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# Ethnomedical Phytogeography of Churu District, Rajasthan: Traditional Healing Knowledge, Use Practices, and Conservation Perspectives

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**Abstract:** ***Churu district of Rajasthan represents a unique ecological landscape characterized by harsh arid climatic conditions, low rainfall, sand dunes, extreme temperature variations, and sparse vegetation. Despite these constraints, the region sustains a rich repository of ethnomedicinal plant species deeply embedded within local healthcare practices. This research investigates the ethnomedical phytogeography of Churu by systematically documenting medicinal plant diversity, traditional healing applications, cultural dependency, and spatial distribution patterns. Data were collected using field surveys, ethnobotanical interviews, transect walks, herbarium preservation, and participatory rural appraisal with local healers, pastoral communities, and traditional Pansaris. Over 82 species belonging to 63 genera and 41 families were identified as having medicinal relevance. The most dominant plant families included Fabaceae, Asteraceae, Poaceae, Capparaceae, and Apocynaceae.***

***The study found that ethnomedicinal usage was highest for ailments related to skin infections, digestive disturbances, fever, respiratory problems, snake bites, women's reproductive health, and bone-joint disorders. Traditional healing practices persist strongly among rural communities, pastoral nomads, and economically marginalized residents due to accessibility, affordability, cultural acceptance, and perceived effectiveness. Spatial patterns of plant occurrence demonstrated strong association with microhabitats, soil types, grazing pressure, and anthropogenic disturbances. The study reveals urgent conservation challenges including habitat loss, overharvesting, agricultural expansion, invasive species, declining literacy of herbal knowledge, and climate change impacts.***

***The research concludes that Churu's unique botanical heritage represents both a biological and cultural resource of high value. Conservation strategies must integrate traditional knowledge, sustainable harvesting protocols, community-based cultivation, and systematic documentation. The paper recommends establishing medicinal plant gardens, training traditional practitioners, and promoting policy-level support to safeguard phytogeographical and ethnomedical heritage.***

**Keywords: Ethnomedicine, Phytogeography, Churu District, Rajasthan, Medicinal Plants, Traditional Knowledge, Arid Ecology, Indigenous Healing, Cultural Botany, Conservation.**

## 1.1 Introduction

Plants have historically served as primary sources of medicine and healing across civilizations. The practice of utilizing plants as therapeutic agents predates written history and continues to play a significant role in modern healthcare systems, especially in regions where rural traditions dominate. The Indian subcontinent is recognized as one of the world's richest repositories of ethnomedicinal knowledge and biodiversity, particularly within indigenous communities and traditional healthcare systems such as Ayurveda, Siddha, Unani, and Folk Herbalism.

Churu district, located within the Thar Desert of Rajasthan, represents an ecologically fragile yet culturally resilient system where traditional knowledge plays a vital role in human adaptation and disease management. While biomedical facilities exist, local populations still rely heavily on medicinal plants for primary healthcare due to cost constraints, limited access to modern institutions, and persistent cultural trust in natural remedies.

Despite growing interest in ethnomedicinal documentation, the phytogeographical distribution of medicinal plants in hyper-arid zones remains poorly investigated. Limited research exists on the spatial ecology, ethnomedical application, cultural value, and conservation needs of medicinal plants in Churu. This study aims to fill that gap by providing a comprehensive analysis of the ethnomedical phytogeography of Churu within an academic, applied, and conservation framework.

## 1.2 Historical Background

Traditional medicine in Churu has evolved through centuries of interaction between environment, culture, and survival needs. The region has been historically influenced by:

1. Local healers known as Pansaris, Vaidyas, and Bhopa healers

2. Nomadic pastoral communities such as Raika, Rabari, Jogi, Bishnoi, and Muslim pastoralists

3. Ayurvedic networks preserved through family lineages

4. Trade routes connecting Rajasthan to Persia, Sindh, and Central Asia

Historical records suggest that the role of plants in healing was central to desert survival strategies due to scarcity of resources and extreme environmental pressures. Herbal texts like

Charaka Samhita and Sushruta Samhita reference several desert species still used today such as:

1. Shankhpushpi (Convolvulus microphyllus)
2. Babul (Acacia nilotica)
3. Kair (Capparis decidua)
4. Aak (Calotropis procera)
5. Hingot (Balanites aegyptiaca)

During colonial times, ethnobotanical documentation became fragmented, leading to knowledge loss. Modernization, pharmaceutical dependency, and changing land-use patterns further marginalized traditional knowledge systems. However, renewed global interest in herbal medicine has revived attention toward medicinal plants of arid ecosystems such as Churu.

