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AN ETHNO-BOTANICAL STUDY OF MEDICINAL PLANTS IN NARHAR FOREST AREA (RANILO JOHAD) OF JHUNJHUNU (RAJASTHAN)

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Abstract:

Jhunjhunu district, located in the Indian state of Rajasthan, possesses a rich diversity of flora, including numerous ethno-medicinal plants. These plants have been traditionally used by the local communities for various medicinal purposes, contributing significantly to the indigenous healthcare system. This paper aims to document the ethno-medicinal plants of Jhunjhunu district, highlighting their traditional uses, medicinal properties, and conservation status. Through field surveys, interviews with local healers, and review of ethnobotanical literature, a comprehensive list of ethno-medicinal plants has been compiled. Additionally, the paper discusses the importance of conserving these plant species for sustainable healthcare practices and biodiversity conservation in the region.

Keywords: Ethno-medicinal plants, Jhunjhunu district, Rajasthan, Traditional medicine, Biodiversity conservation

Introduction:

The Narhar forest area, known colloquially as Ranilo Johad, nestled within the picturesque landscape of Jhunjhunu district in Rajasthan, India, stands as a sanctuary of biodiversity and cultural heritage [1]. This region, characterized by its arid climate and rugged terrain, harbors a treasure trove of medicinal plants that have been integral to the traditional healing practices of local communities for centuries [2]. The ethno-botanical study proposed herein seeks to unravel the mysteries of this botanical haven, documenting the medicinal flora of Narhar forest area and shedding light on its traditional uses by indigenous inhabitants. Jhunjhunu district, situated in the heart of the Thar Desert, is renowned for its rich cultural tapestry and ecological diversity. Despite the harsh climatic conditions, the region boasts a plethora of plant species, many of which possess potent medicinal properties. The Narhar forest area, encompassing Ranilo Johad, represents a microcosm of this botanical wealth, serving as a vital ecosystem supporting diverse plant life and sustaining local livelihoods. The ethno-botanical study of medicinal plants in Narhar forest area holds profound significance for various reasons. The traditional knowledge associated with medicinal plants forms an invaluable part of the cultural heritage of indigenous communities in Jhunjhunu. Documenting this knowledge is essential for preserving cultural traditions and fostering intergenerational knowledge transmission [3-9]. In rural areas like Jhunjhunu, where access to modern healthcare facilities may be limited, traditional medicinal plants

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serve as primary healthcare resources. Understanding the medicinal properties and uses of local flora can enhance healthcare accessibility and affordability for marginalized communities. Narhar forest area is a biodiversity hotspot, harboring numerous endemic and threatened plant species [10-14]. By documenting the medicinal plants found in this region, we can contribute to biodiversity conservation efforts and promote sustainable management of natural resources [15-17]. The study of medicinal plants in Narhar forest area has the potential to uncover novel bioactive compounds with pharmaceutical applications. By exploring the traditional uses of these plants, we can identify promising candidates for drug discovery and contribute to the development of new therapeutic agents [18-20]. The primary objectives of this ethno-botanical study are to identify and document the medicinal plants present in Narhar forest area (Ranilo Johad) of Jhunjhunu district, Rajasthan.

Methodology:

The study employed a multi-disciplinary approach, combining ethnographic fieldwork, botanical surveys, and literature review. A district in the Ranilo johad area situated in Jhunjhunu, Rajasthan [5]. The district is mostly made up of sand dunes, but there are also some hills in some areas. Jhunjhunu is located between latitudes 27 21' and 28 12' north and longitudes 74 44' and 75 25' east [6-7]. The area was studied from January to February during the winter, from May to June during the summer, from August to September during the monsoon for the data collection and inspections of medicinal plants [22-23]. Interviews with herbal healers, traders, doctors, and other locals were conducted. Numerous plants were chosen on field trips to several areas, and species were identified with the use of literature sources and herbarium resources [24-28]. Various medical texts were also cited. Ayurvedic texts, such as Vanoshadhi Chandrodaya, were also cross-referenced. To identify the plants, one of the indigenous floras was also examined [29].

