of indigenous knowledge systems (CBD, 2011; CBD, 2011).

4.9 Erosion of Traditional Institutions and Cultural Practices

Traditional institutions such as village councils, customary governance systems, sacred groves, community festivals and indigenous healing traditions have historically played a central role in conserving ethnobotanical knowledge. However, cultural homogenization, religious transformation and changing social values have weakened many of these institutions. As traditional ceremonies and customary practices decline, the ethnobotanical knowledge embedded within them is also progressively lost (Berkes, 2018; Fernández-Llamazares et al., 2021).

Figure 1. Major drivers responsible for the erosion of ethnobotanical knowledge.



5. CONSEQUENCES OF THE EROSION OF ETHNOBOTANICAL KNOWLEDGE

The erosion of ethnobotanical knowledge has profound ecological, cultural, social, economic and healthcare implications. Traditional plant knowledge represents centuries of accumulated observations, experimentation and adaptation to local environments. Its decline not only affects indigenous communities but also undermines biodiversity conservation, sustainable resource management and cultural continuity. The major consequences of ethnobotanical knowledge erosion are discussed below.

5.1 Loss of Cultural Heritage and Identity

Ethnobotanical knowledge forms an integral component of cultural heritage and community identity. Indigenous knowledge is embedded within local traditions, folklore, rituals, festivals, beliefs and customary practices associated with plant resources. As ethnobotanical knowledge declines, cultural practices linked to medicinal plants, sacred species, food plants and ceremonial uses gradually disappear. The loss of traditional knowledge therefore contributes to cultural homogenization and weakens the unique identity of indigenous and local communities. UNESCO recognizes traditional knowledge as an important element of intangible cultural heritage requiring urgent safeguarding.

5.2 Decline in Traditional Healthcare Systems

One of the most immediate consequences of ethnobotanical knowledge erosion is the decline of traditional healthcare practices. Indigenous communities have long relied on medicinal plants for the prevention and treatment of numerous ailments. As traditional healers age and younger generations fail to acquire their knowledge, valuable information regarding medicinal plant identification, preparation methods, dosage and therapeutic applications is being irreversibly lost. This decline reduces healthcare options, particularly in remote and resource-limited regions where traditional medicine remains an important component of primary healthcare. The World Health Organization recognizes traditional medicine as an essential healthcare resource for millions of people worldwide and emphasizes the need for its scientific validation and conservation (WHO, 2025).

5.3 Reduction in Biodiversity Conservation Practices

Many indigenous communities possess detailed knowledge regarding plant ecology, sustainable harvesting methods, habitat management and species conservation. Traditional resource management systems, including sacred groves, community forests and customary harvesting regulations, have historically contributed to biodiversity conservation. The decline of ethnobotanical knowledge weakens these traditional conservation mechanisms, potentially accelerating habitat degradation and species loss. Consequently, the erosion of traditional ecological knowledge can negatively affect ecosystem resilience and sustainable management of biological resources.

5.4 Loss of Valuable Medicinal Plant Resources

Traditional knowledge often serves as the foundation for identifying medicinally important plant species. Numerous modern pharmaceuticals have originated from compounds initially discovered through indigenous medicinal practices. When ethnobotanical knowledge disappears, opportunities for identifying new therapeutic agents, nutraceuticals and pharmacologically active compounds may also be lost. The erosion of knowledge therefore represents not

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only a cultural loss but also a reduction in future scientific and pharmaceutical opportunities.

5.5 Weakening of Food Security and Nutritional Diversity

Indigenous communities possess extensive knowledge regarding wild edible plants, traditional crops, seasonal food resources and methods of food preparation. Such knowledge contributes significantly to household nutrition, dietary diversity and resilience during periods of food scarcity. The erosion of ethnobotanical knowledge often leads to reduced utilization of wild food plants and traditional crop varieties, increasing dependence on a limited number of commercial food species. This transition may negatively affect nutritional security and agrobiodiversity conservation.

5.6 Disruption of Sustainable Natural Resource Management

Traditional ecological knowledge includes practical information regarding soil conservation, water management, agroforestry systems, seasonal harvesting and ecosystem restoration. The loss of such knowledge can reduce the effectiveness of local resource management practices and contribute to unsustainable exploitation of natural resources. Communities that lose traditional ecological knowledge may become increasingly dependent on external technologies and management approaches that are not always adapted to local environmental conditions.

5.7 Erosion of Indigenous Languages and Oral Traditions

Ethnobotanical knowledge is closely associated with indigenous languages and oral traditions. Local plant names, ecological concepts, harvesting techniques and medicinal practices are often transmitted through language. As traditional knowledge declines, indigenous languages may also lose specialized vocabulary and cultural expressions related to biodiversity. Conversely, language loss further accelerates the disappearance of ethnobotanical knowledge, creating a mutually reinforcing cycle of cultural erosion.

