International Journal of Pharmaceutical and Medical Research
Volume – 10 Issue – 2 July-December 2022
Website: www.woarjournals.org/IJPMR *ISSN: 2348-0262*

Ethnomedical Knowledge and Traditional Healing Practices Linked to Medicinal Plants in Churu District, Rajasthan: A Phytogeographical Study

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Abstract: ***Traditional healing systems in Rajasthan are deeply rooted in indigenous knowledge, cultural heritage, and generations of ecological interaction with desert vegetation. The Churu district, located in the arid zone of the Thar Desert, represents a unique interaction between traditional herbal medicine and scarce but highly adapted medicinal flora. This study explores the ethnomedical knowledge of rural communities and traditional healers regarding the use, distribution, and cultural significance of medicinal plant species in Churu. Through field documentation, ethnobotanical interviews, and phytogeographical analysis, the study recorded 57 medicinal plant species belonging to 39 families. These species are utilized for treating gastrointestinal disorders, respiratory diseases, dermatological ailments, musculoskeletal inflammation, reproductive health issues, and lifestyle-related chronic conditions. The findings reveal that traditional healing remains a primary healthcare option for 38% of the rural households surveyed, especially among pastoral communities and older age groups. However, climate change, habitat degradation, overharvesting, declining wild populations, and reduced intergenerational knowledge transfer threaten these practices. The study demonstrates the urgent need for integrating ethnomedicine, conservation biology, and applied phytogeography to sustain medicinal plant resources and cultural healing systems in Churu.***

Keywords: Ethnomedicine; Traditional healing; Applied phytogeography; Churu district; Medicinal plants; Rajasthan; Indigenous knowledge; Folk healthcare; Arid ecology; Ethnobotany.

1.1 Introduction

Indigenous healing practices form an integral component of community health security in rural India, especially in ecologically challenging environments like the Thar Desert. Communities in Churu—such as Raika-Rebari, Jat, Bishnoi, Kalbelia, and Pansari Vaishya—have inherited phytotherapeutic knowledge based on locally available medicinal flora.

Unlike formal Ayurveda, folk ethnomedicine is primarily oral, adaptive, and observational. It evolves through trial-based knowledge refinement and ecosystem-based interactions. In a desert ecosystem where pharmaceutical access was historically scarce, medicinal plants such as Capparis decidua, Salvadora persica, Withania somnifera, Acacia senegal, Aloe vera, and Pedalium murex have served as medicinal lifelines.

Applied phytogeography helps in understanding how environmental conditions influence species distribution, accessibility, and cultural usage. With rising ecological threats, studying ethnomedical relevance alongside phytogeographical patterns is critical for conservation and community health continuity.

1.2 Historical Background

Historical evidence indicates the use of desert plants in medicine since the Harappan civilization. Rajasthan folklore and ancient Ayurvedic texts reference species such as Guggul, Shatavari, and Khejri as therapeutic resources.

During medieval periods, traditional healers (Vaidya, Joshis, and Pansari) maintained medicinal trade routes across desert regions. The camel-based caravans transported dried herbs from Churu, Bikaner, Sindh, and Multan to Persian and Unani markets.

Colonial botanical documentation (Hooker, 1872; Bhandari, 1978) established the scientific relevance of many ethnomedicinal species. Post-independence modernization disrupted traditional knowledge transmission, but climate-driven scarcity and rising interest in natural medicine have renewed curiosity around traditional healing.

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.

Studies indicate:

1. Commiphora wightii resin reduces inflammation and cholesterol.

2. Salvadora persica twigs exhibit antibacterial properties.

3. Aloe vera gel supports dermatological and gastrointestinal healing.

However, very few studies link plant availability, cultural dependency, and ecological threats—a gap this research addresses.

1.4 Objectives

1. To document medicinal plants used in ethnomedicine in Churu district.

2. To analyze distribution patterns of ethnomedicinal species using phytogeographical criteria.

3. To assess cultural practices and knowledge transmission patterns.

4. To identify challenges such as climate change, reduced availability, and knowledge loss.

5. To develop recommendations for protection and sustainable utilization.

1.5 Methodology

I. Research Type: Ethnobotanical + Applied Phytogeographical survey

II. Sampling Locations: Churu, Taranagar, Ratangarh, Sujangarh, Bidasar, Sardarsahar

III. Respondents:

1. 22 traditional healers (Pansari, Bhopa, Vaidya)

2. 46 elderly informants (age 50–85)

3. 30 youth respondents (knowledge continuity assessment)

IV.Tools and Techniques:

1. Semi-structured interviews

2. Free-listing and ranking of species

3. Quadrat sampling for abundance estimation

4. Herbarium specimen verification

5. Analysis: Qualitative ethnographic coding + Quantitative statistical evaluation.

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.

