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Documentation of Traditionally Used Medicinal Plants from Barnawapara Wildlife Sanctuary

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Abstract

In India, medicinal plants have long served as a primary source of healthcare, especially among tribal and rural communities in remote areas. Barnawapara Wildlife Sanctuary is located in Balodabazar district and comprises undulating tropical dry deciduous forest, with around 18 villages situated adjacent to the sanctuary. The communities living near the sanctuary appear to rely on local plant resources for traditional healthcare practices. Therefore, our study is to document and identify medicinal plants used by local communities including vernacular names, plant parts and preparation methods using field surveys, interviews, specimen collection and literature verification. A total of 52 traditional healers were identified of whom 38 participated (mean age 54 years; 72% male) with maximum acquired ethnomedicinal knowledge through family tradition (36.8%), while fewest (7.9%) learned via social communication. Our study recorded 38 medicinal plant species from 26 families, predominantly trees (22). Fabaceae (6) and Combretaceae (4) were most dominant plant family. Leaves (29.3%) and bark (21.3%) were the most used parts. These medicinal plants were used to treat a wide range of ailments with wound healing being the most common application. Therefore, it seems that local communities around Barnawapara Sanctuary have notable knowledge on therapeutic uses of medicinal plants which needs to be scientifically documented for preserving both biological diversity and the cultural heritage of ethnic communities.

Keywords: medicinal plant, Barnawapara wildlife sanctuary, therapeutic

1. Introduction

Medicinal plants refers to any plant whose organs contains substance that can be used for therapeutic purpose or which are precursors for the synthesis of useful drugs. Medicinal plants provide major source of molecule with medicinal properties due to presence of natural phytochemical compounds that are useful in healing and curing various types of human diseases. (Heinrich et al., 2017). The use of medicinal plants derives from secondary metabolites and are important source of components for antitumors, antivirals, antiepileptics, antibiotics, antiinflammatories, antinociceptives (Alonso-Castro et al., 2011; Le Rhun, Devos and Bourg, 2019; Sharma et al., 2017; Wang et al., 2019). Since ancient times, plants have been used across cultures for therapeutic and medicinal purposes. Medicinal plants remain a major source of modern pharmaceuticals, with approximately 25% of prescribed drugs worldwide derived from plant sources (Alonso Castro et al., 2012). In India, medicinal plants have traditionally been a principal source of healthcare since ancient times. They play an important role in the lives of tribal and rural communities, particularly in remote areas. During the past century, there has

been a rapid expansion of the allopathic system of medicine in the country. However, some drugs are associated with adverse effects on human health, leading many people to return to natural remedies in search of safer and more sustainable alternatives. On the other hand, drugs derived from medicinal plants are generally believed to be safe, affordable, and readily available, with minimal risk of adverse effects. Moreover, indigenous methods of preparing traditional medicines help maintain the purity of the formulations. Traditional folk healers often treat patients with kindness, patience, and tolerance, which may contribute positively to the healing process. Common preparation methods reported by informants include decoctions, powders, and topical pastes. The most frequently used plant parts are stems, bark, and leaves (Alamgir, 2017). These practices reflect accumulated indigenous knowledge that is culturally significant and potentially valuable for bioprospecting and conservation planning. The growing use of herbal medicine is primarily associated with its reported effectiveness, widespread availability, and strong cultural acceptance (Alonso Castro et al., 2017).

According to Department of forest, Chhattisgarh, India, Barnawapara Wildlife Sanctuary situated in the northern part of Balodabazar (formerly part of the Raipur region) in Chhattisgarh, India, covers approximately 244-245 km² of mainly undulating, tropical dry-deciduous forest, intersected by the Jonk river and other tributaries of the river Mahanadi. The sanctuary was established in 1976 and named after the twin forest villages Bar and Nawapara. Major floral habitats include deciduous stands, bamboo patches, riparian corridors and grasslands that sustain both wildlife and a rich assemblage of woody and herbaceous plants. A major part of local tribal and rural communities living in and around Barnawapara have long relied on the sanctuary's plant resources for traditional healthcare. Herbal medicine is one of the oldest forms of medical treatment in human history and could be considered one of the forerunners of the modern pharmaceutical trade.

