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Ethno-medicinal study of some plants in Deeg District, Rajasthan

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Abstract
This study of ethno-medicinal uses of 53 plant species from Deeg district situated in Rajasthan. Whole plant and it`s plant parts like roots, leaves, stem, flower, seeds, bark etc. are used for the treatment of various diseases. All the plants have some medicinal property and used in curing many diseases like kidney disorder, urinary disorder, diabetes, jaundice, arthritis, skin disorder, fever, respiratory diseases, anaemia, constipation, liver diseases, leprosy, rheumatism, dysentery, eye diseases, tooth ache etc. This study is important for maintaining traditional knowledge, finding new directions for medicine development and encouraging the sustainable use of regional biodiversity.

Keywords: Ethnobotany, medicinal plants, traditional knowledge, regional biodiversity

Introduction
Plants have not only been used for conventional medicinal purposes but also in the development, innovation, and improvement of modern medicinal medicines. Primarily medicinal medicines are compounds extracted from plants or their derivatives. Nowadays, the conventional knowledge regrading medicinal plants is helpful not only in health care but also in the development and innovation of the modern-day pharmaceuticals and therapeutically used drugs. The traditional knowledge is lost at a quicker rate since it is considered to be the property of the elderly people, the tribal communities and the younger generation is not interested in acquiring this treasure of traditional knowledge [1, 2]. India and China are two of the foremost countries in Asia, which possess the richest collections of recorded and relatively well-documented medicinal plants [3]. It has been estimated that nearly 80% of the total population in the world, on a daily basis, depends on traditional medicine and their products for their healthcare needs. [4, 5]. Traditional medicines are comparatively less expensive than the modern medicines and perhaps the sole natural treatment available and accessible in the rural communities in developing countries [6, 7]. Ethno-medicinal crops are usually applied in the healing of diverse diseases such as diabetes, dysentery, typhoid, and jaundice. Diverse plant parts such as roots, leaves, fruits and flowers are applied for curing jaundice. In addition, jaundice is not a disease that appears in the liver, implying suppression of the functioning of the liver [8, 9].

Study Area
Deeg district is strategically situated in the northern part of Rajasthan, India, nestled within the Bharatpur division. Positioned approximately at 27.1°N Latitude and 77.0°E longitude, Deeg is positioned close to the border with Uttar Pradesh, a neighbouring state to the east. It lies about 200 kilometres south of the state capital, Jaipur, and approximately 60 kilometres from Bharatpur Divisional headquarter. This location places Deeg in the semi-arid zone of Rajasthan, characterized by its distinctive climatic and ecological conditions, which influence the local flora and traditional practices. Its placement at the intersection of the desert and fertile plains of northern India underscores its unique position in the regional landscape, making it a critical area for studying the interaction between indigenous knowledge and environmental adaptation. The semi-arid environment, varied soil types, and rich cultural legacy of the Deeg district offer an exceptional and worthwhile setting for researching ethno-medicinal plants. The region is ideally situated for investigating the medicinal potential of indigenous plants and comprehending their role in traditional healthcare practices because of

the mix of traditional knowledge and the ecological features of area. Blocks and tehsils, which are administrative divisions of the Deeg district, are essential for planning and carrying out ethno-medical plant research. The principal divisions of administration consist of 6 subdivisions and 9 tehsils which are mentioned in Administrative Map.

Fig 1: Administrative map of district Deeg, Rajasthan. (Adapted from: https://rajasthannewmap.com/2024/02/19/deeg-district-history-culture-geography/#google_vignette**)**

Methodology

A field study of the survey area was conducted between the period January 2024 to April 2024. Field trips were used to collect the plant specimens and identify them using regional flora and following standard literature [10, 11]. The plant samples collected were dried, pressed and mounted on standard size herbarium sheets, Ethnomedicinal data regarding medicinal properties, local name of plants, their usages and parts used was gathered through interviewing priests, local villagers, village Sarpanch, herbal healer, traditional healers, ayurvedic doctors and tribal people. To test the authenticity of information collected on the field, repetitive verification of information from different informants and at various times was conducted.