Figure 1: Map of Jhunjhunu district Rajasthan, India

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Results and Discussion:

The current study shows that there is a wide variety of ethnomedicinal plants in Jhunjhunu, Rajasthan. Fifty-six (56) different namely *Abrus precatorius, Acacia nilotica, Acacia senegal (Wild), Achyranthus asper, Abutilon indicum, Acacia catechu, Aegle marmelos, Aerva javanica (Burm. f.), Shult Aloe vera, Amaranthus spinosus, Argemo mexicana, Asparagus adscendens, Asparagus racemosus Willd., Azadirachta indica, Barleria prionitis, Boerhavia diffusa, Gossypium herbaceum, Calotropis procera, Capparis decidua, Cassia occidentalis, Cucumis melo, Cynodon dactylon, Cleome gynandra, Commelina benghalensis, Cyperus rotundus, Cyperus triceps, Desmostachya bipinnata, Sphaeranthus indicus, Emblica officinales, Gaertn, Euphorbia hirta, Evolvulus alsinoides, Fagonia indica, Ficus benghalensis, Ficus religiosa, Leptadenia pyrotechnica, Luffa aegyptiaca, Leucas aspera, Chenopodium album, Citrullus colocynthis, Momordica balsamina, Moringa oleifera, Nama-demissum, Ocimum sanctum, Pedalium murex, Phyllanthus niruri, Prosopis cineraria, Solanum indicum, Solanum nigrum, Ricinus communis, Salvadora persica, Tecomella undulata, Tinospora cordifolia, Tribulus terrestris, Withania somnifera, Ziziphus mauritiana, Ziziphus nummularia.*, plant families were gathered from the research region. Every plant possesses some sort of medicinal quality (Table 1) and is used to treat a wide range of illnesses, including diabetes, jaundice, arthritis, skin disorders, fever, respiratory conditions, anemia, constipation, liver diseases, leprosy, rheumatism, dysentery, eye conditions, toothaches, genital tract infections, tuberculosis, rejuvenate, liver complaints, sunstroke, malarial, fever, blood vitalizing disorder, sexual disorders, gonorrhoea, hair fall, paralysis, skin conditions, fever, cough, cold, jaundice, nerve tonic, leprosy, anti-allergic, joint pain, tetanus, and rabies, plants were known to have anti-cancer, antibacterial, antifungal, antiviral activities and many more [13-18]. Plant healers employ the dried and stored ethnomedicinal plants for other purposes. There are many therapeutic plants in Jhunjhunu, Rajasthan, India. Certain species, such as Ephedra foliata Boiss & Kotschy ex. Boiss, are uncommon and under peril [30]. These species are extremely common in Jhunjhunu, but because of their great demand, they are currently rare and endangered [19]. Plants such as *Cassia occidentalis* having anti-cancer activity, lots of research is going on to discover new and novel drugs to treat tumor and different types cancers. It is advisable to extract these components from the plants and to do further research to find out effective ways to treat cancer patients. *Nama-demissum* also known to treat cancer as per the research with a 20.7% inhibition rate, the hexane fraction of *Nama demissum* was more than three times as active against HeLa cells than 3T3 cells. Among the most active plants surveyed was *Nama demissum* one of the medicinal plant having good pharmaceutical anticancer activity [20-21]. *Ficus benghalensis* and *Leptadenia pyrotechnica* has a wide range of applications, including antifungal, antibacterial, anticancer, antioxidant, wound healing, anthelmintic, antiatheroscleretic, hypolipidemic, antdiabetic, and hepatoprotective properties. Few species are extremely common in Jhunjhunu. Certain exotic plants, like Prosopis juliflora, are so common that they are starting to pose a threat to native or local plant species. Therefore, the primary goal of this study piece is to raise public awareness of the therapeutic plants found in the area. The traditional medical system uses nearly every part of the plant to treat a variety of illnesses.

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This research study just serves as a hint to scientists to refocus their efforts on the Jhunjhunu deserts, specifically to explore the potential of currently available plants for healing in order to advance the field of contemporary medicine.

The area's expertise of using plants medicinally is fast vanishing since the younger generation is not interested in using medicinal plants, and those that are educated about them tend to keep it to themselves. Therefore, in order to properly utilize natural resources, indigenous plant use requires conservation methods and additional research.

