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An ethno-botanical survey of important medicinal plants in the Shekhawati region of Rajasthan, India

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Abstract
Plants are essential sources of therapeutic medications and contribute to the survival of local people, tribes, and ethnic groups. Because plants are readily available and less expensive than modern pharmaceuticals, they have been widely employed in the prevention and treatment of various human and animal ailments. Chemical substances were created by all plants. These chemical compounds have the potential to be used as medications, and the scientific basis for their use in modern medicine is the content known pharmacological activity of these molecules in medicinal plants, if properly proven.
Ethno medicinal plants are now abundant natural sources of important pharmacological components that are utilized to treat a variety of maladies in humans.
The goal of this research is to learn more about the medicinal properties of plants and to raise awareness about its ethnic significance. From February 2021 to February 2022, an ethno-botanical study was done in the Shekhawati region of Rajasthan to chronicle local knowledge of therapeutic plants. Interviews and questionnaires were used to get information from local residents.
This study identified 18 plant species belonging to 14 families that are employed by local traditional healers. The plant species used by local people in the study region to treat various ailments.

Keywords: ethno-botany, medicinal uses, medicinal plants, diseases, traditional knowledge, shekhawati region

Introduction
Ethno botany is important in traditional medicine research because it serves as a bridge between nature and culture, as well as traditional knowledge and modern technology. Ethno botany has emerge as a potential science that emphasizes the human-plant relationship through a multidisciplinary approach that includes ecology, economic botany, pharmacology, public health, and other disciplines as required [1]. It has safe, effective, and affordable indigenous treatments that are gaining appeal among both urban and rural people, particularly in India and China [2]. Ethno-botany is the study of the interactions between people in prehistoric societies and their natural surroundings. Ethno-botany offers a variety of research methods; nevertheless, plant resources that aid in medicinal aspects are the only ones listed. The forest has a large supply of substances that can be pharmaceuticals and nutraceuticals both use it. Plant extracts contain a number of bioactive chemicals with biological properties such as anti-cancer and antioxidant properties. Furthermore, various diseases associated with vitality, diabetes, and memory loss could be efficiently healed by using drugs that are rarely used by allopathic medicines [3].
A discussion of human life on our planet would be incomplete without a consideration of plants' role [4]. Many cultures have long placed a high value on plants. Feeding, clothing, housing, nursing, and hunting are among basic human requirements. Plants have provided mankind with new treatments as a source of medicines, forming the foundation for a sophisticated traditional system. Folk medicine has seen a surge in popularity in recent years [5]. 70-80 percent of the world's population, mostly in impoverished countries, is projected to rely on medicinal plants for primary health care [6]. India's tribal population is large, with 53 million people, accounting for 8% of the country's overall population. In varied geographical areas, around 550 ethnic groups can be found [7]. India, one of the world's 12 Biodiversity Centers, is one of the most important biodiversity hotspots, having over 45000 plant species. India's forests are the primary source of a wide range of medicinal and aromatic plants. More than 20000 plants are thought to have therapeutic properties, although approximately 7000-7500 species are employed by traditional communities [8, 9].
Rajasthan has a diverse biodiversity, with a wide range of plants, some of which are utilized for medical purposes. Rajasthan is one of India's major states. Tribes including the Bhil, Bhil-Meena, Damor, Garasia, Patelia, Naikara, Meena, and Seharia make up about 12.44 percent of the population and live in isolated locations with limited infrastructure. These ethnic groups are dispersed around the state and have extensive communication with one another. As a result, the majority of ethno botanical knowledge is handed from one

group to the other [10]. A lot of work has been done in Rajasthan on ethno medicinal plants utilized by diverse tribal people for various aliment [11].
However, no comparable effort has been done in Rajasthan's Shekhawati region. The current research documents ethno medicinal plants found in Rajasthan's Shekhawati region, which could be utilized as plant resources for contemporary medicine in the future.

