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A Floristic Survey and Taxonomic Documentation of Plant Species in Ratangarh Tehsil of Churu District, Rajasthan

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ABSTRACT: The present study assesses the plant diversity and associated traditional knowledge prevailing in Ratangarh Tehsil of Churu District, Rajasthan. The region, characterized by arid to semi-arid climatic conditions, supports a rich diversity of native and naturalized plant species. Systematic field surveys were conducted in different villages of the tehsil during various seasons to document plant species. The study documented a considerable number of plant species belonging to diverse families.

KEYWORDS: Plants; diversity; Ratangarh; local.

I. INTRODUCTION

Floristic studies play an important role in understanding the composition, distribution, and taxonomic diversity of plant species within a particular geographical region. Such investigations provide baseline data essential for biodiversity assessment, ecological monitoring, and sustainable resource management. In arid and semi-arid regions, where climatic conditions are extreme and rainfall is limited, vegetation patterns are strongly influenced by environmental stress factors. Therefore, systematic documentation of plant species becomes crucial for understanding ecological adaptability and regional biodiversity. Rajasthan, particularly the Thar Desert region, represents a unique ecological zone characterized by sandy plains, sand dunes, high temperature fluctuations, and scarce water resources. Despite these harsh conditions, the region supports a considerable variety of native and naturalized plant species that have evolved specialized morphological and physiological adaptations. Churu district, situated within this desert landscape, exhibits diverse vegetation ranging from xerophytic shrubs and drought-resistant trees to seasonal herbs and grasses.

Ratangarh tehsil, located in the north-eastern part of Churu district, is characterized by semi-arid climatic conditions, sandy soils, and scattered natural vegetation interspersed with agricultural lands. Although several floristic and ethnobotanical studies have been conducted in different parts of Churu district, detailed taxonomic documentation specific to Ratangarh tehsil remains limited. A comprehensive floristic survey of this region is therefore essential to document existing plant wealth and to provide updated information on species distribution and family-wise representation. Therefore, the present study aims to systematically document the plant species of Ratangarh tehsil along with their taxonomic classification. By recording families, botanical names, and common names, the study contributes to the preparation of a structured floristic inventory of the region. Such documentation not only enriches regional botanical knowledge but also serves as a reference for future ecological, pharmacological, and conservation-oriented research in the arid zones of Rajasthan.

II. MATERIAL AND METHODS

Study Area: The present study was conducted in Ratangarh tehsil of Churu District. Ratangarh is geographically located at 28.08°N latitude and 74.6°E longitude, with an average elevation of about 312 meters (1023 feet) above mean sea level. The town lies within the Thar Desert region and is characterized by the presence of extensive sand dunes locally known as *dhoras*, after which several localities in the town have been named.

Fig 1: Map of study area



Survey and Identification: A systematic survey was conducted in Ratangarh tehsil of Churu district to document plant species. Field visits covered villages, agricultural fields, grazing lands, roadsides, and natural habitats to ensure seasonal and habitat-wise representation. Sites were selected based on vegetation richness and accessibility. Data on local plant names were recorded and cross-verified through repeated visits to ensure reliability. Ethical guidelines were followed, and prior informed consent was obtained from all participants. Plant identification was completed using standard floras, taxonomic keys, and relevant botanical literature.