Argemone maxicana

Abrus precatorius

Echinopes

Boerhavia diffusa

Leptadaenia fruit

Portulaca pilosa

Luffa aegyptiaca

Leptadaenia pyrotechnica

Abutilon indicum

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Table 1: List of ethnomedicinal plant species found in Jhunjhunu district, Rajasthan, India.

S.N.	Botanical Name	Local Name	Parts Use	Ethnomedicinal uses
1.	*Abrus precatorius*	Chirmi /Ratti	Leaves, seed, root	Paralysis, skin conditions, fever, cough, cold, jaundice, nerve tonic, leprosy, anti-allergic, joint pain, tetanus, and rabies.
2.	*Acacia nilotica*	Babul	Bark, latex, gum, pods, leaves and seeds	Cholera, burns, genital tract infections in the urine, toothaches, colic, scorpion stings, and ulcers.
3.	*Acacia senegal (Wild)*	Kumbat	Bark, flower, gum	Diabetes, intestinal mucous, haemorrhage, demulcent, emollient, and inflammation
4.	*Achyranthus asper*	Chirchita /Latjira	Leaves, root, seed, whole plant	bladder stones, hydrophobia, rheumatoid arthritis, dropsy, eruption, colic, gonorrhea, pneumonia, and urinary difficulties
5.	*Abutilon indicum*	Kanghi	Root, bark, leaf, seed	diuretic, febrifuge, alexiteric, uterine haemorrhagic discharges, toothache, lumbago, boils, chest discomfort, bronchitis, piles
6.	*Acacia catechu*	Katha	Leaves, stem, bark, root	Menorrhea, asthma, gonorrhoea, tumours, and vomiting
7.	*Aegle marmelos*	Beal	Bark, leaf, fruit	Heart palpitations, diarrhea, constipation, hypochondriasis, laxatives, febrifuges, ophthalmology, dysentery
8.	*Aerva javanica*	Bui	Whole plant	Decoction to induce urination in cases of intestinal and edema diseases
9.	*Aloe vera*	Gheeganwar	Whole plant	Chronic bronchitis, asthma, rheumatism, arthritis, and digestive difficulties
10.	*Amaranthus spinosus*	Choulai	Leaves, roots	constipation, eczema, leucorrhoea, sores, boils, and diuretics
11.	*Argemone mexicana*	Satyanasi	Whole plant	Diuretic, purgative, aphrodisiac, strangury, leucoderma, cure piles, scorpion bite, constipation flatulence, respiratory diseases,

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				blood purifier, joint pain
12.	*Asparagus adscendens*	Safed musli	Rhizome	Rejuvenate, blood vitalizing disorder, burning sensation
13.	*Asparagus racemosus Willd.*	Satavari	Tuber	Cold, tonic, galactogogue,anaemia, weakness, aging debility, dysentery, joint pain, epilepsy, tuberculosis
14.	*Azadirachta indica*	Neem	Leaf, flower, fruit, bark, seed, oil	Blood purifier, antitoxin, antibacterial, antiviral herb, skin diseases, blood disorder, rheumatism, diabetes, scabies, malarial fever
15.	*Barleria prionitis*	Bajradanti	Leaf, root, Whole plant	Cust, rat poisoning, nervous system, diuretic, fever, rheumatism, liver disease, indigestion, constipation, jaundice, toothache, joint pain, toothache
16.	*Boerhavia diffusa*	Sata/ Punarnava	Whole Plant	Anaemia, leucorrhoea, inflammation, blood purifier, scorpion bite, promote urination, diarrhoea, vomiting, night blindness
17.	*Gossypium herbaceum*	Cotton flower	Whole plant	placenta and to enhance milk, as well as for nausea, fevers, headaches, and gastrointestinal problems such diarrhea and bleeding.
18.	*Calotropis procera*	Aak	Roots, bark, flowers, latex, leaf	Malarial fever, remedy for burn injuries, rheumatism, mumps, sinus fistula, snake bites, and bodily aches
19.	*Capparis decidua*	Kair	Root, bark, flowers, fruit	treatment for inflammation, coughs, and asthma; roots are used for fever, and buds are utilized for boils.
20.	*Cassia occidentalis*	Kesundo	Root, Bark	action that is hepatoprotective, antifungal, antidiabetic, anti-inflammatory, anti-cancer, and antimutagenic.
21.	*Cucumis melo*	Kachri	Fruits, seeds	digestive, boost immunity, bronchitis, ophthalmia, persistent fever, and burning feeling
22.	*Cynodon dactylon*	Dubghas	Whole plant,	Piles, Chronic gleet, stomach-ache, expectorant, analgesic, and laxative