Study area
Shekhawati is an area of Rajasthan that spans the districts of Sikar and Jhunjhunu and is bordered by Haryana, Nagour, Jaipur, and Churu. It is located between 28.06°N latitude and 75.20°E longitude. In the Shekhawati region, there are a few hilly spots such as Lohargarh, Harsh Mountains, Shakambari, Raghunathgarh, and Mansamata. This area is mostly arid and semi-arid. This ethno botanical survey was conduct mostly in the Harsh mountain range, Raghunathgarh, Shakambari, and a few villages in the Jhunjhunu area.
Locals and tribes in Rajasthan's Shekhawati region have extensive knowledge of the therapeutic properties of plants that grow nearby. Rural people's knowledge is rapidly vanishing as a result of modernity. There is a pressing need to research and document this priceless knowledge for the sake of human society's future generations. It is also losing favor due to shortage or non-availability of such plants, which is caused by a variety of human activities as well as natural disasters such as drought and overgrazing. As a result, the preservation and scientific verification of such uncommon and lesser-known medicinal plants become more important.
The purpose of this study was to document the traditional applications of medicinal plants to treat various diseases in the Shekhawati region, as well as to assess their efficacy

Methodology
The survey was conducted in the Shekhawati region from February 2021 to February 2022 to document traditional plant knowledge. With the help of locals, traditional uses were discussed. They were questioned about the plant's use, which components were utilized, for what disease, how the medicines were prepared, and if any side effects had been detected. Local folks in Rajasthan's Shekhawati region were interviewed and a questionnaire was used to collect data. The following plant-related inquiry was posed to them.

1. Local name of plants.
2. Medicinal use of plants.
3. Part of the plant used.
4. Preparation method of decoction.
5. How the plant was collected.
6. Collected plants how stored.
7. Local name of the disease.
8. The symptoms of disease to help correlation of local names with western medicinal conceptions.

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Result
The plants are arranged according to their botanical names in alphabetical order. The following is how the data is organized.

1. Botanical name.
2. Local name.
3. Family name.
4. Habit.
5. Medicinal uses.

Fig 1

1. Abutilon indicum
Common name - Indian mallow
Family- Malvaceae
Habit- Shrub
Medicinal uses- Ulcers, TB, gout, worms, and bleeding problems all benefit from it. It has laxative, digestive, diuretic, expectorant, astringent, and anti-inflammatory properties. Decoction used in tender gums and toothache. Leaf demulcents are administered topically on ulcers and boils. Roots are used to treat fever, and chest pain. Root and bark have long been used as a diuretic and anti-diabetic. Seeds are used to treat urinary problems [12].

Fig 2

2. *Achyranthes aspera*
Common name- Chirchita
Family- Amaranthaceae
Habit-Perennial herb
Medicinal Use: Traditional healers revere the plant, which is used to treat asthma, bleeding, assisting birth, colds, bronchitis, dropsy, dog bites, dysentery, ear complications, leucoderma, pneumonia, headaches, scorpion bites, snake bites, and skin problems, among other ailments [13].

Fig 3

3. *Balanites aegyptiaca*
Common name- Hingot
Family - Zygophyllaceae
Habit- Tree
Medicinal Uses: Malaria, colds, skin boils, leucoderma, syphilis, liver and spleen disorders, wound healing, and aches are among the conditions it treats. The plant's bark can be used to treat epilepsy, yellow fever, jaundice, mental illness, and syphilis [14]. Oral, ulcer, whooping cough, sleeping illness, and skin infection are all treated with the fruits [15].

Fig 4

4. ***Bidens biternata***
Common name- Spanish Needle
Family- Asteraceae
Habit- Herb
Medicinal use- In folk medicine, all parts of *B. biternata* is utilized, including the whole plant, the roots, fresh or dried, and/or the aerial parts (flowers, seeds, leaves, and stems). Plants have been employed as stimulants, anti-inflammatory agents, febrifuges, diuretics, and wound healers [16].

