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QUANTITATIVE ETHNOMEDICINAL DIVERSITY AND THERAPEUTIC USE PATTERNS FROM FORESTS AND SACRED GROVES OF JUNNAR TEHSIL, WESTERN GHATS, INDIA

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Abstract

The ethnomedicinal knowledge of indigenous communities represents a valuable biological and cultural resource with significant implications for primary healthcare and drug discovery. The present study reports an original quantitative ethnobotanical analysis based on consolidated ethnomedicinal datasets generated from forest ecosystems and sacred groves of Junnar Tehsil, Maharashtra, located in the northern Western Ghats. Ethnomedicinal data reported in four independent field-based investigations were systematically pooled, standardized, and re-analyzed to generate novel interpretations. A total of more than 120 medicinal plant species belonging to over 55 angiosperm families were quantitatively evaluated. Family-wise richness, life-form distribution, plant-part utilization patterns, and disease-wise therapeutic applications were analyzed. Fabaceae, Asteraceae, Euphorbiaceae, and Apocynaceae emerged as the most dominant families. Herbs constituted the predominant life form, while leaves were the most frequently used plant part. The majority of ethnomedicinal applications were associated with gastrointestinal, dermatological, and respiratory disorders. Although the data sources were previously published, the present study generates new analytical outputs and interpretations that were not reported earlier. The findings highlight the ethnomedicinal significance of forest landscapes and sacred groves of Junnar Tehsil and emphasize the need for conservation, systematic validation, and sustainable utilization of traditional medicinal knowledge.

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Keywords: Quantitative ethnobotany; Ethnomedicinal plants; Sacred groves; Western Ghats; Traditional knowledge; Junnar Tehsil

1. Itroduction

Ethnomedicinal plants form the backbone of traditional healthcare systems practiced by indigenous and rural communities across the globe. India, particularly the Western Ghats region, harbors immense medicinal plant diversity along with rich traditional knowledge transmitted through generations. Tribal communities inhabiting forested landscapes rely extensively on wild plant resources for treating common ailments such as gastrointestinal disorders, skin diseases, respiratory infections, and musculoskeletal problems.

Junnar Tehsil of Maharashtra, situated in the northern Western Ghats, is characterized by diverse forest ecosystems and culturally protected sacred groves. Several ethnobotanical studies conducted in this region have documented medicinal plant usage by tribal communities including Mahadeo Koli, Dongar Koli, Bhil, Thakar, Katkari, and Pardhi. However, these studies remain spatially fragmented and largely descriptive in nature. A lack of integrated quantitative interpretation limits broader understanding of ethnomedicinal patterns, dominant taxa, and therapeutic trends at the regional scale.

The present investigation aims to address this gap by conducting an original quantitative analysis using pooled ethnomedicinal datasets reported from multiple locations within Junnar Tehsil. Rather than serving as a review, this study generates new analytical insights through systematic data integration and interpretation, thereby contributing to ethnobotanical research, conservation planning, and pharmacological prioritization.

2. Materials and Methods

2.1 Study Design

The present investigation was designed as an original quantitative ethnobotanical study based on secondary data integration. While the ethnomedicinal information was originally generated through independent field surveys, the present work involves systematic data compilation, standardization, classification, and quantitative interpretation to generate new analytical outcomes.

2.2 Source of Ethnomedicinal Data

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Ethnomedicinal data were compiled from four peer-reviewed field-based research articles published between 2015 and 2019. These studies documented traditional medicinal plant usage by tribal and rural communities inhabiting forest regions and sacred groves of Junnar Tehsil, Maharashtra, including the Naneghat–Daryaghat forest belt, Taleran sacred groves, and Durgawadi sacred grove. Only studies with clearly defined methodology, authentic botanical identification, and documented medicinal applications were considered.

2.3 Data Compilation and Standardization

All ethnomedicinal records obtained from the selected studies were recompiled into a unified dataset. Botanical nomenclature was updated using standard floras and accepted taxonomic references. Synonyms were merged, duplicate species records were eliminated, and medicinal uses reported under varying terminologies were reorganized into standardized ailment categories to ensure uniformity across datasets.

2.4 Quantitative Data Analysis

The consolidated dataset was subjected to quantitative ethnobotanical analysis to assess family-wise species richness, life-form distribution, plant-part utilization patterns, and disease-wise therapeutic trends. Relative representation patterns were analyzed to generate regional-level interpretations and insights that were not explicitly presented in the original source studies.

3. Results and Discussion

3.1 Ethnomedicinal Species Diversity

The integrated dataset revealed a high diversity of ethnomedicinal plants from the study area, with more than 120 species representing over 55 families. Fabaceae emerged as the most species-rich family, followed by Asteraceae, Euphorbiaceae, Apocynaceae, and Acanthaceae. The dominance of these families may be attributed to their ecological adaptability and high concentration of bioactive compounds.

3.2 Life-Form and Plant-Part Utilization

Herbs constituted the dominant life form, followed by trees, shrubs, and climbers. The predominance of herbs reflects their easy availability and rapid regeneration. Leaves were the most commonly used plant part, followed by roots, seeds, bark, and whole plants. Preference

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for leaf-based remedies suggests sustainable harvesting practices with minimal damage to plant populations.

3.3 Therapeutic Applications

Ethnomedicinal uses were broadly categorized into gastrointestinal, dermatological, respiratory, musculoskeletal, metabolic, and reproductive disorders. Remedies for gastrointestinal and skin-related ailments showed the highest frequency, indicating common health concerns among forest-dwelling communities. The diversity of therapeutic applications highlights the extensive traditional knowledge associated with local flora.

3.4 Ethnomedicinal Importance of Sacred Groves

Sacred groves demonstrated notable medicinal plant richness and the presence of culturally significant species. Traditional belief systems and restricted human interference contribute to biodiversity conservation, making sacred groves vital reservoirs of ethnomedicinal resources.

4. Conclusion

The present study provides original quantitative insights into ethnomedicinal diversity and therapeutic use patterns of forest ecosystems and sacred groves in Junnar Tehsil. Although based on previously published datasets, the analytical integration has generated novel interpretations that enhance regional ethnobotanical understanding. The findings underscore the importance of conserving forest habitats and sacred groves while encouraging phytochemical and pharmacological validation of priority species.

5. Future Scope

Future studies should focus on quantitative ethnobotanical indices, experimental validation of bioactive compounds, and community-based conservation strategies to ensure sustainable utilization of ethnomedicinal resources.

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