The present study focus on identification of medicinal plants used by local communities in and around Barnawapara Sanctuary with vernacular names as well as parts used and preparation method of traditional medicine. Our field work combines guided walks, semi-structured interviews with traditional healers and household informants, specimen collection and literature cross-referencing to ensure taxonomic accuracy to situate local uses within broader ethnopharmacological knowledge.

2. Materials and method

2.1 Collection of sample

Sample collection was done from various locations of our study site. For leaf sample, the supporting branch were cut in way that petiole, axillary, buds, stipules remain attached. In case of compound leaf, leaf samples were collected in manner so that petiole attachment to stem and branches is retained. Thereafter, photographs of leaf, bark, fruits, flower were taken with the help of GPS tagged camera for further analysis.

2.2 Method used

The personal interviews were conducted among different traditional healers from the study location. A total of eighteen (18) traditional healers from different villages took part in personal interview on a well-structured questionnaire. The questionnaire contains basic details of the healers along with use of medicinal plant in human health, traditional practices, parts used etc. The personal interview was conducted from June 2024 to December 2025. As Chhattisgarhi is the language used in the villages, most conversations have been conducted in the local language and later authors translated the information in the standard language.

2.3 Identification of plant species from digital herbarium

All the plant species were studied using digital herbarium. The photographs of these herbarium were processed using the apps such as "PlantNet" and "LeafSnap". Further, for clarification of each plant species burk, fruits, flower were also considered and identified using the apps. Upon uploading these images, the scientific name of the plant appears below the images provided for identification. All observation was saved and remaining plant species identified in the same manner.

2.4 Identification by books

Some of the collected plant samples were also identified using books available such as 'A Colour Handbook of Flowering & Medicinal Plants of India' by Yashwant Rai (2015),'Identification of Common Indian Medicinal Plants' by V. N. Naik (2012) and 'Glimpses of Ethnobotany and Medicinal Plants of India (2025)' by Sanjeev Kumar.

Figure1: Graph shows types of knowledge acquisition process among the traditional healers in number and percentage.

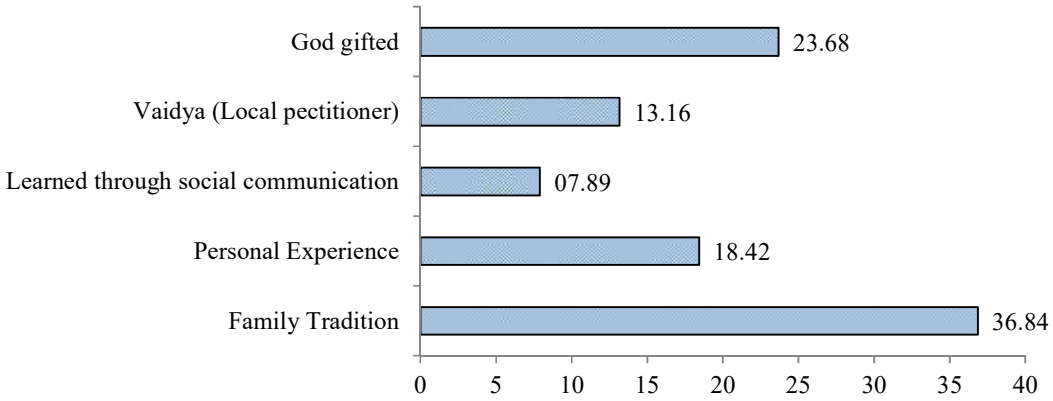


Figure 2: Graph shows number of different plant parts used by traditional healers.

