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Medicinal wild herbs diversity and its uses by tribals of Hadoti region, India

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Abstract
The present paper deals with medicinal wild herbs found in Hadoti region of Rajasthan and their use by local tribals. Although wild plants are typically thought of as undesired plants, the tribal and traditional people in the hadoti region have used them to treat a variety of illnesses, make food, and more. Some plants are also used to manufacture string, make household items, clean teeth, and repel mosquitoes. 37 plants are listed here along with their uses. The information supplied here includes the botanical name, common name, family, plant part used and its medicinal use.

Keywords: Ethnobotany, herbs, medicinal uses, conservation, tribals

Introduction
According to Kirtikar and Basu (1935) [7], the ancient Hindus should receive credit for growing what is now known as ethnobotany. The name "ethnobotany" is not even new to India. As stated by Schultes (1962), ethnobotany is “the study of the relationship which exists between people of primitive societies and their plant environment”. Archaeological searches in books, herbaria, and field studies are some of the ethnobotanical study techniques that are pertinent to medicinal plants. "Man, ever seeking knowledge, has already investigated many things, but deeper and more profound knowledge still lies hidden.

Wasteland plants are typically referred to as weeds and are considered unwelcome and unattractive plant species. On the contrary, "Ayurveda" asserts that "No plant of this earth is useless." Numerous plants are used in the ayurvedic medical system to treat a variety of illnesses, including Alzheimer's disease, AIDS, cancer, depression, nervous disorders, diabetes, rheumatism, leprosy, skin conditions, urinary tract infections, hepatic diseases, digestive system conditions, malaria, and paralysis.

According to the World Health Organization, the majority of people in underdeveloped nations rely on herbal remedies for their primary healthcare requirements (Gupta *et al*., 2010) [2].

In its whole, ethnobotany is a relatively young topic of study, and if it is carefully and methodically explored, it will produce findings that are extremely valuable to ethnologists, archaeologists, anthropologists, plant-geographers, and other scientists. Basic documentation, quantitative usage and management evaluation, and experimental assessment are all parts of basic quantitative and experimental ethnobotany (Choudhary *et al*., 2008) [1].

Rajasthan contains a diverse array of plants, some of which are valued for their therapeutic properties. Rajasthan is one of the largest states of India. Tribes like the Bhil, Bhil-Meena, Damor, Dhanka, Garasia, Kathodi, Kokna, Kolidhor, Naikara, Patelia, Meena, and Seharia, who live in rural places without access to even the most basic infrastructure, make up about 12.44% of the population. The nomadic Banjara, Gadolia-Lohar, Kalbelia, Sikligar, Kanjar, Sansi, and Bagri tribes add to Rajasthan's unique ethnic diversity. These ethnic groups are widely dispersed over the state and interact with one another often. In light of this, the majority of ethnobotanical knowledge is transferred from one group to another.

42 lakh tribal people in Rajasthan have used about 610 types of medicinal herbs (Singh and Pandey, 1998) [14]. Rajasthan has an 80 percent rural population that cannot afford expensive medical care. They rely on the plant around them and make excellent use of it for their therapeutic requirements.

The actual guardians of the therapeutic plants up until this point are the tribal people that rely on the forest's wealth, primarily the greenery in their surroundings. The availability of

medicinal plants in Rajasthan's arid and semi-arid regions has been drastically diminished due to rapid deforestation brought on by overharvesting and exploitative trading of these plants (Singh and Pandey, 1980) [14]

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Study area

A region of Rajasthan state in western India known as Hadoti was formerly known as the Bundi Kingdom. Jhalawar and Kota are the two largest cities. It is bordered on the west by the Mewar, on the northwest by the Ajmer regions of Rajasthan, on the south by the Malwa, and on the east by the Gird regions of Madhya Pradesh state. It also comprises the districts of Bundi, Baran, Jhalawar, and Kota.

On the border with Madhya Pradesh, the area of south eastern Rajasthan is bounded by the Malwa Plateau in the east, the Aravali Range in the west, and the Marwar Plateau in the west south. The Chambal River, along with its tributaries Kaalisindh, Parvati, Parwan, and Chapi, is the main river in the area. Soil found in this region is alluvial and black soil.

