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Review Article

BIODIVERSITY AND ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS IN THE JAGESHWAR REGION, ALMORA DISTRICT

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ABSTRACT

Jageshwar, located in the Almora district of Uttarakhand, India, is renowned for its ancient temple complex and dense forests dominated by Deodar trees (*Cedrus deodara*), locally called '*Devdaru*'. This study aims to identify, document, and promote the conservation of ethnomedicinal plants traditionally used by the local communities in this Himalayan region. Through extensive field surveys and ethnobotanical interviews, the research documents the indigenous knowledge associated with 20 medicinal plant species used to treat a variety of ailments. Key species identified include *Vinca major, Trachyspermum sprague, Berberis aristata* and *Rhododendron arboreum*. These plants are employed in the treatment of common illnesses such as cough, cold, fever, and skin infections, as well as chronic conditions like diabetes, asthma, and gastrointestinal disorders. The study not only highlights the therapeutic potential of these plants but also emphasizes the critical role traditional knowledge plays in sustaining primary healthcare in remote areas. Observations indicate a decline in plant availability due to deforestation, climate change, and increasing human activities. The ecological richness of the region, coupled with the cultural significance of its plant-based healing practices, underscores the urgent need for conservation efforts. The study advocates for sustainable forest management, afforestation programs, and responsible tourism to protect this fragile ecosystem. Moreover, it calls for further pharmacological research to validate the efficacy and safety of the documented traditional remedies.

INTRODUCTION

Known for its lush woods and abundant biodiversity, the Jageshwar region is situated in Uttarakhand, India's Kumaon Himalayas. At a height of roughly 1,870 meters above sea level, this area enjoys a temperate environment that is home to a wide variety of plants (Sharma & Singh, 2018). Coniferous and broadleaf species make up the majority of the woods in Jageshwar, with rhododendron (*Rhododendron arboreum*), (*Pinus roxiburghii*) and deodar (*Cedrus deodara*) predominating (Kumar et al., 2020).[1] In addition to offering habitat for a variety of faunal species and providing local populations with natural resources like medicinal herbs, these woods are essential for preserving ecological equilibrium.

A number of variables, including climate, soil composition, and altitude, affect the vegetation in the Jageshwar area. Pine *(Pinus roxburghii)* forests predominate at lower elevations, although a mixture of rhododendron species can be found at higher elevations (Mehta, 2019).[2] A wide range of ferns, mosses, and lichens can also be found in the area; these plants flourish in the chilly, humid conditions produced by the thick forest cover. Since they have long been utilized in Ayurveda and regional healing customs, several of these plants have cultural and therapeutic value (Joshi et al., 2021).[3]

In order to safeguard the Jageshwar region's distinctive floral diversity from dangers like deforestation, climate change, and human encroachment, conservation activities are crucial. To guarantee the preservation of this ecologically vital area, afforestation projects and sustainable tourism have been suggested (Pandey & Rawat, 2022).[4] It is