Fig 5

5. ***Calotropis procera***
Common name- Aak
Family-Apocynaceae
Habit- Perennial shrub
Medicinal use- Diarrhea and asthma can be treated with capsulated root bark powder. The plant's delicate leaves are often used to alleviate migraines [17]. Antidotes for snake venom are made from dried latex and dried root [18].

Fig 6

6. ***Citrullus colocynthis***
Common name- Bitter apple
Family-Cucurbitaceae
Habit-Climber
Medicinal use- The entire plant is used in most tribal areas and rural populations, but seed is used to treat digestive complaints [19]. Fruits can be used to treat stomach aches [20] and snake bites [21].

Fig 7

7. ***Cleome viscosa***
Common name- Bagra
Family- Cleomaceae
Habit- Herb
Medicinal use- It can be used to treat malarial fevers, indigestion-related fevers, leprosy, blood disorders, and uterine complaints. The leaves' juice has been said to help with earaches, malaria, piles, and lumbago [22]. The seeds of the plant are documented as anthelmintic and detergent in the Unani system of medicine, and are used to treat fever and diarrhea [23].

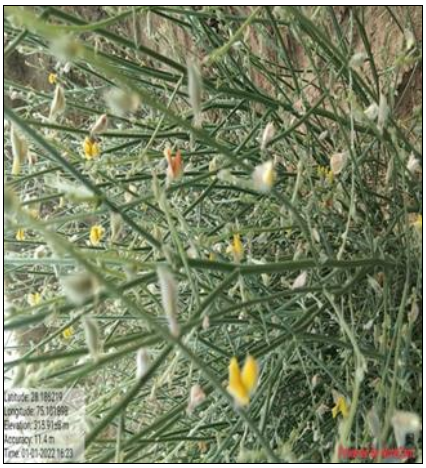

Fig 8

8. ***Crotalaria burhia-***
Common name- Saniya
Family- Fabaceae
Habit- Under shrub
Medicinal use- It's a plant with a lot of medicinal properties. Cooling medication can be made from the leaves, branches, and roots. In traditional medicine, plant juice is used to treat gout, eczema, hydrophobia, pain and swellings, wounds and cuts, infection, kidney pain, stomach disorders, rheumatism, and joint pain [24]. The dried plant material is pulverized, combined with water, and filtered, and it can be used to treat diarrhea and other stomach issues [25]. Typhoid [26] is treated by a root decoction in combination with other plants. The powdered plant material is eaten orally with water when the plant is used for stomachache [27].

Fig 9

9. ***Euphorbia hirta***
Common name- Dudhi
Family- Euphorbiaceae
Habit- Herb
Medicinal use- It's used to treat gastrointestinal issues including diarrhea, dysentery, and intestinal parasitosis, as well as bronchial and respiratory ailments like asthma, bronchitis, and hay fever, and conjunctivitis. *E. hirta* is also said to have hypotensive and tonic effects. Anxiolytic, analgesic, antipyretic, and anti-inflammatory properties are all present in the aqueous extract. Eyelid styes are treated with stem sap, and swelling and boils are treated with a leaf poultice incognita [28]. Dry herb decoction is used to treat skin ailments. For the treatment of thrush, a decoction of fresh herbs is used as a gargle. A root decoction might also help a nursing mother who is low on milk. Snake bites can also be treated using roots [29].

Fig 10

10. ***Leptadenia pyrotechnica***
Common name- Khimp
Family- Asclepiadaceae
Habit- Shrub
Medicinal use- Ethno-botanical Applications *L. pyrotechnica* was found to be used for constipation, obesity, and dysmenorrhea in an ethno-botanical study. The powdered leaf and stalk were utilized for this. This plant's decoction is commonly used as a traditional ethno-medicine for upper gastrointestinal tract (UGT) disorders, spermatorrhoea, and impotency [30].