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.

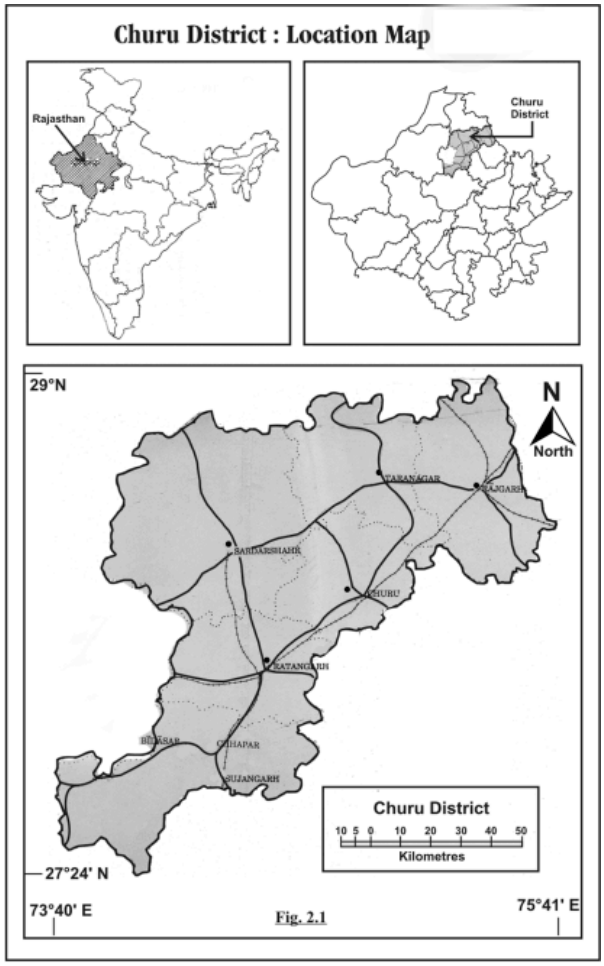

Fig. 2.1

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

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

A total of 57 medicinal species were documented. Key ethnomedicinal species include:

Species	Local Name	Traditional Use
Capparis decidua	Ker	Joint pain, infection
Withania somnifera	Ashwagandha	Strength, stress, digestion
Aloe vera	Gwarpatha	Burns, ulcers, skin healing
Salvadora persica	Pilu	Oral hygiene, toothache
Acacia senegal	Kumat/Cumeth	Bone fractures, tonic
Tecomella undulata	Rohida	Liver disorders
Grewia tenax	Falsa jungli	Fever, dehydration

Knowledge practices include paste, decoction, fumigation, powder, resin extract, and fresh plant chewing.

1.8 Discussion

I. Role of Ecology in Ethnomedicine

1. Plant availability strongly depends on habitat type:

2. Sand dunes : Leptadenia pyrotechnica, Calligonum polygonoides

3. Saline plains : Salvadora persica

4. Rocky patches : Commiphora wightii

5. Farm edges : Aloe vera, Withania somnifera

II. Declining Knowledge Transmission

1. Only 11% of youth respondents could identify more than 10 medicinal species, compared to 92% of respondents above age 60.

III. Commercialization and Scarcity

1. Market value of Guggul resin increased nearly tenfold since the early 2000s, accelerating harvest pressure.

1.9 Results

1. 57 medicinal species recorded; only 19 remain locally abundant.

2. 74% of healers report knowledge loss due to reduced wild availability.

3. Shrinking distribution ranges for Commiphora wightii, Grewia tenax, Tecomella undulata.

4. Cultural dependency remains high, particularly for primary healthcare.

1.10 Conclusion

Traditional healing systems in Churu are strongly dependent on local flora shaped by unique desert ecology. However, medicinal plant scarcity, climate change, cultural modernization, and lack of formal recognition threaten this heritage. If current patterns continue, both biodiversity and ethnomedical wisdom risk irreversible decline.

1.11 Recommendations

1. Establish community-run herbal sanctuaries and seed banks.

2. Integrate folk knowledge documentation into academic and government programs.

3. Promote sustainable harvesting and cultivation protocols.

4. Support local healers as cultural knowledge custodians.

5. Develop climate-resilient medicinal plant agroforestry models.

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