5.8 Reduced Community Resilience to Environmental Change

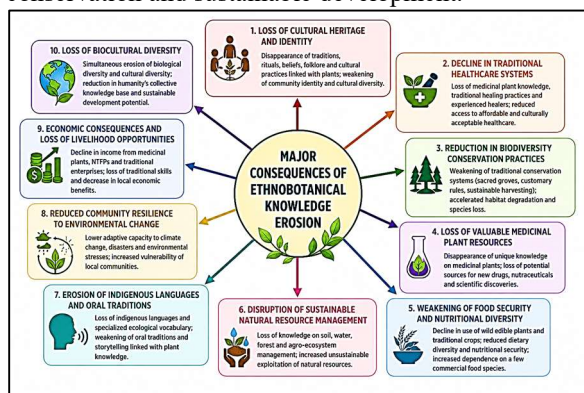
Traditional knowledge systems have evolved through long-term interactions between communities and their environments, enabling adaptation to ecological variability and environmental disturbances. Ethnobotanical knowledge contributes to climate adaptation, disaster preparedness, food security and ecosystem management. The erosion of this knowledge may reduce the adaptive capacity of communities facing challenges such as climate change, biodiversity loss and environmental degradation. As a result, local populations may become more vulnerable to socio-ecological stresses.

5.9 Economic Consequences and Loss of Livelihood Opportunities

Many rural and indigenous communities depend upon medicinal plants, non-timber forest products and traditional plant-based enterprises for income generation. Declining ethnobotanical knowledge may reduce opportunities for sustainable harvesting, cultivation, value addition and community-based enterprises. The loss of traditional skills and knowledge can therefore negatively affect local livelihoods and diminish economic benefits derived from biological resources.

5.10 Loss of Biocultural Diversity

Biological diversity and cultural diversity are closely interconnected. The concept of biocultural diversity recognizes that cultural practices, languages, beliefs and traditional ecological knowledge often co-evolve with local ecosystems. The erosion of ethnobotanical knowledge contributes to the simultaneous decline of both biological and cultural diversity. This loss diminishes humanity's collective knowledge base and weakens the cultural foundations of biodiversity conservation and sustainable development.



6. STRATEGIES FOR THE CONSERVATION OF ETHNOBOTANICAL KNOWLEDGE

The conservation of ethnobotanical knowledge requires an integrated approach that simultaneously safeguards biological diversity, cultural heritage, indigenous rights and traditional healthcare practices. Since ethnobotanical knowledge is closely linked with local ecosystems and cultural traditions, its conservation cannot be achieved solely through documentation. Instead, it requires active participation of indigenous communities, supportive legal frameworks, sustainable resource management and intergenerational knowledge transmission. International organizations, including the World Health Organization (WHO), UNESCO and the Convention on Biological Diversity (CBD), emphasize that traditional knowledge should be protected through evidence-based research, equitable benefit-sharing, biodiversity conservation and recognition of Indigenous Peoples' rights (World Health Organization).

6.1 Systematic Documentation and Digital Archiving

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Comprehensive documentation is the first step in safeguarding ethnobotanical knowledge. Many experienced traditional healers and elderly community members possess valuable knowledge that remains undocumented and is therefore vulnerable to permanent loss. Ethnobotanical surveys should record vernacular plant names, botanical identification, traditional uses, preparation methods, harvesting practices, seasonal availability and associated cultural beliefs. Digital databases, community herbariums, geo-referenced inventories, audiovisual documentation and multilingual repositories can substantially improve long-term preservation while respecting community ownership and prior informed consent.

6.2 Strengthening Intergenerational Knowledge Transmission

Traditional knowledge has historically been transmitted through observation, apprenticeship and participation in everyday community life. Strengthening intergenerational learning is therefore fundamental to conservation. Community workshops, medicinal plant gardens, school-based programmes, field demonstrations, traditional festivals and mentorship between elders and younger generations can revitalize knowledge transmission. Such initiatives not only preserve practical skills but also reinforce cultural identity and respect for indigenous traditions.

6.3 Conservation of Biodiversity and Natural Habitats

The conservation of ethnobotanical knowledge depends directly upon the conservation of plant diversity and natural ecosystems. Protection of forests, sacred groves, wetlands, grasslands and other culturally important landscapes ensures continued availability of medicinal and useful plant species. Community-based forest management, restoration of degraded habitats, in situ conservation and ex situ conservation through botanical gardens, seed banks and medicinal plant conservation areas contribute significantly to sustaining both plant diversity and associated traditional knowledge. IPBES recognizes indigenous knowledge as an essential component of biodiversity conservation and sustainable ecosystem management (World Health Organization).