Fig 11

11. ***Leucas aspera***
Common name- Thumbai
Family-Lamiaceae
Habit- Herb
Medicinal use- The herb has been used as an antipyretic and pesticide for centuries. Flowers are used as stimulant, expectorant, aperient, diaphoretic, pesticide, and insecticide. The leaves are thought to help with chronic rheumatism, psoriasis, and other skin problems. In snake bites bruised leaves are applied topically [31, 32].

Fig 12

12. ***Leucas urticifolia***
Common name-
Family- Lamiaceae
Habit- Herb
Medicinal use- *Leucas urticifolia* is used ethno medicinally as an astringent, on skin ailments, and in fever, typhoid, respiratory disorders, urinary infections, inflammation, and mental disorder according to ethno-medicinal observations [33].

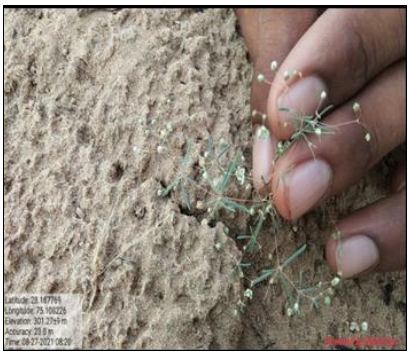

Fig 13

13. ***Mollugo cerviana***
Common name- Thread-stem carpetweed
Family- Molluginaceae
Habit-Herb
Medicinal use- It improves vision and lowers body odor [34]. The diaphoretic effect is treated with a decoction of blossoms and delicate stalks. Gout and rheumatism are treated with roots [35]. Jaundice is also treated with it [36].

Fig 14

14. ***Mollugo nudicaulis***
Common name- Naked-stem carpetweed
Family- Molluginaceae
Habit-Herb
Medicinal use- It is a traditionally valuable wild medicinal herb, and traditional practitioners have used the leaves to treat whooping cough and jaundice [37].

Fig 15

15. ***Pedalium murex***
Common name- Bada gokhuru
Family- Pedaliaceae
Habit- Herb
Medicinal use- Bada Gokhru is one of India's most important traditional medicinal plants. It's been used for puerperal diseases, digestive tonics, ulcers, fevers, wounds, and other ailments, as well as general debility [38].

Fig 16

16. ***Peristrophe bicalyculata***
Common name- Panicled peristrophe
Family- Acanthaceae
Habit- Herb
Medicinal use- The herb is used for antibacterial (tuberculostatic) properties, snake poison, bone fractures, sprains, fevers, colds, coughs, and ear and eye treatments [39].

Fig 17

17. ***Tribulus terrestris***
Common name- Gokhuru
Family- Zygophyllaceae
Habit- Herb
Medicinal use- It has long been used to treat male infertility [40]. This herb's diuretic, aphrodisiac, and anti-urolithiasis effects are well-known in Ayurveda [41]. It's used to purify blood and treat haemorrhoids [42].

Fig 18

18. ***Tridax procumbens***
Common name- Tridax daisy
Family- Asteraceae
Habit- Herb
Medicinal use- *Tridax procumbens* has been used in India for centuries as a wound healer, anticoagulant, antifungal, and insect repellant. In folk medicine, it is used to cure infectious skin diseases. The herb was used to cure diabetes in Rajasthan [43].
Conclusion-
The current study demonstrates that the ethnic community in rural Shekhawati still has a rich traditional knowledge of medicinal plant, which is an important source for primary health care. These plants are mostly utilized ethno-medicinally in the Shekhawati region as an astringent, on skin illness, diarrhea and dysentery, fever, typhoid, respiratory disorders, urinary infection and inflammation, mental disturbance, and as an abortifacient, according to the ethno-medicinal observation. Locals use these plants all year by drying them and creating infusions or decoctions from them. In our field of research, the elderly make up the bulk of the population. In comparison to younger people, elders have better knowledge about plants.

