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# Review of Literature on an Ethnobotanical Survey of Medicinal Plants in Belagavi District, Karnataka: Traditional Methods of Preparation and Use and Conservation Status

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## Abstract

People have always had a special connection with plants, and ethnobotany is the study of this relationship. In rural areas of Karnataka, traditional medicine has been a big part of healthcare for a long time, with knowledge being passed down from one generation to the next. The Belagavi district in Karnataka is home to a wide variety of plants and is an important area where the Western Ghats and Deccan Plateau meet. Many studies have looked at the medicinal plants and traditional healthcare practices in Belagavi and other parts of Karnataka. However, traditional knowledge is under threat due to things like habitat destruction, overexploitation, urbanization and the fact that younger people are losing interest. This review looks at what has been written about the medicinal plants used by local communities in Belagavi and Karnataka, including how they are prepared and used, which parts of the plants are used, what ailments they are used to treat, and whether the plants are at risk of disappearing. Earlier studies in Belagavi found 92 different species of medicinal plants, while other studies in the area found 66 and 48 species. Other studies in Karnataka have also shown just how rich and valuable traditional knowledge is, and highlighted the need to protect wild medicinal plants. The research shows that we need to systematically document and verify traditional knowledge, analyze it in a quantitative way, identify which species are threatened, and find ways to conserve them both in their natural habitats and in controlled environments. By doing this, we can help preserve traditional knowledge and make sure that medicinal plants are used in a sustainable way in Belagavi and Karnataka.

**Keywords: Ethnobotany, medicinal plants, traditional knowledge, Belagavi, Karnataka, preparation methods, ethnomedicine, conservation, threatened plants, sustainable utilization.**

## 1. INTRODUCTION

In India, people have been using plants to treat illnesses for a long time. In rural areas, locals often use plants they find nearby to cure common problems like fever, cough, and skin issues. They also use plants to help with diabetes, jaundice, and breathing problems. The older generation, traditional healers, and community members who have experience pass on their knowledge of which plants to use, how to prepare them, and how much to take. This knowledge is usually shared by word of mouth, from one person to another. For example, they know which plants are good for certain ailments and how to make medicines from them. This traditional way of healing has been around for a long time and is still used today in many parts of India. Karnataka is a treasure trove of medicinal plants, thanks to its diverse geography, climate, and ecosystem. The state is home to parts of the Western Ghats and the Deccan Plateau, making it a unique spot for plant growth. For a long time, people have known about the importance of medicinal plants in Karnataka, and the Central Ayurveda Research Institute has been studying them in various districts, including Belagavi. This research is crucial in understanding the traditional knowledge associated with these plants. By documenting this information, we can better appreciate the value of Karnataka's medicinal plant diversity and work to preserve it for future generations. The state's varied landscape has created a perfect environment for a wide range of plants to thrive, and it's essential that we continue to learn from and protect this natural resource. Belagavi district, also known as Belgaum, is a significant place for studying how people use plants. Some researchers, including Malabadi, Mulgund, and Nataraja, found 92 types of plants with medicinal properties in this area. These plants belong to 54 different

families and can be used to treat various health problems. What's interesting is that the study also discovered new uses for some of these plants that weren't known before in this region. Further studies in certain areas of Belagavi district have shown just how much the local people know about medicinal plants. For example, a survey in Raibag found 66 different kinds of medicinal plants, from 58 groups and 31 families. This survey also included information on what ailments these plants can help with, which parts of the plants are used, and how they are prepared. More recently, another survey was done in Chikodi from 2022 to 2023, and it found 48 medicinal plants from 38 groups and 30 families. This survey also highlighted the importance of writing down the traditional ways that these plants are prepared and used. To really understand where we are with ethnobotanical knowledge in Belagavi, we need to take a close look at what's already been studied. This will help us see what we already know, what we're missing, and how we can best protect and use this knowledge in a way that's good for everyone. By doing this, we can figure out what's working and what's not, and come up with plans to conserve and sustainably use the plants and knowledge that are so important to this area.

