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Wild medicinal plants of Nahargarh Wildlife Sanctuary, Jaipur

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Abstract

Nahargarh wildlife Sanctuary, located in the Jaipur district, has an abundance of medicinal plants. The rural communities of study area possess extensive knowledge of the ethnomedical plants found in their surroundings. The region is predominantly inhabited by rural people. This research examines 41 wild plant species belonging to 38 genera and 25 families utilised for ethnomedicine by the people of study area. The dominant families are Moraceae (4), Fabaceae (3), Solanaceae (3), Cucurbitaceae (3) and Euphorbiaceae (4). Plant components, including stem, roots, bark, leaves, seeds, flowers, pods, gum, and latex, can be used to cure various ailments. This study aims to raise knowledge about the ethnomedical significance of plants and their uses.

Key words : Ethnobotany, study area, ethnomedicine, traditional knowledge, wild plants.

The wild plants involve a significant interplay between human activity and the environment. Over the last few centuries, there has been a growing interest in wild plants for various purposes, including food, medicine, and ecological conservation[6]. In more recent times, there has been a resurgence of interest in native plants for their ecological benefits and cultural significance, with a focus on preserving biodiversity and traditional knowledge[11].

The WHO estimates that more than 80% of people worldwide rely on traditional medicine, which is mostly plant-based, to address their basic medical requirements. In India, the harvesting and processing of medicinal plants and plant derivatives is a significant contributor to the national economy, providing both full and part-time employment. One of the most significant sources of medicines is plants. Plants have been used as remedies from ancient times. The Rig Veda appears to include the oldest records of the use of plants as medicines in India, including references to the medicinal qualities of certain herbs. Medicinal plants are widely used in two different fields of health management, modern and traditional system of medicine, across the

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world. The two primary streams that comprise the traditional medical system are (1) the local, folk, or tribal stream and (2) organised Indian medical system which includes Ayurveda, Siddha, and Unani[13]. It is estimated that over 3000 plant species in India have medicinal properties[16].

Study area :

The Nahargarh Wildlife Sanctuary (Fig. 1) is situated, on the northern outskirts of Jaipur city (Rajasthan) and in the northeastern section of the Aravalli Hills. It is only present between the latitudes of 75° 45' and 77° 05' East and the longitudes of 26° 15' and 28° 45' North. On the Delhi Highway, the Sanctuary is situated 3 kilometres from Amer Town. Jaipur lies in India's semi-arid zone, which has high temperatures, limited rainfall and a pleasant winter. Nahargarh tract's climate is subtropical, with defined summer, monsoon and winter seasons. The average temperature in Jaipur is 36 degrees Celsius, with the warmest and coldest months being January and June, respectively at around 18 °C and 40 °C.The Nahargarh Wildlife Sanctuary comprises 13 villages (Gazette of 8th March 2019). The Nahargarh-Amer Forest Range falls within the wide category of "Dry Tropical Forests" (According to H.G. Champion and S.K. Seth's classification of Indian forest types). In valleys with excellent soil and moisture conditions, forests grow well. *Anogeissus pendula*, also known as dhoak is the predominant species of the tree, accounting for more than 80% of the area. Its associates, such as Gurjan (*Linnea corommendelica*) and Salar (*Boswellia serrata*), grow in arid areas and on rocks.