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			roots	
23.	*Cleome gynandra*	Safed hulhul	Leaves, seeds, root	Compounds with anti-inflammatory, anti-tumor, immunomodulatory, free radical-scavenging, and antidiabetic properties.
24.	*Commelina benghalensis*	Moriya bati	Whole plant	Leprosy, liver complaints, sunstroke, malarial fever
25.	*Cyperus rotundus*	Nagarmoth	Tuber	malaria, pyresis, constipation, diabetes, inflammation, and gastrointestinal and stomach issues
26.	*Cyperus triceps*	Chuhe kiDadi	Roots	hepatoprotective, antibacterial, antioxidant, and antidiabetic
27.	*Desmostachya bipinnata*	Kusha	Whole plant, Root	used as a diuretic and to treat menorrhagia and dysentery
28.	*Emblica officinales Gaertn*	Amalaki	Dried fruit	Menstrual cramps asthma, bleeding, jaundice, dyspepsia, rheumatic pains, and nausea
29.	*Euphorbia hirta*	Laldhudi	Aerial part	typhoid, ulcers, eczema, scabies, pimples, worms, asthma, bronchial infection, vomiting
30.	*Evolvulus alsinoides*	Vishnukranta	Whole plant	Ayurvedic medicine to treat cough, cold, and fever
31.	*Fagonia indica*	Dhamaso	Whole plant	antioxidant, antimicrobial, astringent, anti-tumor, analgesic, anti-allergic, and beneficial for skin conditions
32.	*Ficus benghalensis*	Bargad	Roots, latex fruits, buds leaves,	diarrhea, a cough, rheumatism, toxemia, diabetes, lumbago, eye tonic, broken bone, vomiting, skin conditions, wounds, gonorrhea, and infertility in women
33.	*Ficus religiosa*	Pipal	Bark, fruit, latex, tender leaf	antiulcer, antimicrobial, and antidiabetic; used to treat skin conditions and gonorrhea
34.	*Leptadenia pyrotechnica*	Khimp	Whole plant	wound healing, skin conditions, diabetes, rheumatoid arthritis, stomach issues, and constipation

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35.	*Luffa aegyptiaca*	Sponge gourd	Fruit, leaves	controlling and preventing colds. Additionally, it is utilized to alleviate swelling nostrils and sinus problems. Some people take it to treat chest, joint, and muscular discomfort
36.	*Leucas aspera*	Paniharin	Leaves, flowers	Their juice is utilized as an antibacterial medication for chronic skin eruptions, psoriasis, rheumatism, and scabies.
37.	*Chenopodium album*	Bathua	Seeds	Historically employed as an anthelmentic against round and hookworms, blood purifier, diuretic, sedative, hepatoprotective, and antiscorbutic laxative
38.	*Citrullus colocynthis*	Gartoomba/ Tumba	Roots, fruits	Jaundice, purgative, treatment for warts, scrotal enlargement, early ejaculation, osteoarthritis, earache, and slowness
39.	*Momordi ca balsamina*	Karela	Fruits	Cathartic, diabetes
40.	*Moringa oleifera*	Moringa	Leaves,fruits	Because of the high levels of polyphenols in its leaves and blossoms, it shields the liver against oxidation, damage, and toxicity.
41.	*Ocimum sanctum*	Tulsi	Whole plant	Suggested for the management of skin conditions, malaria, diarrhea, dysentery, bronchitis, and bronchial asthma
42.	*Pedalium murex*	Bada Gokhru	Fruits, leaves, root	Dissolution and avoidance of kidney stone development
43.	*Phyllanthus niruri*	Bhui-anwla	Whole plant	Urine-genital disease, gonorrhoea, dropsy
44.	*Prosopis cineraria*	Khejri/janti	Inflorescen ce, flowers, bark, fruit	leprosy, diarrhea, earache, asthma, leucoderma, and dyspepsia
45.	*Solanum indicum*	-	Seeds	Toothache, anorexia, dysuria, alopecia, digestion, cough
46.	*Solanum nigrum*	Makoy	Whole plant	Heal wingworms, tonsillitis, toothaches, pneumonia, soreness, inflammation, and fever in addition to acting as an antipyretic, diuretic, and hepaprotective.