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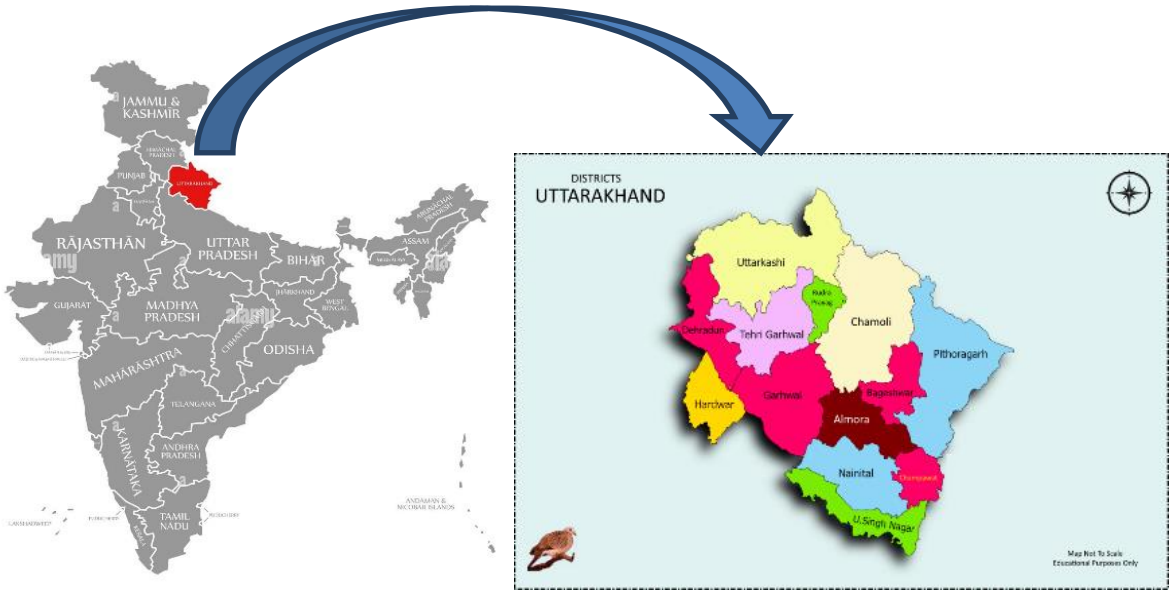
essential to research and record Jageshwar's flora in order to conserve biodiversity and comprehend the complex ecological linkages that support the Himalayan ecosystem.

Study Area

The Indian state of Uttarakhand's Almora district is home to the little town of Jageshwar. It is well-known for its historic temple complex devoted to Lord Shiva and is situated roughly 36 kilometres northeast of Almora.



Geographic Information[5]

GPS coordinates: 29.6456° N

Direction: 79.8532° E

The elevation is approximately 1,870 meters (6,135 feet) above sea level. The Jata Ganga River and dense deodar (cedar) woods surround the area**.**

Methodology

This current research in Jageshwar region (Almora district) through a field survey helped in identifying the nomenclature and diversity of medicinal plants of the region. These listed plants are collected and assembled from Jageshwar region. For identification of plants and their medicinal purposes and their values we used some knowledge from local people also how they used it through time after that proper documentation and listing is done.

S.No	Family	Botanical Name	Part Used	Medicinal Importance
1.	Apocynaceae	*Vinca major*[6]	Leaves, flower	Antibiotic, antidiabetic, antioxidant
2.	Apiaceae	*Trachyspermmum sprague*[7]	Seed like fruits	Used in traditional Indian cooking and antimicrobial activity
3.	Araliaceace	*Hedera helix*[8]	Leaves, berries	Antispasmodic, febrile disorder
4.	Barberidaceae	*Barberis aristata*[9]	Root, bark, fruit	*Prameh, Kandunasak*
5.	Ericaceae	*Rhododendron arborum*[10]	Leaves,	Hepato-protective activity, anti-diabetic, antioxidant, anti-diarrhea, headache
6.	Fabaceae	*Flamingia strobiferia*[11]	Roots	Epilepsy
7.	Lamiaceae	*Ajuga bracteosa*[12]	Leaves and root	Fever, especially in Ague
8.	Lamiaceae	*Rosmarinus officinalis*[13]	Leaves and twigs	Antioxidant properties, anti-inflammatory activity, oxidative stress
9.	Moraceace	*Ficus hetrophylla*[14]	Bark, roots, leaves, fruits	Asthma, diabetes, analgesic activity Leaves given in *Atisaar* with milk
10.	Pinaceace	*Pinus roxburghii*[15]	Stem, leaves, bark	Analgesic activity, anti-inflammatory
12.	Rosaceae	*Crataegus monogyna*[16]	Berries, leaves, flower	Antioxidant property, antispasmodic