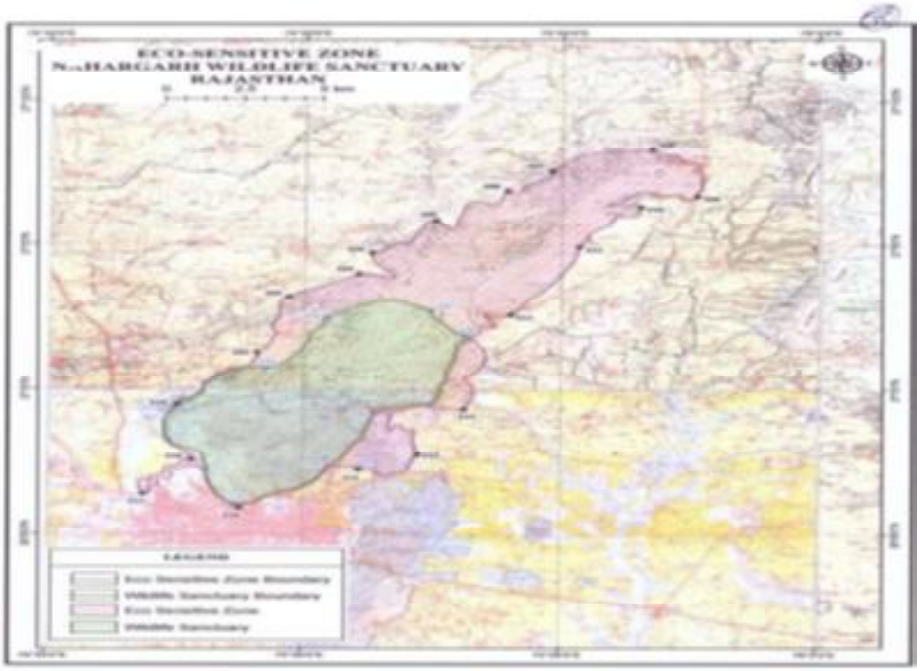

Fig. 1. Map of study area

The study was conducted in ten villages located in the vicinity of Nahargarh Wildlife Sanctuary. The relevant data was collected from January 2022 to October 2024 by filed walk and household survey via semi – structured questionnaire. The research was carried out in 10 villages namely Nestiwas, Jaisalya, Chimanpura, Shisiyawas, Akeda, Badagaon Jakhya, Kurad, Papad, Kishanbagh and Kukas. A total of 300 respondents (women, men and children) of different age groups were selected randomly and taken into consideration for data gathering and interviews. Pre-structured questionnaires were used to gather the information from each respondent. In surveys besides tribal people and traditional communities, the information was also collected from non-tribal people like forest officials, college students from rural areas *etc*. who have enough knowledge regarding ethnobotanical uses of plants due to their long association with tribal's and long stay in the rural areas. Data on plant consumption for medicines and food as well as the quantity utilised, were recorded. The plants found during field visits were identified with the help of herbarium of university of Rajasthan, Flora of Rajasthan vol. 1-3 Sheety and Singh (1987- 93) and Flora of Indian desert Bhandari (1990) were also consulted.

A total of 41 wild medicinal plant species (Table-1) from 25 families and 38 genera were identified in the study area during the current study. Among the collected plant specimens, Moraceae (4), Fabaceae (3), Solanaceae (3) and Cucurbitaceae (3) are the dominant families. These medicinal plants are arranged in alphabetical order of their scientific name, common name along with family followed by uses.

Table-1. Ethno- medicinal plants used by rural people of study area.

S. No	Botanical Name	Common Name	Family	Ethno-medicinal uses
1.	*Acacia nilotica* L	Babool	Fabaceae	Leaves as astringent and remedy for diarrhea
2.	*Acacia senegal* (Linn.) Willd	Kumatha	Fabaceae	Gum is demulcent and cures intestinal trouble. Used in malaria and cough
3.	*Abutilon ramosum*. Guill. Perr.	Atibala	Malvaceae	The powered root is used in the treatment of stomach ailments.
4.	*Adhatoda vasica* Nees.	Adusa	Acanthaceae	Leaf extract used for asthma, bleeding gum, bronchitis and pyorrhea.
5.	*Aegle marmelos* (Linn.) Correa	Bel	Rutaceae	Used in jaundice, piles, vomiting, urinary complaints, obesity and gastro intestinal diseases
6.	*Asparagus recemoues* (Willd)	Shatavari	Asparag-aceae	Root power used for cold and cough treatment.
7.	*Azadirachta indica*	Neem	Meliaceae	The leaves are excellent for treating

