

# *Medicinal Plants Conservation Areas (MPCAs): Importance, Threats and Conservation Efforts in India*

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## **ABSTRACT**

Medicinal Plants Conservation Areas (MPCAs) play a pivotal role in safeguarding India's extensive medicinal plant diversity, which is vital for traditional healthcare, cultural practices, and economic stability. India is home to approximately 8,000 species of medicinal plants, many of which are integral to traditional medicine systems such as Ayurveda and Unani. MPCAs facilitate in-situ conservation, protecting these species from threats including overharvesting, habitat destruction, and climate change. The rising demand for natural remedies, combined with the economic benefits of medicinal plant trade, underscores the importance of these areas. However, medicinal plants face significant challenges: overexploitation, habitat loss driven by deforestation and urbanization, climate change, and the impact of invasive species. The erosion of traditional knowledge further complicates sustainable practices. Government initiatives, such as the National Medicinal Plants Board (NMPB) and community-led conservation efforts through Joint Forest Management (JFM), are crucial for the preservation of these resources. Over 200 MPCAs have been established across India, with a focus on rare and endangered species. Despite notable progress,

challenges such as illegal trade, funding limitations, and climate-related risks continue to impede conservation efforts. Future strategies must prioritize sustainable harvesting practices, stringent enforcement of regulations, and enhanced research to secure the long-term conservation of India's medicinal plants.

## INTRODUCTION

Medicinal plants are intricately linked to India's traditional healthcare systems, economic activities, and cultural heritage. The establishment of Medicinal Plants Conservation Areas (MPCAs) serves as a crucial strategy for conserving this diversity within their natural habitats. As the demand for medicinal plants increases, MPCAs provide essential in-situ conservation, protecting species from threats such as overexploitation and habitat loss. This essay examines the significance of MPCAs, the various threats faced by medicinal plants, and ongoing conservation efforts.

### Importance of Medicinal Plants

India's rich biodiversity includes approximately 8,000 species of medicinal plants, many of which are endemic. These plants are essential for healthcare, traditional knowledge, and economic viability.

### Traditional Medicine and Healthcare:

Medicinal plants underpin systems such as Ayurveda, Unani, and Siddha, with up to 70-80 per cent of rural populations relying on traditional remedies for primary healthcare. For example, Ashwagandha (*Withania somnifera*) and Brahmi (*Bacopa monnieri*) are widely used in Ayurvedic practices for stress relief and cognitive enhancement.

**Economic Value:** India ranks among the largest producers of medicinal plants globally, significantly contributing to the herbal medicine market, which is projected to grow at a compound annual growth rate (CAGR) of 16 per cent from 2020 to 2025. The export of

products derived from medicinal plants, such as *Piper longum* (long pepper) and *Terminalia chebula* (Haritaki), supports the livelihoods of rural populations and enhances the national economy. The herbal products market was valued at approximately \$5 billion in 2020, with further growth anticipated due to the increasing demand for natural remedies.

### Cultural and Religious Significance:

Medicinal plants like Tulsi (*Ocimum sanctum*), Neem (*Azadirachta indica*), and Amla (*Phyllanthus emblica*) hold profound cultural and religious importance in India, often featured in rituals and traditional ceremonies symbolizing healing and longevity.

### Biodiversity and Ecological Contributions:

Medicinal plants play a crucial role in maintaining ecological balance by supporting pollinators and wildlife. For instance, *Rauvolfia serpentina* (Sarpagandha), used to treat hypertension, also serves as a food source for various insects, highlighting the ecological imperative of conserving these species.

### Threats to Medicinal Plants in India

Medicinal plants face multiple threats that jeopardize their survival:

**Overharvesting:** The expansion of industries such as pharmaceuticals and cosmetics has led to unsustainable collection practices. Species like *Aconitum heterophyllum* (Ativisha) and *Nardostachys jatamansi* (Jatamansi) are at risk of extinction due to overexploitation. Research indicates that 90% of medicinal plant species used in trade are sourced from the wild, often

through methods that do not permit regeneration.

**Habitat Destruction:** Deforestation, mining, and urbanization are rapidly diminishing the natural habitats of medicinal plants. The Himalayan region, home to several rare species such as *Picrorhiza kurroa* (Kutki) and *Swertia chirayita* (Chirayata), has experienced significant habitat loss, with reported declines of 30-40 per cent in medicinal plant populations over the past decade (Chaudhuri, 2007).

**Climate Change:** Alterations in temperature and precipitation patterns disrupt the growth cycles and habitats of many medicinal plants. A 2019 study projected that species like *Saussurea costus* could lose up to 40 per cent of their suitable habitats by 2050 due to climate change (Halder and Jha, 2023).

