

PRESERVING LOCAL MEDICINAL PLANT HERITAGE: INTEGRATING CLASSICAL AYURVEDIC PRINCIPLE AND CONTEMPORARY CONSERVATION FRAMEWORKS

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ABSTRACT

Approximately 80% of the global population relies on traditional medicinal plants for primary healthcare, yet accelerating habitat loss, over-exploitation, and unsustainable harvesting practices pose severe threats to their survival. Preserving this vital bio-cultural heritage demands an integrated conservation paradigm encompassing systematic taxonomic identification, ethnobotanical documentation, geographic distribution mapping, and active community engagement. Furthermore, implementing sustainable utilisation strategies such as non-destructive harvesting of plant parts and commercial cultivation is essential to prevent wild population depletion. This study highlights the need to bridge classical Ayurvedic principles (*Nama*, *Rupa*, and *Guna Jnana*) with modern conservation mechanisms (*in-situ*, *ex-situ*, and tissue culture repositories) to safeguard botanical diversity, secure

healthcare access, and ensure the long-term availability of medicinal natural resources.

KEYWORDS: Bio-cultural Heritage, Conservation, Dravyaguna, Ethnomedicine, Medicinal Plants, *Nardostachys jatamansi*.

INTRODUCTION

Medicinal plants are defined as botanical taxa capable of synthesising therapeutic secondary metabolites to alleviate, manage, or cure human ailments, occupying a fundamental role in

traditional healthcare systems across local communities.^[1] India represents a global biodiversity hotspot, harbouring an estimated 8,000 species of medicinal flora according to the Botanical Survey of India (BSI).^[2,3] Over 80% of the global population relies predominantly on crude plant drugs, both organised and unorganised, in various dosage forms for healthcare.^[4] However, excessive commercial extraction, improper harvesting, and wild stock depletion threaten the continuity of local medicinal flora.^[2] Preserving local medicinal plant heritage requires combining empirical ecological wisdom with institutional, policy-driven conservation strategies.

MATERIALS AND METHODS

The need to safeguard local medicinal plant heritage is widely validated across contemporary literature and policy reports. Key strategies repeatedly emphasised include systematic taxonomic identification, geographic distribution mapping, non-destructive plant part harvesting, public education, and targeted conservation measures. Additionally, secondary data from recent government press releases were integrated to reflect ongoing policy mandates and strategic institutional efforts toward local medicinal plant preservation.

RESULT

In the *Charaka Samhita*, *Acharya Charaka* establishes that effective plant identification relies on systemic nomenclature (*Nama Jnana*) and morphological characterisation (*Rupa Jnana*), which can be obtained from forest dwellers, shepherds and/or cowherds, and provides a vital foundation for recognising living plants in their natural habitats. However, *Nama* and *Rupa Jnana* alone are insufficient; it must be coupled with therapeutic knowledge (*Aushadhi Guna Jnana*). Thus, *Nama Jnana*, *Rupa Jnana* and *Guna Jnana* are equally important.^[5]

Nama and Rupa Jnana

Standardised botanical nomenclature under the International Code of Botanical Nomenclature (ICBN) facilitates systematic field surveys and geospatial mapping of local plant distributions.

Guna Jnana

Ethnomedicine is the study of traditional medical systems and medicinal plants used by indigenous communities.^[4]

For instances, *Jatamamsi*, botanically identified as *Nardostachys jatamamsi* (D.Don) DC. belongs to the Caprifoliaceae family, is an erect perennial herb found in the alpine and sub-alpine Himalayas. Its roots and tubers are ethnobotanically used in the Indian, Chinese and Japanese systems of medicine for their pharmacological actions such as hair growth, antimicrobial, anti-tumorous, anti-catalytic, anti-urolithic, anti-diabetic, anti-convulsant, nootropic, hepatoprotective, radioprotective and cardioprotective is presently enlisted in the critically endangered category of the IUCN Red List. *Jatamamsi* is in the list of 20 most traded plants in India and is extensively exploited.^[6] *Jatamamsi* is included in Appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), under which its trade is subject to regulation to ensure that utilization remains sustainable and does not become incompatible with the survival of the species.^[7]

Conservation methods

In-Situ Strategies

In-situ conservation refers to wild species or local plant heritage protected or preserved within their natural ecological habitats. Medicinal Plants Conservation Areas (MPCAs) implement systematic survey and documentation of intra-specific variation, species recovery plans for threatened species, and community-led site management. Similarly, sacred groves are patches of forest dedicated to a local deity and serve as community-protected micro-reserves where local cultural traditions preserve natural biodiversity.

