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Original Article

Important Medicinal Plants in Sikkim

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Abstract

Sikkim, a northeastern state of India nestled in the Eastern Himalayas, is a hotspot of biodiversity and traditional medicinal knowledge. With its diverse climatic zones and rich flora, Sikkim harbors over 500 species of medicinal plants, many of which have been used for generations by local communities, including the Lepcha, Bhutia, and Nepali ethnic groups. This paper explores the ethnobotanical wealth of Sikkim, the most commonly used medicinal plants, their therapeutic applications, threats to their survival, and current conservation efforts. The role of traditional healers, integration with modern research, and government initiatives are also examined to understand the sustainable use and preservation of this invaluable bioresource.

Keywords: *Sikkim, Medicinal Plants, Ethnobotany, Traditional Knowledge, Biodiversity Conservation, Amchi System, Sustainable Use*

Introduction

Sikkim is one of the most beautiful and ecologically sensitive states in India. Despite its small size, it holds an important place due to its rich biodiversity, cultural heritage, and commitment to sustainable development [1,2,3]. This paper aims to explore various facets of Sikkim, providing a consolidated overview for academic and general purposes. Located in the Eastern Himalayas, Sikkim is bordered by China (Tibet Autonomous Region) to the north and northeast, Bhutan to the east, Nepal to the west, and West Bengal to the south. It covers an area of approximately 7,096 square kilometers and is home to the third-highest mountain in the world, Mount Kanchenjunga. Sikkim has the smallest population among Indian states, with about 700,000 residents [4,5]. The major ethnic groups include Lepchas, Bhutias, and Nepalis. Nepali is the official language, but other languages such as English, Sikkimese, and Lepcha are also widely spoken. The economy of Sikkim is primarily driven by agriculture, tourism, and hydroelectric power. It is India's first fully organic state, with agriculture based on organic farming. Cardamom, ginger, and oranges are some of the main crops. Tourism and hydropower are growing contributors to the state's GDP. Sikkim is recognized as a biodiversity hotspot. It is home to more than 4,500 species of flowering plants, 500 species of birds, and many rare animals such as the Red panda (state animal) and Snow leopard [6,7]. The state's varying altitudes provide a range of ecological zones. The cultural landscape of Sikkim is diverse, with Buddhism and Hinduism being the predominant religions. Monasteries like Rumtek and Pemayangtse are cultural landmarks. Festivals such as Losar, Saga Dawa, Pang Lhabsol, and Tihar are celebrated with great enthusiasm. Tourism is a major source of revenue, with attractions like Tsomgo Lake, Yumthang Valley, and Nathula Pass drawing visitors year-round. Education is improving, with literacy rates around 81%.

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The government is promoting digital and AI literacy through specialized programs. Sikkim, though the second smallest state in India, is one of the richest in biodiversity [8,9,10]. It lies within the Eastern Himalayas, one of the world's top ten biodiversity hotspots [11, 12]. Traditional medicine plays a vital role in the lives of the people of Sikkim, especially in rural and tribal areas. Ethnomedicinal knowledge passed down generations forms a crucial component of the cultural heritage of the state [13,14].

Importance of Medicinal Plants in Sikkim

Medicinal plants are widely used by local healers known as Baidhyas, Amchis, and Jharis. The Sikkimese pharmacopoeia includes plants used for digestive problems, respiratory disorders, skin diseases, reproductive health, and fever management. Many of these species are recognized in Ayurveda, Amchi (Tibetan), and Unani systems of medicine.

3. Major Medicinal Plants Found in Sikkim

Sl No.	Plant Name	Local Name	Use
1	Nardostachys jatamansi	Jatamansi	Nervine tonic, epilepsy
2	Swertia chirayita	Chiraito	Antimalarial, liver tonic
3	Picrorhiza kurroa	Kutki	Hepatoprotective
4	Taxus wallichiana	Lauth salla	Source of anticancer drug (Taxol)
5	Rheum emodi	Padamchal	Laxative, anemia
6	Dactylorhiza hatagirea	Salampanja	Aphrodisiac, anti-inflammatory
7	Aconitum ferox	Bikhma	Analgesic (highly toxic)
8	Berberis aristata	Chutro	Skin diseases, eye infections
9	Valeriana jatamansi	Sugandhawal	Sedative, insomnia
10	Aegle marmelos	Bel	Digestive issues
11	Zanthoxylum armatum	Timur	Toothache, cold
12	Tinospora cordifolia	Gurjo	Immunity booster
13	Emblica officinalis	Amla	Antioxidant, vitamin C
14	Ocimum sanctum	Tulsi	Respiratory problems
15	Curcuma longa	Haldi	Antiseptic, anti-inflammatory

Ethnobotanical Knowledge and Indigenous Practices

Ethnomedicinal practices in Sikkim are closely tied to the culture of its indigenous people [15,16,17]. Traditional healers rely on empirical observation and oral traditions. The Amchi system, derived from Tibetan medicine, is practiced in northern Sikkim and uses plants such as Cordyceps sinensis and Rhodiola imbricata. The Lepcha community uses decoctions, pastes, and powders for treating fever, dysentery, and wounds [18, 19].

Conservation Challenges

Overharvesting: Due to rising demand in pharmaceutical and cosmetic industries. Habitat Loss: Deforestation and infrastructural development reduce natural habitats. Climate Change: Alters phenology and distribution patterns.Lack of Documentation: Traditional knowledge is declining due to modernization [20, 21].

Conservation and Sustainable Use

Efforts to conserve medicinal plant diversity in Sikkim include:In-situ conservation: Establishment of Medicinal Plant Conservation Areas (MPCAs).Ex-situ conservation: Botanical gardens and nurseries. Government initiatives: National Medicinal Plants Board (NMPB), State Biodiversity Board [22, 23] Community participation: Involving local communities in conservation and benefit-sharing.

Research and Future Prospects

There is increasing interest in scientific validation of traditional uses. Studies on bioactive compounds, cultivation techniques, and value addition are ongoing [24, 25]. Promoting cultivation through farmers' cooperatives and linking traditional knowledge with modern science can enhance livelihoods and conservation simultaneously.

Conclusion

Sikkim's rich medicinal plant diversity represents a treasure trove of traditional knowledge and potential for sustainable development. A multi-stakeholder approach involving government, communities, and researchers is vital for conserving these resources and integrating them into health care and economic development.

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Conflicts of interest
The authors declare that there are no conflicts of interest regarding the publication of this paper

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