13.	Rosaceae	*Rubus ellipticus*[17]	Fruit, bark	Wounds, burns, inflammation, cough, fever, diarrhea
14.	Rosaceae	*Prunus cerssoides*[18]	Stem bark, seeds	Paste of bark is applied externally in scorpion sting, dried powder used in asthma
15.	Rosaceae	*Pyracantha crenulata*[19]	Fruits, leaves	Antioxidant activity, antihypertensive activity.
16.	Rosaceae	*Potentilla fulgens*[20]	Root, leaves	Diabetes, peptic ulcers, diarrhea
17.	Rosaceae	*Fragaria vesca*[21]	Fruits, leaves	cardiovascular disorder
18.	Saxifragace	*Bergenia lingulata*[22]	Whole plant	*Ashmarihaghna, Shishanshool*
19.	Solanaceae	*Solenum khasianum*[23]	Fruit	Fruit is specially emphasized for its alkaloidal content
20.	Taxaceae	*Taxus baccata*[24]	leaves	*Kapha vat nashak, Balya*
20.	Valerianaceae	*Valeriana wallichii*[25]	Root	Root is laxative, pains in joints, eye disorder

Vinca major

Trachyspermmum sprague

Hedera helix

Crataegus monogyna

Barberis aristata

Rhododendron arborum

Flamingia strobiferia

Ajuga bracteosa

Rosmarinus officinalis

Taxus baccata

Ficus hetrophylla

Pinus roxburghii

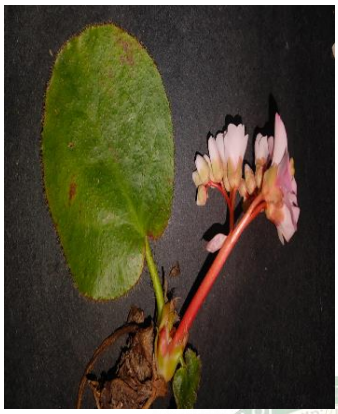

Rubus ellipticus


Prunus cerssiods


Pyracantha crenulata


Potentilla fulgens


Fragaria vesca


Bergenia lingulata


Solenum khasianum


Valeriana wallichii

RESULT AND DISCUSSION

Predominant Species: In this present study a total of 20 medicinal shrubs and trees have been identified and documented, which are traditionally used for treatment of diseases.

***Cedrus deodara* (Deodar cedar):** Majestic, towering evergreen trees that create thick, revered groves.

Associated Tree Species

Pinus roxburghii (Chir Pine)

Quercus leucotrichophora (Banj Oak)

Rhododendron arboreum (Buransh)

Barberis aristata (Daruharidra)

The plant species are utilized to treat a variety of conditions including cough, cold, fever, dysentery, diarrhea, diabetes, kidney and heart issues, burns, cuts and wounds, joint and muscle discomfort, asthma, skin disorders, dental health, headache, inflammation, and snakebite.

CONCLUSION

The Jageshwar flora area, located in the Kumaon Himalayas of Uttarakhand, showcases a vibrant and varied ecological zone marked by temperate woodlands and a distinct collection of plant species. The area, characterized by impressive deodar trees (*Cedrus deodara)*, also hosts a diverse array of other plant life, such as blue pine (*Pinus wallichiana*), *Banj oak* (*Quercus leucotrichophora*), *Buransh* (*Rhododendron arboreum*), along with numerous ferns, mosses, and medicinal herbs. This biodiversity not only boosts the ecological value of the area but also adds to its cultural and spiritual importance, as Jageshwar is a holy site with ancient temples set amidst stunning nature. The vegetation is crucial for soil preservation, water management, and carbon capture, establishing it as a significant factor for ecological sustainability.

It is essential to prioritize conservation initiatives to safeguard this delicate ecosystem against Deforestation, climate change, and human activities. Protecting the plant life of Jageshwar is crucial not just for sustaining biodiversity but also for guaranteeing that future generations can enjoy and gain from this extraordinary natural legacy.

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