Table 1: Plants List with ethnomedicinal property

S. No.	Botanical name	Family	Local name	Plant part	Medicinal uses
1	*Acacia nilotica*	Fabaceae	Babul	Bark/ Leaves	Diarrhea, Intestinal pain, Healing wounds.
2	*Acacia catechu*	Fabaceae	Khair / Katha	Gum	Stomach-ache, leprosy, Diarrhea, eruptions of the skin, Asthma, Cough.
3	*Albizia lebbeck*	Fabaceae	Siris Tree	Leaves	Abdominal tumors, Conjunctivitis, Cough, Lung ailments.
4	*Aloe barbadensis*	Liliaceae	Aloe-vera	Pulp of leaves	Liver disease, Skin problems, hair problems, wound healing.
5	*Argemone mexicana*	Paperveraceae	Mexican poppy	Leaves decoction	Malaria Fever, Skin problems, Ulcer.
6	*Azadirachta indica*	Meliaceae	Neem	Leaves/ Stem / Bark	Blood purification, Chronic fever, Antim skin diseases, Insect repellent.
7	*Boerhavia diffusa*	Nyctaginaceae	Punarnava	Leaves/ Root	Diuretic, Liver complications, Snake bite, Jaundice.
8	*Bauhinia variegata*	Fabaceae	Kachnar	Flowers / Leaves/ Bark	Diarrhea, Leprosy, Laxative, Skin problems, ulcers, gastrotestinal problem.
9	*Butea monosperma*	Fabaceae	Palash Dhak/ Jangal ki aag	Gum/ Stem/ Bark/ Seeds/ Leaves	Guinea worm, Chronic dysentery, dyspepsia flatulence, leprosy, sprain, Fracture (after delivery- kamarkas)
10	*Calotropis procera*	Asclepiadaceae	Aak	Leaves/ Stem / Bark	Swelling, Coughing, Malaria, Digestive disorders, Skin diseases.
11	*Calotropis gigantea*	Asclepiadaceae	Madar	Bark / Latex	Eye flu, Diarrhea, Vomiting, nausea, fever Cough, Skin disease.
12	*Cannabis sativa*	Cannabaceae	Ganja	Leaves	Piles, Pain relief, Multiple sclerosis, Anxiety.
13	*Cassia fistula*	Fabaceae	Amaltas	Stem / Bark	Diarrhea, inflammatory, Antimicrobial, Laxative.