6.4 Community Participation and Empowerment

Indigenous and local communities are the primary custodians of ethnobotanical knowledge. Conservation programmes should therefore adopt participatory approaches that recognize community leadership in decision-making, documentation, resource management and benefit-sharing. Capacity-building programmes, community-based organizations, women's self-help groups and local biodiversity management committees can strengthen the role of indigenous communities in conserving their own knowledge systems.

6.5 Integration into Education

Formal education has often contributed to the decline of traditional knowledge by emphasizing modern scientific curricula while neglecting indigenous knowledge systems. Integrating ethnobotanical knowledge into school, college and university curricula can help bridge this gap. Field-based learning, ethnobotanical gardens, experiential education and inclusion of Indian Knowledge Systems (IKS) under the National Education Policy (NEP 2020) offer opportunities for preserving traditional ecological knowledge while promoting scientific validation.

6.6 Scientific Validation and Sustainable Utilization

Scientific validation of traditional plant uses enhances the credibility and wider acceptance of ethnobotanical knowledge. Interdisciplinary research involving botanists, ethnobotanists, pharmacologists, chemists, ecologists and healthcare professionals should evaluate the efficacy, safety and conservation status of medicinal plants. Sustainable harvesting protocols, cultivation of medicinal species and value-addition through community enterprises can reduce pressure on wild populations while generating livelihood opportunities.

6.7 Legal Protection and Intellectual Property Rights

Effective conservation requires legal recognition of indigenous knowledge and protection against misappropriation. The Convention on Biological Diversity, the Nagoya Protocol and recent international initiatives emphasize prior informed consent, equitable access and fair benefit-sharing for traditional knowledge holders. National policies should strengthen intellectual property protection, community rights and mechanisms that prevent unauthorized commercial exploitation of traditional knowledge (Convention of Biological Diversity).

6.8 Policy Support and Institutional Collaboration

Governments, research institutions, universities, non-governmental organizations and international agencies should collaborate to develop comprehensive policies for documenting, conserving and promoting ethnobotanical knowledge. Long-term financial support, multidisciplinary research programmes, national inventories of medicinal plants, regional ethnobotanical databases and collaboration between traditional healers and modern healthcare systems are essential for effective conservation. The WHO Global Traditional Medicine Strategy 2025–2034 specifically encourages Member States to strengthen evidence generation, biodiversity conservation, community engagement and protection of traditional medical knowledge (World Health Organization).

7. FUTURE PERSPECTIVES

Future research should move beyond descriptive inventories toward interdisciplinary studies integrating ethnobotany, conservation biology,

Journal of Animal Environment, Vol. 18, No. 2s, Spring 2026 pharmacology, genomics, climate science and digital technologies. Artificial intelligence, geographic information systems (GIS), remote sensing and digital knowledge repositories provide new opportunities for documenting and monitoring traditional knowledge while respecting ethical principles and Indigenous rights. Greater attention should also be given to quantitative ethnobotanical studies, community-led conservation, restoration of threatened medicinal plant populations and evaluation of ecosystem services associated with indigenous resource management. International collaboration, capacity building and equitable benefit-sharing will remain central to safeguarding ethnobotanical knowledge in the context of global environmental change.

8. CONCLUSION

Ethnobotanical knowledge represents an invaluable component of global biocultural heritage and has long contributed to healthcare, food security, biodiversity conservation and sustainable natural resource management. The reviewed literature demonstrates that its erosion is driven by multiple interacting factors, including modernization, urbanization, declining intergenerational knowledge transmission, language loss, biodiversity degradation, climate change, commercialization and inadequate institutional support. The disappearance of traditional knowledge threatens not only cultural identity but also the conservation and sustainable use of plant diversity. Long-term conservation of ethnobotanical knowledge requires integrated strategies combining systematic documentation, biodiversity conservation, community participation, educational initiatives, scientific validation and supportive legal frameworks. International instruments such as the Convention on Biological Diversity, the Nagoya Protocol and the WHO Global Traditional Medicine Strategy 2025–2034 provide a strong policy foundation for protecting indigenous knowledge and ensuring equitable benefit-sharing. Future conservation efforts should prioritize community-led approaches, interdisciplinary research and evidence-based integration of traditional knowledge into biodiversity conservation and public health policies. Such measures will help preserve ethnobotanical knowledge for future generations while contributing to sustainable development and resilience in changing socio-ecological systems. (World Health Organization).

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