References
1. Balick MJ. Transforming ethnobotany for the new millennium. Annals of the Missouri Botanical Garden, 1996, 58-66.
2. Katewa SS, Guria BD, Jain A. Ethnomedicinal and obnoxious grasses of Rajasthan, India. Journal of ethnopharmacology,2001:76(3):293-297.
3. Schultes RE. Role of ethnobotanist in search for new medicinal plants. In Lloydia (1962, January),1962:25(4),257.
4. Veilleux C, King SR. An introduction to ethnobotany. Linda Morgenstem Editor, 1996.
5. Gurib-Fakim A. Medicinal plants: traditions of yesterday and drugs of tomorrow. Molecular aspects of Medicine,2006:27(1):1-93.
6. World Health Organization. Traditional medicine. act sheet no. 134. Geneva: World Health Organization, 2008.
7. Anonymous. Ethnobiology in India –A Status Report (of All India Coordinated Project on Ethnobiology). Ministry of Environment & Forests, Govt. of India, New Delhi, 1994.
8. Robson T. Introduction to complementary medicine. Routledge, 2020.
9. Mao AA, Hynniewta TM, Sanjappa M. Plant wealth of Northeast India with reference to ethnobotany, 2009.
10. Sharma H, Kumar A. Ethnobotanical studies on medicinal plants of Rajasthan (India): A review. Journal of Medicinal plants research,2011:5(7):1107-1112.
11. Sebastian MK, Bhandari MM. Medicinal plant lore of Udaipur district, Rajasthan. Bull Med Ethnobot Res,1984:5:122-34.
12. Chatterjee A, Pakrashi SC. Treatise on Indian medicinal plants. Publications & Information Directorate, 1991.
13. Jain SK. Dictionary of Indian folk medicine and ethnobotany,1991:581:634 J3.
14. Hamid OA, WM AZ, Idris SM. *Balanites aegyptiaca* extracts for treatment of HIV/AIDS and leukemia (WO0149306). International research report, World Intellectual Property Organization, 2001. http://europepmc. Org./article/PAT/WO0149306.