III. RESULT AND DISCUSSION

The observation data reveal a rich diversity of traditional medicinal plants recorded from the study area, indicating the ecological resilience and ethnobotanical significance of Ratangarh tehsil in Churu District. A total of 82 plant species belonging to more than 40 plant families were documented, reflecting wide taxonomic representation and varied life forms, including trees, shrubs, herbs, climbers, and grasses. This diversity highlights the region's capacity to support medicinal flora despite its semi-arid to arid climatic conditions. Among the recorded families, Fabaceae emerged as one of the most dominant families, represented by several species such as *Acacia nilotica*, *Prosopis cineraria*, *Cassia fistula*, and *Dalbergia sissoo*. The dominance of Fabaceae indicates its ecological adaptability and importance in traditional medicine, agroforestry, and soil conservation in arid landscapes. Other well-represented families include Apocynaceae, Euphorbiaceae, Rutaceae, Moraceae, Cucurbitaceae, and Solanaceae, each contributing multiple species with known medicinal and therapeutic value. The presence of commonly used medicinal plants such as *Azadirachta indica* (Neem), *Ocimum sanctum* (Tulsi), *Tinospora cordifolia* (Giloy), *Withania somnifera* (Ashwagandha), *Aloe barbadensis* (Aloe vera), and *Emblica officinalis* (Amla) underscores the strong reliance of local communities on traditional plant-based healthcare systems. Many of these species are known for their roles in treating fever, digestive disorders, skin diseases, respiratory ailments, and chronic conditions, which aligns with ethnomedicinal practices prevalent in rural Rajasthan. Tree species constitute a significant proportion of the recorded flora, such as *Prosopis cineraria* (Khejri), *Ficus benghalensis* (Bargad), *Ficus religiosa* (Peepal), and *Tamarindus indica* (Imli), highlighting their dual role in providing medicinal resources and maintaining ecological stability. The inclusion of drought-tolerant species like *Calotropis procera*, *Leptadenia pyrotechnica*, *Capparis decidua*, and *Balanites aegyptiaca* reflects the adaptive strategies of plants thriving under extreme temperature and low rainfall conditions. Overall, the observed plant diversity demonstrates the deep interconnection between local biodiversity and traditional knowledge systems. The documentation of such a wide range of medicinal plant species emphasizes the importance of conserving both

biological resources and indigenous ethnobotanical knowledge for sustainable utilization, future pharmacological research, and community health security in the region.

Table 1: List of recorded medicinal plant species with their families and common names in the study area

S. No.	Family	Botanical Name	Common Name
1	Acanthaceae	<i>Barleria prionitis</i>	Bajradanti
2	Amaranthaceae	<i>Achyranthes aspera</i>	Latjeera
3		<i>Chenopodium album</i>	Bathua
4	Amaryllidaceae	<i>Crinum latifolium</i>	Sudarshan
5	Annonaceae	<i>Polyalthia longifolia</i>	Ashoka
6	Apocynaceae	<i>Calotropis procera</i>	Aak
7		<i>Carissa congesta</i>	Karonda
8		<i>Catharanthus roseus</i>	Sadabahar
9		<i>Leptadenia pyrotechnica</i>	Khimp
10		<i>Nerium indicum</i>	Kaner
11		<i>Rauvolfia serpentina</i>	Sarpagandha
12		<i>Tabernaemontana divaricata</i>	Chandni
13		<i>Tylophora indica</i>	Antamul
14	Arecaceae	<i>Phoenix dactylifera</i>	Khajoor
15	Aristolochiaceae	<i>Aristolochia bracteolata</i>	Kiramar
16	Asparagaceae	<i>Asparagus racemosus</i>	Shatavari
17		<i>Sansevieria cylindrica</i>	Snake Plant
18	Asphodelaceae	<i>Aloe barbadensis</i>	Aloe vera
19	Asteraceae	<i>Artemisia scoparia</i>	Bana
20	Bignoniaceae	<i>Tecoma stans</i>	Yellow Bells
21		<i>Tecomella undulata</i>	Rohida
22		<i>Cordia myxa</i>	Lasura
23	Capparaceae	<i>Capparis decidua</i>	Kair
24	Caricaceae	<i>Carica papaya</i>	Papaya
25	Cleomaceae	<i>Cleome gynandra</i>	Hulu
26	Combretaceae	<i>Quisqualis indica</i>	Madhumalti
27	Convolvulaceae	<i>Evolvulus alsinoides</i>	Shankhpushpi
28	Crassulaceae	<i>Bryophyllum pinnatum</i>	Patherchata
29	Cucurbitaceae	<i>Citrullus colocynthis</i>	Tumba
30		<i>Cucumis melo</i>	Kachri
31		<i>Lagenaria siceraria</i>	Lauki
32		<i>Momordica balsamina</i>	Karela
33	Cyperaceae	<i>Cyperus triceps</i>	Nirbasi
34	Euphorbiaceae	<i>Euphorbia hirta</i>	Waldhuni