	A.Juss.			wounds, boils, chronic ulcers, and smallpox eruptions.
8.	*Achyranthus aspera*. Linn	Ounga	Amaran-thaceae	For coughs, powdered root combined with honey and pepper is given.
9.	*Balanitits roxburghii* Planch.	Hingot	Zygoph-yllaceae	Pulp used as a remedy for cough and skin diseases
10.	*Boerhavia diffusa* Linn	Santhi	Nyctagi-naceae	Used as fooder, whole plant useful in jaundice, anemia, cardiac disorder, constipation, bronchitis and general debility.
11.	*Calotropis procera* (Ait) W.T. Aiton	Akra	Apocy-naceae	Whole plant – antioxidant, antitumor, and anti malarial activity. Leaves used in the treatment of knee joint pain (Leaves with oil are heated and applied externally), Latex is applied on wounds of snake bite to neutralised poison.
12.	*Capparis decidua* (Forssk.) Edgew	Ker	Cappar-aceae	The stem is used in pyorrhoea and rheumatism
13.	*Cuscuta reflexa*. Roxb.	Amar bel	Cuscut-aceae	Used externally in the treatment of itch and for washing sores.
14.	*Citrullus colocynthis* (Lischard) Schrad	Gadtumba	Cucurbita ceae	Roasted fruits are used to cure joint pain.
15.	*Datura metel* Linn	Datura	Solanaceae	Plant juice cures hydrophobia, boiled leaves as a poultice to relieve pain.
16.	*Euphorbia hirta* L	Dudhi	Euphorb-iaceae	Warts and skin diseases (leucodermal spots) are treated with latex
17.	*Eclipta alba* Linn	Bhringiraj	Asteraceae	Whole plant – anti inflammatory, anthelmintic, diuretic. Used for strengthening and blackening of hair
18.	*Ficus glomerata* Roxb	Gular	Moraceae	The bark used in skin diseases
19.	*Ficus benghalensis* Linn.	Bargad	Moraceae	The plants' milky latex is applied externally on blisters, boils, and cracked heels.
20.	*Ficus religiosa* Linn	Peepal	Moraceae	Leaves used to treat skin conditions and help heal wounds and bruises
21.	*Flacourtia indica*. Burm.f	Cocon	Salicaceae	Most parts are used for pneumonia, cough and bacterial sore throat

				infection.
22.	*Grewia tenax* Forsk	Ganger	Tiliaceae	Plant-based remedies are utilised to strengthen boues, promote tissue repair, and cure fractures. Fruits are utilised to promote fertility in females.
23.	*Leptadenia pyrotechnica* (Forssk) Decne	Kheenp	Apocy-naceae	To remove thorns from the body, plant sap is applied to the wound.
24.	*Launaea procumbens* Linn	Van gobhi	Asteraceae	For painful urination, the plant is grinded in water and given orally together with sweets (Misri).
25.	*Maytenus emarginata* Linn	Kakeda	Celastr-aceae	The fruits are cooling, delicious, and blood-purifying. Used to cure piles and ulcers.
26.	*Momordica balasmina* L	Kakoda	Cucurbi-taceae	Used in skin disorders, hepatitis, excessive uterine bleeding, rheumatism and fever.
27.	*Morus alba* Linn	Sehtoot	Moraceae	Bark is used to treat cough, wheezing, edema and to promote urination.
28.	*Moringa oleifera* Lamk	Sehnjana	Moring-aceae	Bark is used to treat skin infections, wounds. Roots are used to treat ulcers, kidney stones and inflammation.
29.	*Ocimum americanum* Linn	Van tulsi	Lamiaceae	For fever and cough, whole plant decoction is utilised. Moreover used as a toothache remedy.
30.	*Phyllanthus emblica* Linn.	Anwala	Phyllan-thaceae	Used in Leprosy, Burning sensation, Vomiting, Leucorrhoea, Thirst, Constipation, Inflammation.
31.	*Rumex dentatus* Linn	Van palak	Polygo-naceae	Whole plant- antibacterial and antifungal activity.
32.	*Ricinus communis* L	Arand	Euphorbi-aceae	The leaves are warmed and rubbed with oil, which is then applied to the belly to relieve postnatal pain, the knee, and other afflicted areas to relieve pain.
33.	*Rhus mysorensis*. Don	Dhansale	Anacardi-aceae	Fruits used in the treatment of diabetes.
34.	*Solanum nigram* L	Makoy	Solanaceae	Whole plant is diuretic, laxative