Sahariya is the major tribe found in hadoti region of Rajasthan. Other tribes found here are meena, kathodi, damor, bheel, kanjar etc. these tribes still follow their ancestral practices for treatment of various disease. Common medicinal plants used by these tribes are *Tridex procumbens, Solanum nigrum, Withania somnifera, Convolvulus, Tribulus terrestris, Ziziphus jujuba* etc.

A large number of medicinally important plant species are present in hadoti region of rajasthan. A classified list of plant species is compiled, together with the plant part(s) used, the manner of administration, and the stated effectiveness in treating various conditions.

Fig 1: Map of Hadoti region of Rajasthan

Methodology

With a population of roughly 5, 64, 73, 122 crore, Rajasthan is a large state, 80 percent of people reside in communities that use traditional medical practises. Rajasthan state is located between 23degree 3’3' and 30° 12' N latitude and 69 degree 30’ and78 degree 17’ E longitude are the coordinates of this location. The state's entire land area is roughly 3,24,239 km^2, of which 1,98,100 km^2 is arid and the remaining semi-arid.

The suggested study was based on in-depth interviews with tribe members and residents of rural areas of all ages.

Detailed survey was made in hadoti region of Rajasthan and information regarding the use of medications has been recorded. In order to identify the plants, standard monographs and flora were used. On the basis of regular interviews with locals using the indigenous system of medicine, villagers, priests, and tribe members, ethnomedical data about the plants was gathered. Even though ethnobotany offers a variety of methods for studying plants, only the materials that are helpful for studying medicinal plants are given here.

Archaeological resources

India is home to a vast collection of ancient archaeological sculptures, which can be quite helpful in identifying the plants that were utilised in early civilization. Sithole (1976) described over 40 such plants from first- and second-century B.C. bas reliefs on the fence of Bharhut Stupa and the Great Stupa at Sanchi, respectively.

Literature resources

Information on therapeutic plants can also be found in our ancient writings. In this nation, there are no authentic records of any kind from the prevedic era save from a few Mohenjo-Daro archaeological sculptures. But our oldest Vedic literary sources, the Rigveda and Atharvaveda, which date from 2000 to 1000 B.C., provide important details about the medicinal herbs used at that time. Sharma (1968–1969) [11] enumerated 248 plants that are mostly found in the Atharvaveda and Rigveda. Because they are necessary for human survival, plants have been used for medical purposes in India for thousands of years, according to Atharvaveda and Rigveda as well as Sharma (1968–1969) [11]. For more than a thousand years, other Asian nations like Sri Lanka have routinely used plants and their products to heal ailments (Napagoda *et al*., 2018) [9]

Herbarium resources

Field notes and herbarium sheets have also proven to be reliable sources of ethnobotanical information. Dr. Altschul's investigation of nearly 2.5 million plant specimens in the Harvard University Herbarium revealed 5, 178 valuable notes of food and therapeutic value, making it the most notable example of this type of research.

Result and Discussion

The WHO report states that a number of modern diseases today are lifestyle disorders. Therapeutic plants have great importance in providing health care to about 80% of the population in India. Plants have been a significant source of the products and precursors utilised in a range of sectors, including the pharmaceutical sector, agrochemicals, food, and cosmetics. Researchers have been looking to the natural world for prospective pharmaceuticals as the search for novel medications continues. On the other hand, traditional medicines are becoming more and more popular due to their minimal or complete lack of residual toxicity. Initially, the primary component of folk medicines is plants. Folk remedies gradually paved the way for the development of traditional medical practises like Ayurveda in India.

Indian tribes in Rajasthan have long used natural medicine.

Our research indicates that each of the plant is critical for treating a range of ailments, including rheumatism, diarrhoea, TB, joint pain, cancer, dysentery, malaria, diabetes, skin illnesses, scurvy, respiratory disorders, asthama, and bony harmonic imbalance. These herbs are regularly used by indigenous people, however some of them have not yet been studied by modern medicine.