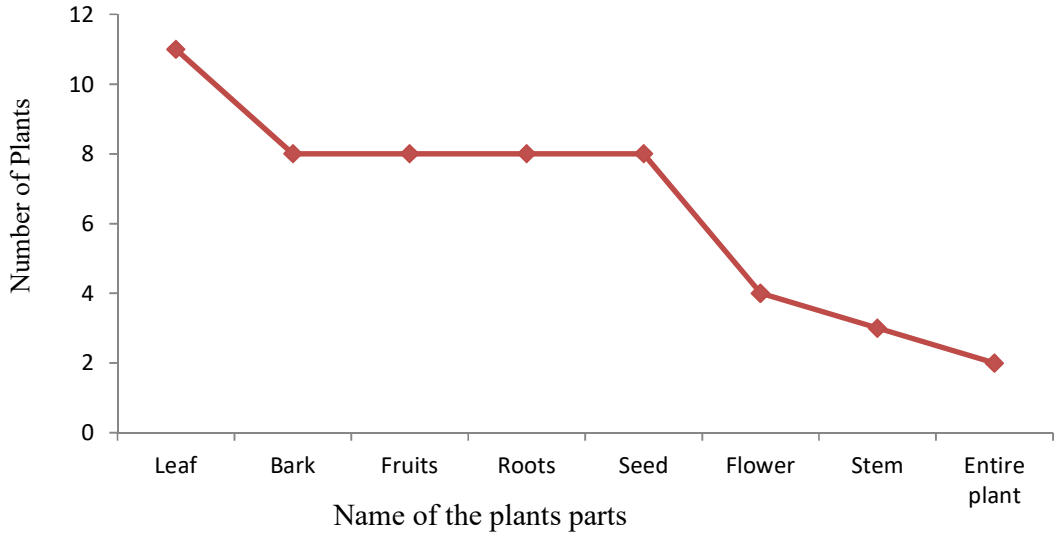


Figure 3: Graph shows plant families in numbers that are used by the traditional healers.

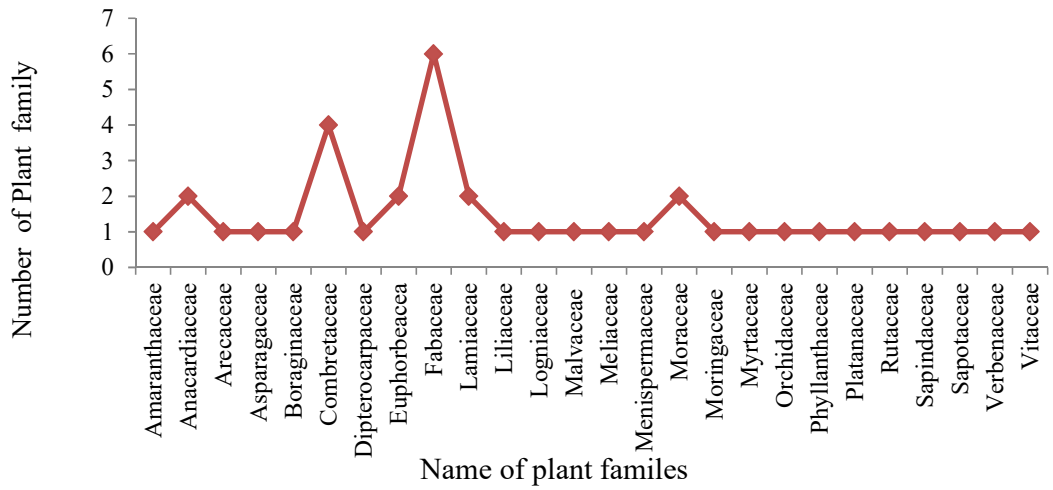


Table 1. List of plant species that are used by traditional healers from Barnawapara Wildlife Sanctuary.