**Invasive Species:** Non-native species, such as *Lantana camara* and *Parthenium hysterophorus*, threaten indigenous medicinal plants like *Asparagus racemosus* (Shatavari) and *Withania somnifera* (Ashwagandha) by outcompeting them and degrading their habitats.

**Lack of Knowledge and Awareness:** The decline in traditional knowledge, particularly among younger generations in rural areas, poses a risk to the sustainable use of medicinal plants. Surveys indicate that fewer than 10 per cent of individuals under 30 in the Western Ghats can identify key medicinal plants used in their communities (Basavarajaiah et al., 2020)

### Medicinal Plants Conservation Areas (MPCAs)

MPCAs have been established as part of India's national strategy for biodiversity conservation, designed to protect medicinal plants within their natural ecosystems.

**MPCAs as Conservation Tools:** These areas allow for the in-situ conservation of medicinal plants. India has established over 200 MPCAs across 16 states, encompassing diverse ecosystems, including tropical rainforests and alpine regions. A notable example is the MPCA in the Dihang-Dibang Biosphere Reserve in Arunachal Pradesh, which conserves species like *Paris polyphylla*, utilized in traditional medicine.

**Protection of Rare and Endangered Species:** Many MPCAs prioritize the conservation of endangered species. The Sikkim Himalayan MPCA safeguards the endangered *Taxus baccata* (Himalayan Yew), heavily exploited for its cancer-fighting compound, taxol. The MPCA in Uttarakhand's Govind Wildlife Sanctuary has also been instrumental in conserving *Saussurea costus* and *Rauvolfia serpentina*.

### Government and Community Conservation Efforts

The conservation of medicinal plants in India necessitates collaboration among government entities, communities, and NGOs.

**National Medicinal Plants Board (NMPB):** Under the Ministry of AYUSH, the NMPB promotes the conservation, cultivation, and sustainable use of medicinal plants. Initiatives such as the "Green India Mission" aim to enhance medicinal plant cover and encourage farmers to cultivate species like Aloe vera and *Moringa oleifera*, reducing pressure on wild populations.

**Community Participation:** Local communities play a critical role in successful conservation initiatives. Programs like Joint Forest Management (JFM) engage communities in the stewardship of forest resources, including medicinal plants. In Kerala, tribal communities are actively involved in managing MPCAs, monitoring

plant populations, and implementing sustainable harvesting practices.

**Research and Documentation:** Institutions such as the Indian Council of Forestry Research and Education (ICFRE) and the Botanical Survey of India (BSI) are conducting extensive research on medicinal plant diversity and propagation techniques. The documentation of traditional knowledge by the Foundation for Revitalization of Local Health Traditions (FRLHT) has facilitated the creation of digital databases to preserve ethnobotanical knowledge.

### Challenges and the Way Forward

Despite advancements, the conservation of medicinal plants faces several persistent challenges:

**Illegal Trade:** The illicit trade of medicinal plants remains a significant issue, with species such as *Aconitum* and *Swertia* often smuggled across borders. Strengthening enforcement mechanisms is essential to combat this problem.

**Funding and Resources:** Many MPCAs operate with insufficient funding, hindering their ability to effectively monitor and protect plant populations. Increasing financial support and forming partnerships with private organizations can address these limitations.

**Capacity Building:** Training for forest officers, NGOs, and local communities in sustainable harvesting practices and conservation techniques is necessary to enhance conservation efforts.

**Climate Change Adaptation:** Developing strategies to adapt to climate change is critical. Researchers are exploring seed banking and cultivating high-altitude species in controlled environments to mitigate climate risks.

### CONCLUSION

The conservation of medicinal plants is essential for maintaining India's biodiversity, healthcare traditions, and cultural heritage. MPCAs represent an effective strategy for in-situ conservation, protecting both medicinal plant species and their ecosystems. However, achieving long-term sustainability requires a coordinated approach that encompasses government policies, scientific research, and active community participation. As global demand for natural remedies continues to rise, sustainable practices must be prioritized to reconcile economic needs with environmental stewardship.

### REFERENCE

- Basavarajaiiah, D.M., Narasimhamurthy, B., Bharathi, M. and Naik, J., 2020. Tribal livelihood status in Western Ghats. *Fores Res*, 9, p.234.
- Chaudhuri, A.B., 2007. *Endangered medicinal plants*. Daya Books.
- Halder, M. and Jha, S., 2023. The current status of population extinction and biodiversity crisis of medicinal plants. In *Medicinal Plants: Biodiversity, Biotechnology and Conservation* (pp. 3-38). Singapore: Springer Nature Singapore.