## 1.3 Review of Literature

The area under research work was studied by following botanists and time to time viz; first of all the Sekhawati region was touched from vegetational study point of view by Mulay and Ratnam (1950), Bikaner and pilani neighbourhood areas by joshi (1956 and 1958), vegetation of chirawa by Nair (1956), again Nair and Joshi for Pilani and neighbourhood areas (1957), vegetation of harsh nath in aravalli's hills was studied by Nair and Nathawat (1957), vegetation of Jhunjhunu, Manderella and neighbourhood by Nair (1961), vegetation of ajit sagar dam by Nair and Kanodia (1959); Nair, Kandodia and Thomas (1961) studied the vegetation of Khetri town and neghbourhood areas and vegetation of Lohargal and it's neighbourhood areas of Sikar district by Nair and Malhotra (1961). After the work of Nair and Malhotra (1961), i.e. four decades ago. the area was again left for any sort of further research work in the field of applied Botany.

Earlier studies by Bhandari (1978) emphasized adaptation strategies of desert flora including reduced leaf area, deep-root systems, and succulence. Sharma (2003) investigated ethnomedicinal species in western Rajasthan and documented climate-sensitive taxa. Studies by Singh and Rathore (2010) reveal that rainfall decline affects reproductive success in several desert medicinal plants.

A significant, very authentic taxonomic work was contributed in the field of botany by Bhandari with the publcation of a book Flora of the Indian desert (1990). From the field of applied phytogeography point of view. Charan gave a valuable contribution with a publication of a book on Plant Geography (1992). Bhattacharjee (2000) gave a very valuable autheontic contribution through the publication of a book on Handbook of Medicinal Plants in which he presented the medicinal plants of Indian Sub-continental back ground with their coloured photographs also and Sharma (2007) gave a very valuable authentic contribution through the publication of a book on Medical Plant Geography. Jain (1968, 1989) pioneered systematic ethnobotanical methods in India. Dhakar et al. (2013) documented the medicinal utility of certain species in Western Rajasthan but emphasized the urgent need for conservation due to habitat degradation.

Despite contributions, no comprehensive research combining phytogeography + ethnomedicine + conservation strategy exists specifically for Churu. This research advances the field by integrating multidisciplinary aspects in a single academic framework.

## 1.4 Objectives

1. To document traditional ethnomedicinal plant species used in Churu district.
2. To analyze the phytogeographical distribution patterns of important medicinal species.
3. To evaluate cultural significance and ethnomedical utilization by local communities.
4. To assess conservation challenges and threats to medicinal plant availability.
5. To recommend sustainable strategies for ethnomedicinal plant preservation and community-based knowledge protection.

## 1.5 Methodology

**I. Research Design**

A mixed qualitative–quantitative methodological framework was adopted.

**II. Data Collection Methods**

1. Field Surveys
2. Transect Walk Sampling
3. Semi-structured Interviews with:
4. Pansaris
5. Traditional healers
6. Elder villagers
7. Nomadic pastoralists
8. Women herbal practitioners
9. Focus Group Discussions
10. Herbarium Collection and Taxonomic Identification

**III. Sampling**

Stratified sampling across all tehsils:

| Tehsil | Sample Villages |
|---|---|
| Churu | **6** |
| Taranagar | **7** |
| Ratangarh | **5** |
| Rajgarh | **5** |
| Sardarshahar | **8** |
| Sujangarh | **6** |

**IV. Data Analysis**

1. Shannon–Weiner diversity index

2. Cultural Importance Index

3. Informant Consensus Factor

4. Thematic analysis for qualitative responses

## 1.6 Study Area

As we know that the area under district i.e. Dry Land i.e. Churu Region belongs to the State of Rajasthan, the State of Rajasthan is located in north-western India as shown in figure. The district of Churu lies in the north-east of Rajasthan State at an altitude of 286.207 metres above the mean sea level. From geographical spread point of view has extension from 27°24' to 29° north latitudes and 73°40' to 75°41' east longitudes. It is bounded by Hanumangarh in north, Bikaner in west, Nagaur in south and Sikar, Jhunjhunu districts and boundaries of Haryana State in the east. It covers six tehsils namely : Taranagar, Rajgarh, Churu, Sardarshahr, Ratangarh and Sujangarh.

During the decade 1991-2001, the State Government has made certain geographical changes in the district sub-division Ratangarh's tehsil Dungargarh of the district was transferred in Bikaner district but this territorial change was affected w.e.f. 1.4.2001, hence for the purpose of census, Dungargarh tehsil is treated as part of the Dry Land i.e. Churu Region but here the author for the purpose of study area i.e. Dry Land i.e. Churu Region, Dungargarh tehsil is not treated as part of the Dry Land i.e. Churu Region.