Local name	Botanical name	Family	Part used	Medicinal uses
Bhui Amla	*Phyllanthus niruri*	Euphorbiacea	Whole plant	Help in managing liver disorder, in Ulcer , Protecting the stomach lining, Jaundice
Neem	*Azadirachta indica*	Meliaceae	Fruits & Leaves ,Bark	Bark is used in skin troubles , Ulcers and eczema.rheumatism,Herbal pesticide
Tulsi	*Ocimum sanctum*	Lamiaceae	Leaves,Entire plant	Ringworm and other cutaneous disease
Bael	*Aegel mormelos*	Rutaceae	Fruits & Roots	Digestion, Clean stomach,Treating fever , Nausea,Vomiting,Swelling,dysentery,Dyspepsiya,Uri nary problems.
Amla	*Emblica officinalis*	Euphorbeacea	Fruits	Antioxident,anti,inflammatory & antimicrobial
Arjuna	*Terminalia arjuna*	Combretaceae	Bark	Bark is useful in managing high cholesterol level
Mahua	*Madhuca indica*	Sapotaceae	Bark,Fruits & seed	Headache,Diarrhea,wound healing,Skin disease
Lantana	*Lantana camara Linn.*	Verbenaceae	Leaves	Leaves is mostly used in herbal medicine for wound healing,fever treatment ,cough treatment,influenja

				treatment,stomach ache,malaria etc.
Sarai	*Shorea robusta*	Dipterocarpaceae	Bark,Roots and leaves	Leaves and bark are used to treat leprosy,wounds,ulcers,cough,gonorrhoea,headache,diarrhea.
Jamun	*Syzygium cuminii*	Myrtaceae	Fruits,seed	Used in diabetes
Agave (Centuary Plant)	*Agave amaericana L.*	Asparagaceae	Leaves,Sap, Root	Used for wound healing,skin diseases,inflammation,joint pain,and digestive problems.
Garari	*Cleistanthus collinus*	Phyllanthaceae	Bark,Leaves,Roots	Used for skin disease,wounds,ulcers,and as an antiseptic
Polar palm	*Chamaedorea elegans*	Arecaceae	Leaves,Stem	Polar palm is mainly used for air purification and stress reduction, with no major traditional medicinal use.
Sagoun (Teak)	*Tectona grandis*	Lamiaceae	Wood,bark,leaves.seeds	Used for skin diseases, wound healing, inflammation, and digestive disorders.
Vanda Orchid	*Vanda tessellata*	Orchidaceae	Roots,leaves,flowers	Used for rheumatism, inflammation, fever ,and wound healing.
Ghost tree	*Platanus orientalis*	Platanaceae	Bark,leaves	Used for skin diseases, wounds, and inflammation.
Dahiman	*Cordia macleodii*	Boraginaceae	Leaves,Bark	Healing wounds ,Treating jaundice in treating cancer.
Lajwanti	*Mimosa pudica*	Fabaceae	Leaves	The leaf and root paste is used in case of piles and diseases of kidney. The root is used in treating asthama, cough, dysentery and fever.
Munga	*Moringa oleifera*	Moringaceae	Leaves,Fruits and Roots	Prevent inflammation, Improve body immunity ,Antibacterial properties,Control blood pressure, sugar,Killing worm
Kuchana	*Strychonus nux-vomica*	Logniaceae	Seeds	Treatment of cancer and heart disorder.
Amaltas	*Cassia fistula Linn.*	Malvaceae	Leaves , flower	Chronic fever,ring worm and in rheumstism.
Chirchita	*Achyranthes aspera Linn.*	Amaranthaceae	Roots, Stem,and Leaf	Antimicrobial,antidiabetic,headache,dysentery
Saja	*Terminalia eliptica willd.*	Combretaceae	Bark ,Leaves	Bark is used against diarrhoea
Palas	*Butea monosperma*	Fabaceae	Flowers	Leucorrhoea
Kosam	*Schlechera oleosa*	Sapindaceae	Seeds oil	Body pain,Cleaning stomach
Harra	*Terminalia*	Combretaceae	Fruit &	Digestive disorder,rheumatic