14	*Cassia occidentalis*	Fabaceae	Kasaunda	Leaves	Fractured bone, typhoid, Hepatitis, Oral, Gum problems.
15	*Cassia tora*	Fabaceae	Phouadia / takla / tora /Ringworm Plant	Seeds	Galactagogue, Ring worm, Asthma.
16	*Catharanthus roseus*	Apocynaceae	Sadabahar	Seeds	Diabetes, Bleeding, anticancer, blood pressure and skin conditions
17	*Citrus medica*	Rutaceae	Baranimbu/ Bijaura	Fruit / Leaves	Scurvy, eczema, Blister, Stomach-ache, Ringworm, pulmonary and intestinal trouble.
18	*Centella asiatica*	Apiaceae	Brahmi	Leaves /Stem	Purifies of blood, Brain tonic, Diuretic, Leprosy promote healthy skin and hair.
19	*Cleome gynandra*	Capparaceae	Hulhul / Gandhuli	Whole plant	Skin diseases, diarrhea, toothache, headache, Pain Relief, neuralgia, stomach pain.
20	*Cleome viscosa*	Capparaceae	Bagra	Leaves / Stem	Scabies, ringworm, boils, Malaria, treating Earache, Wound healing and ulcer.
21	*Cocculus hirsutus*	Menispermaceae	Patalgarudi / Jaljamni	Whole plant	Stomach disorders, Menstrual Cycle, Paralysis, Galactagogue, urinary issues.
22	*Cordia dichotoma*	Boraginaceae	Lasoda/lakh soda	Fruit / Seed Kernel	indigestion, Antibacterial, Laxative, ulcers, nasal and bronchial congestion, cough.
23	*Cuscuta reflexa*	Convolvulaceae	Amar Bel/Akash Bel	Whole plant	Jaundice, gout, constipation, Bilious disorder, Purgative, hair growth.
24	*Datura innoxia*	Solanaceae	Dhatura	Leaves	sickness, nausea, gout, Asthma, Pus, Pain Relief, motion.
25	*Datura stramonium*	Solanaceae	Devil`s trumpet	Fruits/Seeds	Diarrhoea, respiratory disorders, stimulate central nervous system, alopecia, tooth-ache, dental and skin infections.
26	*Dalbergia sisso*	Fabaceae	Sheesham	Leaves	Laxative, osteoporosis, ulcer, spermatogenesis, microbial infections, skin disorders, diabetes.
27	*Eclipta alba*	Asteraceae	Bhringraj	Whole Plant	Dysentery, Snake bite, Stomach-ache, Abdominal Pain, Skin and hair problems.
28	*Emblica officinalis*	Euphorbiaceae	Ambla	Seed, Fruit	Fruit juice is used in treatment of the eye and heart. Scurvy, rheumatism, diarrhea. Seeds are used in the treatment of asthma, bronchitis, leukorrhea, cholesterol reduction, syphilis cancer prevention, Hair problems.
29	*Euphorbia caducifolia*	Euphorbiaceae	Thor / Danda	Root, Latex	Abortifacient, abortifacient, Wound healing, Cutaneous eruption, skin diseases.
30	*Euphorbia hirta*	Euphorbiaceae	Asthma weed	Root, Leaves, Latex	Decoction of leaves is used in asthma, cough, bronchitis, eczema and spermatorrhoea. Latex of plants is used in warts and skin diseases (leukodermal spots). Paste of root with honey increase lactation.
31	*Ficus benghalensis*	Moraceae	Bargad/ bad	Leaf extract, Latex, Bark	Diarrhea, Health tonic, leprosy, leaves used in treatment of fever. Latex used for Aphrodisiac, vulnerary, nose disease, gonorrhoea and for piles, Bark is used in vaginal infection, wound healing, reducing swelling.
32	*Ficus racemosa*	Moraceae	Gular	Stem/ Bark / Bark	Health tonic, Digestive issues, Haemorrhoids respiratory problems, wound healing.
33	*Holoptelia integrifolia*	Ulmaceae	Bander bati / Papri	Leaves	Leave is used for skin disease, ringworm and chewed to cure mouth sores.
34	*Helitropium indicum*	Boraginaceae	Hathi Sundi or Hathi Sundi ka Ghass	Leaves	Wounds, Skin ulcer, Conjunctivitis.
35	*Hibiscus rosa-sinensis*	Malvaceae	Gudhal / Japa Pusp	Flower decoction	Hair tonic, Wound healing, fever, Cough and diabetes.
36	*Latana camara*	Verbenaceae	Tantani / Chandi kaplant/ Raimuniya	Leaves	Rheumatism, Itching, ulcer, cancer, chicken pox and measles.
37	*Lawsonia inermis*	Lytheraceae	Henna/ Mehendi	Leaves	Coolant, conditioner, Giddiness, Vertigo, paste of leaves applied on soles relieves burning sensation. The bark is useful in the treatment of liver enlargement and jaundice.
38	*Madhuca indica*	Sapotaceae	Mahwa	Flower / Fruit / Latex	Cough, Cold, Bronchitis, itchy Skin, rheumatism and ulcer.
39	*Mimosa pudica*	Fabaceae	Touch-me-not plant/ chhui-mui	Leaves	Wounds, Skin problems, Gynaecological Disorders, cancer, diabetes, obesity and urinary infection.
40	*Moringa oleifera*	Moringaceae	Sahjan	Pod / Bark /Seed	Rheumatic pain, paste of leaves heals wounds. Flowers are used as tonic and diuretic. Seed oil is applied locally in acute rheumatism; The unripe pod is eaten as a vegetable and is useful as a circulatory stimulant.
41	*Nerium indicum*	Apocynaceae	Kaner	Leaves / Flowers	Scabies, Anti-cancerous, Liver Malaria, Swelling, Kidney disease, nervous disorders and snake bite.
42	*Nyctanthes arbortristis*	Nyctanthaceae	Harsingar/ Parijat	Leaves / Seeds	Scurvy, Laxative, Rheumatism, Fever, Diuretic, Leaves are antibacterial, anti-fungal, anti-inflammatory and anti-pyretic.
43	*Ocimum americanum*	Lamiaceae	Hoary Basil or Lime Basil	Whole Plant	Whole plant is used to cure toothache, earache, headache. cough and fever.
44	*Ocimum basilicum*	Lamiaceae	Sweet Basil/ Holy	Leaves	Leaves extract with honey, used orally to cure cough, cold and