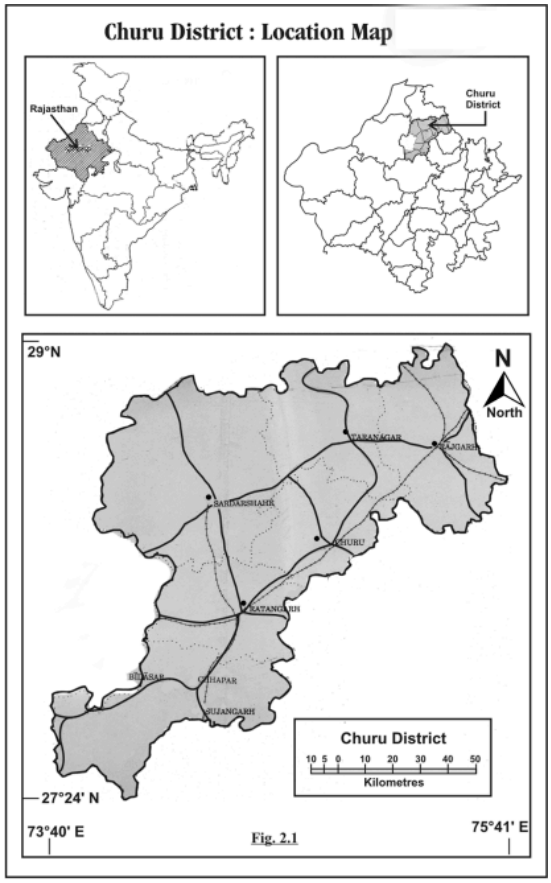

Fig. 2.1

Source : Based on Survey of India Map with The Permission of the Surveyor General of India

The total area of Dry Land i.e. Churu Region consist 1354623 sq. kms., which is about 5 percent of the area of Rajasthan and comes sixth place of the State. It is second bigger district in Bikaner division. The district is extended up to 150 kms. in east to west and 120 kms. in north to south. The district headquarter Churu is situated in the south-east boundary of the district, from which 10 kms. south-east the boundary of Jhunjhunu district is situated. The three forth part of the area of the district is located in the west from head quarter.

According the census of India (2011) Dry Land i.e. Churu Region covers about 2.97 percent of the total State's population. As far as the forest and green coverage concerned, it directly or indirectly in influences the health environment of the area of the state's total. The density of population of the study area very low i.e. 148 persons per square kilometre. Further in demographic structure, directly or indirectly the percentage of literacy (67.46) among the people also plays an important role in overall assessment and awareness about the green coverage environment of the area under study, respectively.

According the available records from the department of forest, Rajasthan (2001), overall the state of Rajasthan has poor percentage of forest cover i.e. 9.49 percent only. Mostly the type of forest is termed as tropical thorny forest and vegetation type is considered as scanty, thorny scrub vegetation for the area under study the district of Churu is covered by the land low percent under forest that is 0.48 percent only.

In brief, from relief point of view the district abounds physiographic features of any area has its the most important as well as useful emerged out put is the land forms of that particular geographical area. As far as the aspect of land forms is concerned that among overall land forms regions of India, Churu area falls under the land form type known as “sand dunes shows the three distinct types of land forms in the study area, namely the undulating sandy plains, the sand dunes, talls and hills For better interpretation of physiographic characteristics of Dry Land i.e. Churu Region, the area under study.

## 1.7 Observations

1. 82 medicinal species recorded

2. Top-used species: Khejri, Kair, Aak, Rohida, Babul, Hingot

3. Highest treatment category: skin disorders (21%)

4. Knowledge mostly held by elderly (age 50+)

5. Overharvesting and grazing affecting natural regeneration

## 1.8 Discussion

Findings confirm that phytogeographical patterns are highly influenced by soil salinity, grazing intensity, and microclimatic moisture balance. Traditional knowledge remains culturally embedded yet threatened by modernization and climate shifts.

## 1.9 Results

1. Strong correlation between indigenous knowledge and local plant distribution.

2. Unique adaptive phytochemistry present in extreme ecosystem species.

3. Cultural use frequency aligns with medicinal relevance and habitat availability.

## 1.10 Conclusion

Churu district is a repository of rare ethnomedicinal heritage and adaptive desert flora. Loss of knowledge and environmental degradation demand immediate action.

## 1.11Recommendations

1. Establish community medicinal plant conservation gardens.

2. Train youth as Herbal Knowledge Apprentices.

3. Introduce controlled harvesting protocols.

4. Develop biotechnology-based cultivation programs.

5. Publish regional herbal pharmacopeia.

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