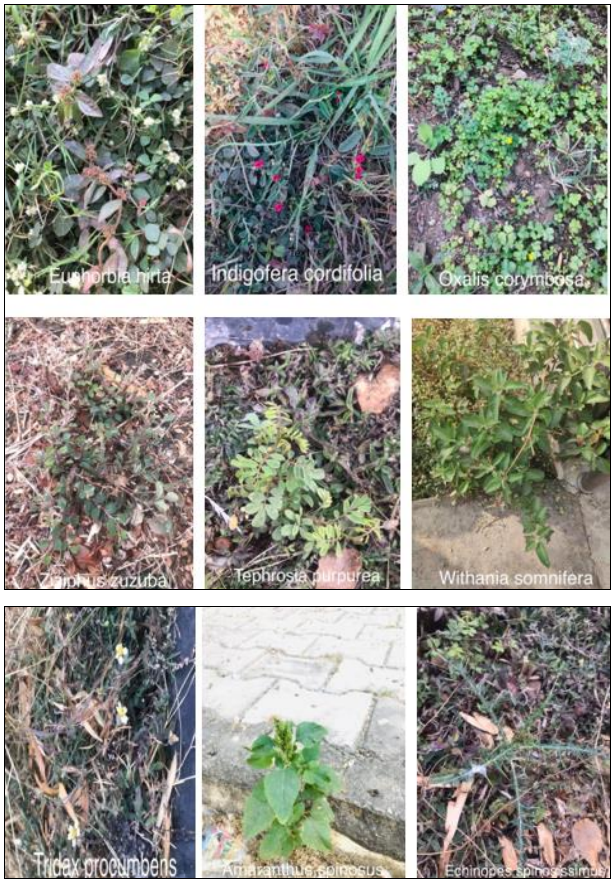
The ethnomedical herbs should be preserved through various means. Ecological monitoring is a crucial tool for the conservation of biodiversity in the Hadoti region since plant components are used to treat a variety of illnesses. Although Hadoti has a high biodiversity, the region's ever-changing climatic circumstances have an impact on its expanding region and natural habitats. This is an effort to prevent potential effects in the future and to elevate these significant plants to the status of endangered species.

Here in the present work total 37 plant species belonging 20 genus have been enumerated. Proper evaluation may lead to discovery of some important information which can prove useful for society. The present study highlights useful ethnomedicinal importance of several wild plants used by tribals of Hadoti region.