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47.	*Ricinus communis*	Erand	Leaves, seeds,oil, root	Rheumatism, healing properties, cure paralysis, rheumatism, joint pain, backache, jaundice, cure piles, wound
48.	*Salvadora persica*	Jhal/ Chotapilu	Roots, bark,seed, leaf, fruit	Asthma, gonorrhoea, gastric problems, rheumatism, scurvy, blisters, tumours, ascites, joint pain, indigestion,pyorrhoea
49.	*Tecomella undulata*	Rohida	Bark	Syphilis and leucorrhoea, jaundice, eye disease, cough, cold, fever, skin disease, eczema, abscesses, tooth brush,fever
50.	*Tinospora cordifolia*	Guduchi	Stem	most adaptable Herbs for rejuvenation, diabetes, rheumatism, jaundice, chronic fever, malaria, vomiting, gout, urinary issues, and leucorrhoea
51.	*Tribulus terrestris*	Gokshur	Roots, leaves,fruits	gonorrhea, haematuria, hair growth, rheumatoid arthritis, diuretics, tonics, cough, diabetes, scabies, stomach issues, and increased sexual power
52.	*Withania somnifera*	Ashawgandh a	Roots, leaves	Sexually transmitted infections, respiratory infections, urino-genital problems, ulcers, diuretic, blood purifier, inflammatory, boils, eczema, rheumatic pain, skin disease, leucorrhoea, rickets, tumors, and antibacterial
53.	*Ziziphus mauritiana*	Ber/ bordi	Wholeplant	Gum inflammation, pain, wound healing, blood purifier, constipation, pyorrhea, fever, skin condition, cold, and diarrhea
54.	*Ziziphus nummularia*	Jhaahberi	Leaves, fruits	Asthma, eye illness, bone grafting, toothache, cold, cough, paralysis, pyorrhea, dysentery, hair loss, skin disease, regularize menstruation are some of the symptoms of biliousness.
55.	*Portulaca pilosa*	Penawar	Leaves, whole plant	Antiseptic, febrifuge, vermifuge, and anti-rheumatic

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Summary:

In summary, the ethno-botanical study conducted in Narhar forest area (Ranilo Johad) of Jhunjhunu, Rajasthan, has provided valuable insights into the rich biodiversity and traditional knowledge associated with medicinal plants in the region. Through extensive field surveys, ethnographic interviews, and botanical identification, we have documented a diverse array of plant species with significant medicinal properties. The traditional uses of these plants, as recorded from local communities and indigenous healers, underscore the deep-rooted connection between nature and human health in this ecologically vibrant landscape.

Furthermore, the study highlights the importance of conserving the medicinal flora of Narhar forest area for cultural preservation, healthcare accessibility, biodiversity conservation, and potential drug discovery. By recognizing the value of indigenous knowledge and promoting sustainable management practices, we can ensure the continued availability of medicinal plants for future generations while safeguarding the fragile ecosystems they inhabit. Further experimental research for therapeutic use of these plants can be planned to find out more novel activities such as anti-tumor, anti-cancerous activities. Moving forward, it is imperative to integrate the findings of this study into conservation strategies, healthcare policies, and community-based initiatives aimed at preserving traditional wisdom and protecting the natural resources of Narhar forest area. Collaboration between researchers, policymakers, local communities, and conservation organizations will be essential in achieving these goals and fostering holistic approaches to ethno-botanical research and biodiversity conservation in Rajasthan and beyond.

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