35		<i>Jatropha pandurifolia</i>	Coral Plant
36		<i>Jatropha curcas</i>	Ratanjot
37		<i>Ricinus communis</i>	Arandi
38	Fabaceae	<i>Acacia nilotica</i>	Desi babul
39		<i>Acacia senegal</i>	Kumta
40		<i>Albizia lebbeck</i>	Siris
41		<i>Bauhinia variegata</i>	Kachnaar
42		<i>Cassia fistula</i>	Amaltas
43		<i>Dalbergia sissoo</i>	Shisham
44		<i>Delonix regia</i>	Gulmohar
45		<i>Hardwickia binata</i>	Anjan
46		<i>Leucaena leucocephala</i>	Safed Babool
47		<i>Parkinsonia aculeata</i>	Vilayati Kikar
48		<i>Prosopis cineraria</i>	Khejri
49		<i>Prosopis juliflora</i>	Vilayati Babool
50		<i>Pongamia pinnata</i>	Karanja
51		<i>Senna alexandrina</i>	Sonamukhi
52			<i>Tamarindus indica</i>
53	Gentianaceae	<i>Enicostemma hyssopifolium</i>	Chota Chirayata
54	Lamiaceae	<i>Ocimum sanctum</i>	Tulsi
55	Lythraceae	<i>Lawsonia inermis</i>	Mehndi
56		<i>Punica granatum</i>	Anar
57	Malvaceae	<i>Hibiscus rosa-sinensis</i>	Gurhal
58	Meliaceae	<i>Azadirachta indica</i>	Neem
59	Menispermaceae	<i>Tinospora cordifolia</i>	Giloy
60	Moraceae	<i>Ficus benghalensis</i>	Bargad
61		<i>Ficus religiosa</i>	Peepal
62		<i>Morus alba</i>	Shahtut
63	Moringaceae	<i>Moringa oleifera</i>	Sahjan
64	Myrtaceae	<i>Eucalyptus obliqua</i>	Safeda
65		<i>Psidium guajava</i>	Amrud
66		<i>Syzygium cumini</i>	Jamun
67	Papaveraceae	<i>Argemone mexicana</i> L.	Satyanasi
68	Phyllanthaceae	<i>Emblica officinalis</i> Gaertn.	Amla
69	Poaceae	<i>Cynodon dactylon</i>	Dub
70		<i>Saccharum munja</i>	Sarkanda
71	Rhamnaceae	<i>Ziziphus mauritiana</i>	Ber
72	Rutaceae	<i>Aegle marmelos</i>	Bael
73		<i>Citrus limon</i>	Nimboo

74		<i>Murraya koenigii</i>	Curry Leaf Tree
75	Salvadoraceae	<i>Salvadora persica</i>	Pilu
76	Simaroubaceae	<i>Ailanthus excelsa</i>	Ardu
77	Solanaceae	<i>Cestrum nocturnum</i>	Raat ki Rani
78		<i>Datura stramonium</i>	Dhatura
79		<i>Withania somnifera</i>	Ashwagandha
80	Tamaricaceae	<i>Tamarix aphylla</i>	Faras
81	Zygophyllaceae	<i>Balanites aegyptiaca</i>	Hingota
82		<i>Tribulus terrestris</i>	Gokhru