**MATERIAL AND METHODS**

The present study is based on the review of published literature on medicinal plants, traditional method of preparation, ethnobotanical knowledge and conservation status in Belagavi district, Karnataka. Relevant details have been collected from research articles, journals, books and available scientific literature on Belagavi and other parts of Karnataka. Data collected included scientific and local names of medicinal plants, botanical families, plant parts used, diseases treated, traditional methods of preparation and modes of administration. Data collected included scientific and local names of medicinal plants, botanical families, plant parts used, diseases treated, traditional methods of preparation and modes of administration. In an effort to evaluate the importance of medicinal plants, quantitative ethnobotanical indices such as Use Value (UV), Fidelity Level (FL) and Informant Consensus Factor (ICF) were taken into Conservation status was determined using available IUCN Red List information, reported distribution, habitat conditions and threats, including overharvesting and habitat destruction. The findings were compared and summarised to find the research gaps and to provide the suitable strategies for sustainable utilisation and conservation of medicinal plants in Belagavi.

**2. Ethno botanical Knowledge Concepts**: Communities possess extensive botanical expertise vital to traditional medicine. This includes plant identification, vernacular names, habitats, harvesting seasons, utilized parts, preparation and administration techniques, dosages, treated ailments, ingredient combinations, cultural beliefs, and conservation methods. Such knowledge is essential for rural primary healthcare. In Karnataka's Kodagu region, 126 species across 60 families were identified, with knowledge transmitted intergenerationally. However, the decline of traditional healers threatens this heritage. Springer Link findings emphasize the need to document unwritten practices in Belgaum to develop conservation strategies.

**3. Belagavi Ethnobotanical Literature**:

**3.1 Malabadi et al**. – Belgaum District A foundational survey by Malabadi, Mulgund, and Nataraja identified 92 medicinal species from 54 groups used for ailments like diabetes, skin issues, wounds, and fevers. Notably, 33 previously unreported medicinal applications were discovered, suggesting potential for new drug development.

**3.2 Non-codified Medicine in Belgaum**: Research on Belgaum's indigenous healthcare highlights that while previous Karnataka studies focused on documentation and specific community practices, understanding cultural traditions and beliefs is equally vital. Per Springer Link, this knowledge forms the basis for management and conservation.

**3.3 Raibag Survey Kambhar and colleagues (2019–2020)** documented 66 medicinal plants from 58 groups and 31 families in Raibag taluka. Published in Botany Journals, the study

detailed scientific and Kannada names, uses, and preparations, noting that rural populations still depend heavily on wild flora.

**3.4 Chikodi Survey A 2022–2023** study in Chikodi identified 48 medicinal species from 38 groups and 30 families. By recording botanical data and local names, the research demonstrated that traditional knowledge varies significantly across Belgaum's sub-regions, necessitating localized studies.

**4. Traditional Preparation Methods Karnataka's**: **ethno botanical literature describes several simple processing techniques:**

**4.1 Juice:** Crushing plant parts for internal or topical use**.**

**4.2 Paste:** Grinding fresh plants for external application on wounds or swelling.

**4.3 Decoction**: Boiling plant material in water and filtering the liquid.

**4.4 Powder:** Grinding shade-dried plants to be consumed alone or mixed with water, milk, or honey.

**4.5 Infusion:** Steeping material in hot or cold water.

**4.6 Direct Use:** Consuming fruits or leaves raw.

**4.7 External Application:** Applying oils or crushed materials to skin conditions. Documenting these methods is as critical as identifying the species.

**5. Utilized Plant Parts**: Specific parts serve distinct roles: leaves (juices/pastes), roots and bark (decoctions/powders), flowers (infusions), and seeds (oils). Research in the Journal of Threatened Taxa notes that while leaves are most commonly used in Hassan district, the harvesting of roots, bark, and whole plants poses higher conservation risks to the species.