Table 1: Medicinal wild herbs of hadoti region

S. No.	Botanical name	Family	Common name	Plant part used	Medicinal value
1	*Acalypha indica*	Euphorbiaceae	Copper leaf	Whole plant	Diabetes, hypertension, dysentery
2	*Adhatoda vasica*	Acanthaceae)	Adusa	Seed, whole plant	Diarrhoea, cough
3	*Ageratum conzyoides*	Compositae	Billygoat weed	Root, leaves	Wound healing, anti microbial
4	*Alternanthera pungens*	Amaranthaceae	Khaki weed	Root, leaves, shoot	Hepatitis, bronchitis, asthama
5	*Amaranthus hybridus*	Amaranthaceae	Smooth pig weed	Seed, leaves	Anti diabetic, anti malarial, anti cancer
6	*Amaranthus spinosus*	Amaranthaceae	Jangli chouli	Leaves, root, seeds	Ulcer, diarrhoea
7	*Argemone mexicana* L.	Papaveraceae	Maxican poppy	Latex root, seeds	Tumors, warts, jaundice, leprosy
8	*Asparagus racemosus* Willd.	Liliaceae	Satavari	Root	High fever, antioxidant, sexual weakness
9	*Chenopodium album*	Chenopodiaceae	Bathua	Whole plant	Anthelmintic carminative, digestive, diuretic
10	*Convolvulus arvensis*	Convolvulaceae	Shankhpushpi	Vegetative parts	Herbal drug, antipelpetic
11	*Convolvulus microphyllus*	Convolvulaceae	Santari	Whole plant	Laxative brain tonic
12	*Datura innoxia Mill*	Solonaceae	Datura	Seeds and leaves	Inducing sleep, fever, alleviating pain
13	*Euphorbia hirta*	Euphorbiaceae	Asthama plant	Fresh milk latex	Female disorder, respiratory ailments
14	*Euphorbia pulcherrima*	Euphorbiaceae	Ponsettia	latex	Skin disorder, toothache, infection,
15	*Evolvulus alsinoides*	Convolvulaceae	Morning glory	Whole plant	Dementia, brain tonic, depression
16	*Gomphrena celosoides*	Amaranthaceae	Bachelor button	Leaves, twigs, flowers	Natural analgesic rheumatism
17	*Indigofera cordifolia*	Papillionaceae	Heart leaf indigo	Leafy twigs	Epilepsy, nerval disorder, gastro intestinal, respiratory disease
18	*Indigofera linifolia*	Papillionaceae	True indigo	Leafy twigs	Epilepsy, nervous disorder, asthma, fever, stomach pain
19	*Ipomoea spp*	Convolvulaceae	Railway creeper	Leaf	Healing body rashes
20	*Lantana camara* L	Varbenaceae	Panchfuli	leaves	Cancer, chicken pox, eczema, rheumatism
21	*Launea procumbens*	Compositae	Jangi Gobi	Entire plant	Antidiabetic
22	*Malvastrum coromandelianum*	Malvaceae	false mallow	leaves	Anti inflammatory, analgesic, anti bacterial
23	*Ocimum americanum*	Lamiaceae	Jangli tulsi	leaves	Analgesic anti- inflammatory, cough and respiratory problem
24	*Ocimum basilicum*	Lamiaceae	Tulsi	leaves	Antiviral, antibacterial, Bronchitis,asthama
25	*Oxalis corymbosa*	Oxalidaceae	Katti batti	Leaves, flowers	Anti inflammatory, anti fungal
26	*Peristophe paniculata*	Acanthaceae	Kati aghedi	Whole plant	Antibacterial and snake poison treatment
27	*Rhynchosia minima*	Fabaceae	Least snout bean	Roots, seeds, leaves	Itch and swelling, herbicide
28	*Saccharum bengalense* Retz.	Poaceae	Munji	Stem,	Burning sensation
29	*Sida acuta*	Malvaceae	Common wireweed	root	Neurological disorder, leucorrhoea, tuberculosis, rheumatic problem
30	*Solanum xanthocarpum*	Solanaceae	Kantakari	Fruit,	Hair loss remedy, diabetes, inflammation, cancer
31	*Solanum nigrum*	Solanaceae	Macoy	Leaves, fruits	Fever, diaarhea, eye disease
32	*Sonchus asper*	Compositae	Dudhi	Leaf	Manstrual
33	*Tephrosia purpurea*	Fabaceae	Masa	Whole plant	Jaundice, kidney disorder
34	*Tribulus terrestris*	Zygophyllaceae	Gokhru	Fruit and seeds	Treat female sterlity
35	*Tridax procumbens* L	Asteraceae	Sadahari	Whole arial part	Antifungal, diarrhea, used in blood cloting
36	*Withania somnifera* (L.)	Solanaceae)	Dunal	Whole plant	Leaves used against body ache. Seeds used joint pain
37	*Ziziphus jujube.*	Rhamnaceae	Ber	Root, fruit	Appetizer, Food digestive

List of some important wild herbs of hadoti region



Conclusion

Since ages, conservation of natural resources has been important part of communities in India. The survey indicates that hadoti region is rich in medicinal flora. It is an important area for diversity of plants for in terms of health care.

The region's medicinal plant resources are becoming less abundant due to overuse of some species, illegal trade, road construction, and other developmental projects (that causes destruction of their habitats). The results of the current study highlight the need for natural treatments to be verified by science. This will not only acknowledge this unrecorded knowledge but also aid in the preservation of such precious, rapidly declining medicinal plants.

The effectiveness of the numerous medicinal plants will need to be submitted to functional and molecular confirmation, and further research is necessary to fully understand these extremely useful findings. Finally, this study provided evidence of the use of plant products by a population in an uninvestigated part of India.

It is reasonable to draw the conclusion that the tribal people in the examined area employed wild herbs for a variety of uses, including medical and culinary ones.

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