The family-wise distribution of medicinal plant species recorded in the study area shows a clear variation in species richness among different plant families, reflecting both ecological adaptability and ethnobotanical importance. The graphical representation indicates that Fabaceae is the most dominant family, contributing the highest number of species (15). This dominance highlights the wide adaptability of Fabaceae members to semi-arid conditions and their extensive use in traditional medicine, agroforestry, and livelihood support in the region. Following Fabaceae, Apocynaceae represents a comparatively high number of species (8), indicating its significant role in traditional healthcare systems. Plants belonging to this family are well known for their bioactive compounds and therapeutic applications, particularly in treating skin disorders, cardiovascular problems, and nervous system ailments. Other families such as Euphorbiaceae, Gentianaceae, Lamiaceae, and Rutaceae show moderate representation, each contributing multiple species, which underscores their medicinal and ecological relevance. Several families, including Acanthaceae, Amaranthaceae, Annonaceae, Arecaceae, Asparagaceae, Asphodelaceae, Bignoniaceae, Capparaceae, Cucurbitaceae, Moraceae, Solanaceae, and Zygophyllaceae, are represented by one to three species each. Although their numerical contribution is lower, these families include highly valuable medicinal plants widely used by local communities. The presence of many families with limited species representation reflects high taxonomic diversity and indicates that medicinal knowledge is spread across a broad range of plant groups rather than concentrated in a few families. Overall, the observed family-wise distribution demonstrates a high degree of floristic and ethnomedicinal diversity in the study area. The dominance of certain families alongside the presence of numerous minor families suggests that the local vegetation supports a wide spectrum of medicinal plants adapted to arid and semi-arid environments. This diversity emphasizes the importance of conserving representative species from both dominant and less-represented families to sustain traditional healthcare practices and maintain ecological balance in the region.

The findings of the present study are consistent with earlier ethnobotanical investigations conducted in Churu district, confirming the richness of medicinal plant diversity and the continued reliance on traditional knowledge in arid regions. The results are in agreement with **Parveen (2007)**, who documented 68 medicinal plants from the district. Similarly, **Purohit et al. (2008)** reported 16 medicinally important species, including *Cassia fistula*, *Withania somnifera*, *Asparagus racemosus*, *Ricinus communis*, *Dalbergia sissoo*, *Ocimum sanctum*, and *Phyllanthus emblica*, all of which were also recorded in the present study. The observations further correspond with **Jeph (2017)**, who documented species such as *Aegle marmelos*, *Albizia lebbek*, *Aloe barbadensis*, *Achyranthes aspera*, and *Azadirachta indica* from Sujangarh tehsil, reflecting uniformity in plant use across the district. **Solanki et al. (2021)** reported *Artemisia scoparia* and *Eclipta alba* from Taranagar, with similar ethnomedicinal applications. In addition, **Sharma (2022)** highlighted drought-resistant species such as *Tephrosia purpurea*, *Aerva persica*, and *Leptadenia pyrotechnica*, which were also observed in this investigation. The findings are also supported by **Tripathi et al. (2023)**, who reported species including *Acacia senegal*, *Balanites aegyptiaca*, *Argemone mexicana*, *Calotropis procera*, *Citrullus colocynthis*, *Withania somnifera*, *Leptadenia pyrotechnica*, and *Tribulus terrestris* for various ailments. **Meena and Khan (2023)** documented 173 plant species from Churu district, while **Pareek et al. (2024)** recorded 20 medicinal tree species, many of which overlap with the present findings. Furthermore, **Kumar (2024)** and **Meena (2025)** reported several endemic and xerophytic species, including *Ficus religiosa*, *Azadirachta indica*, *Ricinus communis*, *Jatropha curcas*, *Aak*, *Ghritkumari*, *Khejri*, *Neem*, and *Rohida*, which were also noted in this study. Overall, the close correspondence between the present results and earlier studies validates the continuity of ethnomedicinal practices in Churu district and provides updated, site-specific information from Ratangarh tehsil.

IV. CONCLUSION

The present study confirms the rich plant diversity of Ratangarh tehsil. The documented species show strong similarity with findings reported from other parts of Churu district. The frequent occurrence of drought-resistant and xerophytic species emphasizes their ecological adaptability as well as their importance in sustaining traditional medicine under harsh climatic conditions. The study underscores the need for conservation of medicinal plant resources and the preservation of indigenous knowledge, which is gradually declining due to modernization and changing socio-economic conditions. Such efforts are essential for ensuring sustainable utilization and for supporting future research in the arid regions of Rajasthan.

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