15. Abou Khalil NS, Abou-Elhamd AS, Wasfy SI, El Mileegy IM, Hamed MY, Ageely HM. Anti-diabetic and antioxidant impacts of desert date (*Balanites aegyptiaca*) and parsley (*Petroselinum sativum*) aqueous extracts: lessons from experimental rats. Journal of diabetes research, 2016.
16. Panda H. Medicinal plants cultivation & their uses. Asia Pacific Business Press Inc. 2002.
17. Singh VP, Sharma SK, Khare VS. Medicinal plants from Ujjain district Madhya Pradesh-part II. Indian Drugs Pharm. Ind.,1980:5:7-12.
18. Basu A, Sen T, Ray RN, Chaudhuri AN. Hepatoprotective effects of *Calotropis procera* root extract on experimental liver damage in animals. Fitoterapia,1992:63(6):507-514.
19. Nadkarni KM. Indian materia medica, popular Book Depot. Bombay,1954:7:946-948.
20. Singh V, Pandey RP. Economic and medicinal plants of Indian desert. Desert Resources and Technology,1983:1:307-368.
21. Tiwari G, Srivastava DK, Gangrade SK. Status of Medicinal Plant Diversity of Kymore Plateau and Satpura Hill Region of Madhya Pradesh and Their Utilization. Recent Progress in Medicinal Plants,2003:7:45-56.
22. Kirtikar KRBB, Basu BD. Indian medicinal plants. Indian Medicinal Plants, 1935.
23. Chopra RN, Nayar SL, Chopra IC. Glossary of Indian Medicinal Plants. New Delhi: Council of Scientific and Industrial Research, 1956.
24. Bibi Y, Arshad M, Ahmad N, Riaz I, Chaudhari SK. An insight into medicinal and ethnopharmacological potential of Crotalaria burhia. Asian Pacific Journal of Tropical Disease,2015:5(7):511-514.
25. Marwat SK, Rehman FU. Medicinal folk recipes used as traditional phytotherapies in district Dera Ismail Khan, KPK, Pakistan. Pak J Bot,2011:43(3):1453-1462.
26. Katewa SS, Galav PK. Additions to the traditional folk herbal medicines from Shekhawati region of Rajasthan, 2006.
27. Kumar S, Goyal S, Parveen F. Ethno-medico-botany of household remedies of Kolayat tehsil in Bikaner district, Rajasthan, 2003.
28. Joshi SK, Sharma BD, Bhatia CR, Singh RV, Thakur RS. The wealth of India raw materials. Council of Scientific and Industrial Research Publication, New Delhi,1992:3:270-271.
29. Williamson EM. Major herbs of Ayurveda. Churchill Livingstone, 2002.
30. Qasim M, Abideen Z, Adnan MY, Ansari R, Gul B, Khan MA. Traditional ethnobotanical uses of medicinal plants from coastal areas. J coast life Med,2014:2(1):22-30.
31. Rai V, Agarwal M, Agnihotri AK, Khatoon S, Rawat AKS, Mehrotra S. Pharmacognostical Evaluation of *Leucas aspera* Link. Natural product sciences,2005:11(2):109-114.
32. Shirazi AM. Studies on *Leucas aspera*. Indian j pharm,1947:9:116-7.
33. Nutan R, Veena S. Phytochemical analysis of *Leucas urticifolia* (Vahl) R. Br. ex Sm.: A traditional medicinal herb. Journal of Pharmacognosy and Phytochemistry,2019:8(2):1752-1756.
34. Pavithra PS, Janani VS, Charumathi KH, Indumathy R, Potala S, Verma RS. Antibacterial activity of plants used in Indian herbal medicine. International Journal of Green Pharmacy (Medknow Publications & Media Pvt. Ltd.), 2010, 4(1).
35. Aglin AA. Medicinal effects of *Mollugo cerviana*-A Review. Int. J. Sci. Res. in Multidisciplinary Studies,2018:4:9.
36. Valarmathi R, Rajendran A, Akilandeswari S. Hepatoprotective efficacy of *Mollugo cerviana* Linn against carbon tetrachloride induced liver damage in rats. Int. J. Pharm. Sci. Res,2011:2(8):176-179.
37. Nagesh KS, Shanthamma C. Micropropagation and antioxidant activity of *Mollugo nudicaulis* Lam. Journal of Medicinal Plants Research,2011:5(6):895-902.
38. Rajashekar V, Rao EU, Srinivas P. Biological activities and medicinal properties of Gokhru (*Pedalium murex* L.). Asian Pacific journal of tropical biomedicine,2012:2(7):581-585.
39. Rashmi G, Jaya P, Hardik P, Bhumi M, Shivani A. Peristrophe bicalyculata-A review. Pharmacognosy Journal,2010:2(14):39-45.
40. Gauthaman K, Adaikan PG, Prasad RNV. Aphrodisiac properties of *Tribulus terrestris* extract (Protodioscin) in normal and castrated rats. Life sciences,2002:71(12):1385-1396.
41. Deepak M, Dipankar G, Prashanth D, Asha MK, Amit A, Venkataraman BV. Tribulosin and β-sitosterol-D-glucoside, the anthelmintic principles of *Tribulus terrestris*. Phytomedicine,2002:9(8):753-756.
42. Stojanov N. Our medicinal plants. Naouka & Izkoustvo, Sofia (in Bulgarian), 1973.
43. Amutha R, Sudha A, Pandiselvi P. Tridax procumbens (coat buttons)-a gift of nature: an overview. Saranraj P., Feliciano Dire G. & Jayaprakash A., Pharmacological Benefits of Natural Products. Jps Scientific Publications, India,2019:193-212.