	chebula		Leaves,Bark	swelling,ophthalmia,Diarroea,colds and coughs
Shisham	*Dalbergia sissoo.Roxb*	Fabaceae	Leaves,seed oil	Leprosy
Giloy	*Tinospora Cordifolia*	Menispermaceae	Entire plant	Use in fever,Digestive disorder,Dengue,Diabetes,Leprosy
Ghritkumari	*Aloe barbadensis*	Liliaceae	Plant leaf,roots & Flower	Used on burns,treatment of leukoderma,Purgative
Bhelva	*Semecarpus ancardium*	Anacardiaceae	Bark,fruits	Cuts & healing wounds
Baheda	*Terminalia indica*	Combretaceae	Fruit & Leaves,Bark	Digestive disorder,rheumatic swelling,ophthalmia,Diarroea,colds and coughs
Hadjod	*Cissus quadrangularis*	Vitaceae	Entire plant	Fracture healing,wound healing,Reducing pain and inflammations
Babul	*Acacia nilotica*	Fabaceae	Bark,Flower	Used in oral and dental hygine,skin disease
Charota	*Cassia tora Linn.*	Fabaceae	Leaves,seed	Used as laxative,for the treatment gastrointestinal tract disorder.
Bargad	*Ficus benghalensis*	Moraceae	Stem ,bark & root	Used in skin disease,Ulcer,Diarrhea & Piles.
Peepal	*Ficus religiosa Linn.*	Moraceae	Stem ,bark & root	Diarrhea ,Cuts
Aam	*Mangifera indica*	Anacardiaceae	Stem ,bark,leaf & Flower	External Application of mango parts can help hasten wound healing,prevent bleeding , Flower can be used to purify blood naturaliy in diarrhea
Kachnar	*Bauhinia variegate*	Fabaceae	Leaves	It is used for the treatment of bleeding hemorroids,cough,diarrea ,dysentery,leprosy and malaria

Figure 4: Photograph of some medicinal plant species found in Barnawapara wildlife sanctuary.

Phyllanthus emblica

Andrographis paniculata

Madhuca longifolia


Platanus


Agave

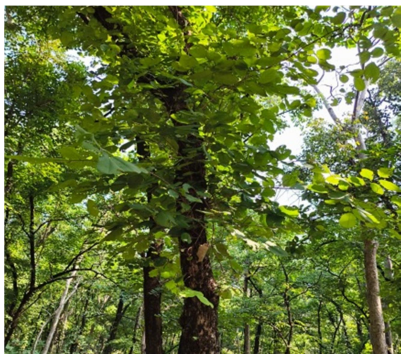

Cleistanthus collinus


Vanda tessellata


Syzygium cumini


Chamaedorea elegans


Caryota urens


Tectona grandis


Azadirachta indica

3. Result and Discussion

Out of 18 villages surveyed, we have found a total of 52 traditional healers from different communities. However, 38 of them participated and expressed their information. The average age of the interviewees was 54 years old of which 72% were male and rest were females. The educational qualification level between the traditional healers was illiterate to matriculation. Most of the interviewees specified that knowledge about the traditional medicinal plants was passed from family tradition (36.84%) and lowest numbers are learned through social communication (7.89%) (Figure1). The present study recorded 38 plant species belong to 26 family. Among them 22 were trees, 4 herbs 8 shrubs and 4 climbers (Table 1). Our results exhibited the most number of medicinal plants from Fabaceae (6), Combretaceae (4), Euphorbiaceae (2), Lamiaceae (2), Anacardiaceae (2) and Moraceae (2). Among the parts used for various treatments, leaf was the most used part (29.33%), followed by bark (21.33%), fruits, roots, seed,

flower, each 9.33%, stem (6.7%), and entire plant (5.33%). In our findings, the number of diseases cured by the medicinal plants is wound healing (12) followed by skin disease, diarrhea, fever, inflammation/swelling, digestive disorders, ulcers, rheumatism, cough, leprosy, diabetes, headache, jaundice, piles, malaria and cancer (Table 1).

4. Conclusion

This study documents 38 ethnomedicinal plant species belonging to 26 families from Barnawapara Wildlife Sanctuary, highlighting rich traditional knowledge about medicinal plant among local communities. Trees were the dominant life form (57.89%), followed by herbs, shrubs and climbers, with families such as Fabaceae and Combretaceae showing highest diversity. This ethnomedicinal knowledge is valuable for primary healthcare, however, it faces threats from environmental degradation and cultural loss. Therefore, proper documentation, scientific validation, and conservation of these plant species are essential for sustainable utilization and the welfare of both local communities and mankind.

5. Conflict of Interest

There is no known conflict of interest.

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