Ex-Situ Strategies

Ex-situ methodologies protect species outside their natural habitats through cultivation, botanical gardens, community seed banks, DNA libraries, and *in-vitro* tissue culture repositories.^[4]

National Medicinal Plants Board (NMPB), Ministry of Ayush has supported training projects to various organisations across the country to train the farmers on Good Agricultural Practices (GAP) and Good Field Collection Practices (GFCP) of medicinal plants.^[8] Farmers rely on Community seed banks managed within the local seed system, which operate on a small scale at the community level with few resources.^[4]

DISCUSSION

Since 80% of the population depends on plants for medicine, preserving local medicinal plant heritage is essential. Guided by *Acharya Charaka's* principle of *Nama, Rupa, and Guna Jnana*, steps have been undertaken for its conservation.

Identification and Geospatial Mapping

Identifying and naming plants in local plant heritage correlating with their local name,^[9] distribution of medicinal plants information has to be investigated by local road trips to know their ethnomedicinal uses has to be documented in the database.^[10]

Educating local people

Educating local people about Identification, survey participation, GAP and GFCP, IUCN red list of species, Ethnomedicinal uses, Rules for exporting medicinal plants, Community seed banks and institutions that support them are extremely important in the preservation of local medicinal plant heritage.

Non-Destructive Harvesting and Part Substitution (*Pratinidhi Dravya*)

To prevent destruction in wild plant populations, raw drug procurement must prioritise non-destructive harvesting methods (e.g., collecting leaves or fallen fruits rather than uprooting whole plants or strip-barking). For taxa categorised as Vulnerable, Endangered, or Critically Endangered, classical concepts of plant substitution (*Pratinidhi Dravya*), using renewable plant parts or ecologically stable surrogate species with equivalent pharmacological profiles, offer a sustainable alternative. However, integrating substitutes requires careful standardisation to maintain clinical efficacy and prevent accidental drug adulteration.^[11]

Conservation measures

Conservation studies and trade assessment, which included new enrichment plantings, plantations, small-scale farm production, protection of genetic resources by in situ and ex situ conservation practices, formulating new regulations and focus shifting to other plant develops traditional medicine along scientific, ethical and sustainable.^[12]

Contemporary Policy and Institutional Interventions

NMPB, Ministry of Ayush signs two Memoranda of Understanding (MoU) in the presence of Union Minister of State for Ayush, Shri Prataprao Jadhav, at Nirwan Bhawan, New Delhi on 4th August 2025. First MoU signed between NMPB and IshVed-Bioplants Venture, Pune, Maharashtra, to conserve and maintain germplasm of Rare and threatened medicinal plants

through Tissue culture methods so that supply of these medicinal plants can be made accessible. Second MoU signed among NMPB, All India Institute of Medical Services (AIIMS), New Delhi, through All India Institute of Ayurveda (AIIA) to establish a national medicinal plants garden to spread public awareness about medicinal plants, sharing knowledge and expertise of all parties. Both MoUs mark a milestone to promote evidence-based conservation, research, and public engagement in the medicinal plants sector.^[13]

CONCLUSION

Preserving local medicinal plant heritage requires balancing traditional ecological knowledge with modern scientific management. Adopting classical Ayurvedic principles (*Nama*, *Rupa*, and *Guna Jnana*), along with non-destructive harvesting, plant substitution, tissue culture micropropagation, and strict trade regulation, provides a path toward sustainable use. Strengthening collaborations between research institutions, government bodies (such as the NMPB), and local communities remains vital to safeguarding global biodiversity and preserving medicinal plant resources for future generations.

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