				antiseptic, antidysenteric and effective in chronic diseases, such as acne, eczema and psoriasis
35.	*Sida cordifolia* Linn	Khirenti	Malvaceae	For rheumatism and intermittent fever, plant extract is utilised.
36.	*Tephrosia purpurea* (L) Pers	Jhojaru	Fabaceae	A plant decoction is used to treat Dhamsia(cough with blackphlegm) a frequent illness in rural areas, as well as an anthelmintic for children and a blood purifier.
37.	*Tinospora cordifolia* Thunb	Giloy	Menisp-ermaceae	Plant aqueous extracts are commonly used to treat jaundice and are also useful in treating chronic fevers like dengue and chikungunia.
38.	*Tribulus terrestris* Linn	Gokharu	Zygophy-llaceae	Fruits are diuretic and used to expel kidney stone. And useful in bladder, urinary tract and urogenital related conditions.
39.	*Tridax procumbens* Linn	Pathar phodu	Aster-aceae	It's have antioxidant, antiviral, anti inflammatory activity and wound healing activity Leaf juice is applied on cuts and wounds to stop bleeding.
40.	*Withania somnifera* (L) Dunel	Ashwa-gandha	Solan-aceae	Decoction of roots is beneficial for leucorrhea and debility resulting from old age.
41.	*Ziziphus nummularia* Wt & Arn	Jhadi ber	Rham-naceae	Raang is prepared by boiling the roots in water. Rural women boiled wheat grains in the raang and made laddus to treat menstruation issues.

In Rajasthan, ethnobotanical studies on medicinal plants were carried out by Sharma and Kumar[17]; Meena and Yadav[14]; Pareek and Trivedi[15]; Kapoor and Kumar[7]. Gupta & Solanki[4] in the Aravalli area and Simalwara tehsil of the Dungarpur District of Rajasthan have conducted studies on a few disorders, including kidney stones and urinary tract, and gynaecological. Arora & Jain[2]. Maheshwari and Sharma[12]. Diversity of economically useful wild plants of Jhalana Jaipur was studied by Agarwal and Rijhwani[1].

Ethno-medicinals plants of Jhunjhunu district were studied by Jeph & Khan[5]. Khan & Singh[9] studied Ethno-medicinal active plants for treating cold and cough in the vicinity of Nahargarh Wildlife Sanctuary, Jaipur. The current study suggests that one effective method for identifying plants with potential medical use is to conduct a seasonal survey and collection of these plant species. Such studies and findings are very beneficial in supporting the case for drugs and protecting the ayurvedic medical system. Katewa[8] conducted a study on traditional medicine practiced by indigenous people and found that plants have been crucial in the identification of new plant products that have the potential to be used as chemotherapeutic agents. Sharma and Khandelwal[18] have also noted that tribal and traditional people employed a wide variety of plant species ethnomedicinally to cure a wide range of diseases, including fever, cold and cough, body pain and gastrointestinal disorders.

The results of the ethnobotanical survey conducted in the study region have provided significant knowledge into the various uses of many medicinal plants of Nahargarh wildlife. Evaluating the enumeration reveals that many of the medicinal plants and their varied components are utilised by the locals in this area to cure a variety of ailments.

The goal of the current study is to highlight the traditional medicinal uses made by the study area's inhabitants for a variety of plant components, including roots, stems, flowers, seeds, fruits, etc. The ethno-medicinal benefit of plants may be brought to the attention of pharmacologists and pharmaceutical companies through this study. The research conducted adds to the current knowledge of traditional remedies. Both the extraction and characterization of the bioactive substances as well as the farming of public health policies depend heavily on the documentation of such knowledge. So as for individuals in the same area or in other areas to utilise it.

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