			Basil		fever.
45	*Phoenix sylvestris*	Arecaceae	Janglikhajur	Fruit / Sap	Gum problems, Toothache, cooling, Laxative, abdominal complaints, Fever, constipation.
46	*Pithecellobium dulce*	Fabaceae	Jangal jalebi	Bark / Stem	Dysentery, haemorrhages, diarrhea, indigestion and toothache.
47	*Pongamia pinnata*	Fabaceae	Karanj	Seed oil	Dental caries, Rheumatic pain, Boils skin problems, piles and Ulcer.
48	*Ricinus communis*	Euphorbiaceae	Aerandi	Leaves / Oil	Eye lubricant, abdominal pain, arthritis, backache, toothache Laxative, Vermifuge, swelling and to start labour pain.
49	*Solanum nigrum*	Solanaceae	Makoi	Leaves	menstrual cramps, toothache, asthma, whooping Cough, intestinal issues Liver diseases, skin diseases and Inflammation.
50	*Syzygiumcumini*	Myrtaceae	Jamun / jaman	Bark / Leaves / Seeds	Diabetes, diarrhea, Vomiting, Chronic strengthening the teeth and gums.
51	*Tamarindus indica*	Combretaceae	Imli	Stem Bark	Digestive issues, Fever, Infections, good for heart health, wound healing, neurogenerative diseases, Diarrhea, Dysentery.
52	*Terminalia arjuna*	Combretaceae	Arjuna	Leaves/ Seed	High blood Pressure, Cardiac tonic Abdomen pain, Skin eruptions, , earache, obesity, diabetes, and constipation.
53	*Withania sominifera*	Solanaceae	Ashwagandha	Whole plant	Diabetes, hypertension, stress, arthritic diseases Constipation, Rheumatism, Stronger nervous system, Asthma and cancer.

Result and discussion

Total 53 medicinal plant species belonging to 44 genera and 28 families were recognized and documented. All reported species were angiosperms, which include monocotyledonous and dicotyledonous groups. Fabaceae were the most dominant family (with 12 species), followed by Solanaceae and Euphorbiaceae (4 species each), Liliaceae (3 species), Combretaceae, Moraceae, Apocynaceae, Boraginaceae, Capparaceae, Asclepiadaceae (2 species each), while other families were represented by one species only. The present paper reveal that Deeg is rich in ethnomedicinal plant diversity. All the plants have some medicinal property and used in curing many diseases like kidney disorder, urinary disorder, diabetes, jaundice, arthritis, skin disorder, fever, respiratory diseases, anaemia, constipation, liver diseases, leprosy, rheumatism, dysentery, eye diseases, tooth ache etc. The objectives of this paper are to inventory and analyze the ethno-medicinal plants of Deeg District, categorize them according to their applications and medicinal qualities, and look into the phytochemical and biological activities of these plants.

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