**6. Karnataka Ethnomedicinal Context Broader state research informs local findings:**

Lingaraju et al. (ScienceDirect) documented 126 species used by Kodagu tribes, noting a decline in healers. In the B.R. Hills, Soliga communities utilize 130 species; researchers there suggested cultivation to protect endangered plants. A Chitradurga study identified 190 medicinal herbs. These variations reflect local ecology and culture.

**7. North-Central Western Ghats The Western Ghats** are a biodiversity hotspot. Hurkadale and Bidikar (plantsciencejournal.com) emphasized sustainable utilization and biocultural diversity. Conservation in Belgaum requires a holistic approach, protecting forests, grasslands, and traditional home gardens alongside the plants themselves.

**8. Conservation Status Documentation**- Must address the extinction of wild species caused by deforestation, urbanization, overharvesting, and climate change. PubMed Central (PMC) reports that 84 Indian medicinal species require urgent intervention. A 2024 review (HRPUB) cited rising market demand and habitat loss in Karnataka, advocating for legislative protection, cultivation, and both in-situ and ex-situ conservation.

**9. Significance of IUCN Categorization:** The IUCN Red List offers a global standard for evaluating extinction threats through classifications including Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), and Not Evaluated (NE). Research in ethnobotany should contrast recorded medicinal flora against these statuses. A 2023 analysis of 143 species in the Western Ghats of Dakshina Kannada, published on ethnobotanyjournal.org, illustrated this by identifying various threatened and data-deficient plants. Consequently, Belagavi's medicinal flora requires individual conservation assessments to prioritize protection for vulnerable species rather than assuming they are secure.

**10. Link between Customary Usage and Preservation**

Ethnobotanical expertise and conservation are deeply intertwined. Local communities often understand optimal harvesting periods, sustainable gathering, regeneration, plant locations, propagation, and substitutes. However, commercialization frequently leads to destructive harvesting, such as removing entire plants. A 2024 report on Karnataka's botanical resources warned that excessive wild harvesting is unsustainable. The document recommends

transitioning to controlled cultivation, such as home gardening, alongside habitat protection to ensure long-term resource availability.

**11. Function of Domestic Gardens**

Home gardens bridge traditional healing and environmental protection. Growing medicinal flora at residences, farms, schools, or community plots alleviates pressure on wild stocks, ensures resource access, maintains cultural knowledge, and aids education. Karnataka-based literature identifies these indigenous spaces as vital biodiversity hubs. For Belagavi, creating institutional and community gardens would enhance existing documentation and conservation initiatives (HRPUB).

**12. Quantitative Ethnobotanical Approaches** Modern ethnobotanical research increasingly combines traditional qualitative documentation with quantitative methods. Important indices include:

**Use Value (UV)** Use Value helps estimate the relative importance of a plant species based on the number of uses reported by informants. UV = ∑U/N where U represents the number of use reports and N represents the number of informants.

**Fidelity Level (FL)** Fidelity Level measures the percentage of informants who independently report the use of a plant for the same specific ailment.

**FL%=\ Np/N x100** where Np is the number of informants reporting a plant for a particular ailment and N is the total number of informants mentioning the plant. Informant Consensus Factor (ICF) ICF helps evaluate the degree of agreement among informants concerning medicinal plants used for particular categories of diseases. Researchers in Karnataka have had success with certain methods when studying the traditional use of plants. For instance, some studies have used special tools like Use Value, Fidelity Level, and Informant Consensus Factor to measure and understand the local knowledge of plants. This approach has been helpful in learning more about the ways people use plants in their daily lives. You can find more information on this topic at rmrct.academia.edu.

**Major Research Gap in Belagavi** There have been several studies on medicinal plants in the Belagavi district, but the information is spread out and not well connected. Existing research has concentrated on: Belgaum district; Raibag; Chikodi; particular communities; and selected disease conditions. There is a need for a comprehensive and updated survey covering a wider range of villages and communities. In particular, future research should integrate three major components:

**A. Traditional knowledge documentation** local names; plant identification; diseases treated; preparation methods; dosage; administration; combinations with other plants.

**B. Quantitative ethnobotany** Use Value; Fidelity Level; Informant Consensus Factor; frequency of citation; relative importance.

**C. Conservation assessment** IUCN category; endemicity; rarity; abundance; habitat; harvesting pressure; regeneration; threats; conservation priority. This way of looking at things gives us a lot more helpful information than just making a list of plants that can be used for medicine.

**13. Proposed Conservation Framework for Belagavi** Based on the literature, the following conservation framework can be proposed. Ethnobotanical documentation → Plant identification and herbarium preparation → Documentation of traditional preparation and use → Quantitative analysis of ethnomedicinal importance → Assessment of abundance and regeneration → IUCN/conservation-status assessment → Identification of threatened and high-priority species → In-situ conservation → Ex-situ conservation and medicinal plant gardens → Sustainable harvesting and cultivation → Community participation and traditional knowledge preservation This integrated strategy can help connect ethnobotanical research with practical conservation.

## 14. DISCUSSION

Medicinal plants are still a big part of traditional healthcare in Belagavi and Karnataka. In fact, a study done a while back in Belgaum found 92 different species of plants that have healing properties. Other studies in Raibag and Chikodi also found a significant number of medicinal plants - 66 and 48 species, respectively. This just goes to show how important these plants are to the local communities. The number of species found can vary a lot depending on who's doing the research, where they're looking, and when they're doing it. This doesn't necessarily mean that the actual number of species is changing - it could just be that different researchers are looking in different places or at different times. So, when comparing surveys, it's not always a good idea to assume that any differences are due to real changes in the number of species. When it comes to traditional medicine, it's not just about listing the plants used. The way a remedy works and its importance to a culture can depend on many things, like which part of the plant is used, when it's picked, how it's prepared, how much is taken, and how it's given to the patient. All these details are crucial to understanding how the remedy works and why it's valued by the people who use it. By recording these specifics, we can get a better sense of what makes traditional medicine effective and meaningful. Conservation is becoming a big issue now. Research in different parts of Karnataka shows that people are taking too much from the land, habitats are being destroyed, and old ways of knowing about medicinal plants are disappearing. This is a threat to the plants that can help us stay healthy. We need to be careful with plants that are collected for their roots, rhizomes, bark, or entire plant. To make sure we don't harm these species, we should create rules for harvesting them in a sustainable way and start growing them in controlled environments. This will help us protect these plants and make sure they're around for a long time. It's clear that combining traditional knowledge with modern science is crucial. By using things like botanical authentication, documenting plants in herbariums, screening for phytochemicals, studying pharmacology, and assessing conservation, we can make ethnobotanical research more scientifically sound. This approach can really strengthen our understanding of plants and their uses.

## 15. CONCLUSION

The literature reviewed in the present study demonstrates that Belagavi district possesses considerable ethnobotanical knowledge and medicinal plant diversity. Studies conducted in Belgaum, Raibag and Chikodi have documented numerous medicinal plants used by local communities for a wide range of ailments. ResearchGate Traditional ways of using plants, like making juice, paste, or powder, or just using them directly, are still a big part of how people take care of their health locally. But this traditional knowledge is in danger because of modern ways of living and the fact that fewer people are passing it down to the next generation. As people's lifestyles change, they're not learning about these old methods as much as they used to, which means this knowledge is slowly disappearing. Conservation status should therefore become an essential component of future ethnobotanical surveys. Medicinal plants should be assessed for abundance, regeneration, harvesting pressure, habitat condition and IUCN status. Threatened and vulnerable species should receive priority through in-situ conservation, ex-situ cultivation, medicinal plant gardens, tissue culture, seed conservation and community-based sustainable harvesting. To really understand and protect the plants in Belagavi, we need to look at the whole picture. This means bringing together traditional knowledge, counting and measuring the plants, checking they are what we think they are, and seeing how we can conserve them. By doing all these things together, we can help keep the traditional medicine and plants safe and make sure we use them in a way that's good for everyone. This way, we can preserve the special plant heritage of Belagavi and use its natural resources in a sustainable way.

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