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Traditional Use of Medicinal Plants by Local Communities of Mahkhuti, Dhing, Nagaon District, Assam

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Abstract

This study documents the traditional knowledge of medicinal plants utilized by the local community of Mahkhuti, Dhing, in Assam's Nagaon district. The region is characterized by high biodiversity and is inhabited by several ethnic groups, particularly Nepali and Assamese communities, who employ native plants to treat common illnesses. Ethnobotanical surveys were conducted through interviews with local healers, elders, and other community members. The research identified 35 medicinal plants species belongs to 33 genera and 25 families are used for different aliments such as fever, cough, digestive disorders, wounds, and skin diseases. Among these, the family Lamiaceae was the most frequently represented, while the genera *Piper* and *Terminalia* were most commonly recorded, each with two species. The results indicate that leaves are the most frequently utilized plant part. The majority of treated ailments include gastrointestinal disorders, skin diseases, fevers, respiratory problems, and wounds. Community members employ straightforward and effective preparation methods, such as pastes, decoctions, juices, and powders. Nevertheless, modernization, habitat loss, and increased reliance on commercial medicines are diminishing the community's connection to traditional plant knowledge. Documenting this knowledge contributes to the preservation of ethnic traditions and supports the sustainable utilization of local plants for future medicinal applications.

Keywords: *Ethnobotany, Medicinal Plants, Traditional Knowledge, Mahkhuti, Assam*

Introduction

Traditional knowledge of medicinal plants plays a vital role in healthcare among rural and indigenous

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communities (Kala, 2005; Jain, 1991). In India, particularly in the Northeast, this knowledge is transmitted across generations. Dhing, Mahkhuti, a rural area in Nagaon district, is recognized for its ethnic diversity and rich plant resources, which supports traditional healing practices (Borthakur & Sarma, 2010). However, there is limited scientific documentation of this knowledge. The present study explores, documents, and analyzes the medicinal use of local plants, thereby supporting conservation efforts and informing future research. Plants have been integral to human life since the beginning of civilization, serving as sources of food, shelter, and, most importantly, medicine (Balick & Cox, 1996). Prior to the advent of modern pharmaceutical sciences, indigenous societies worldwide relied extensively on local flora to treat a variety of illnesses (Jain, 1991). This practice, commonly referred to as traditional or folk medicine (Srivastava & Singh, 2021), reflects the collective wisdom accumulated over generations. In India, especially in rural and ethnically diverse regions, medicinal plants continue to constitute an essential component of local healthcare systems.

Assam, located in northeastern India, is recognized as a global biodiversity hotspot with abundant vegetation and a rich cultural heritage (Kalita et al., 2010). Nagaon district is noted for its fertile land, diverse flora, and a population comprising Assamese, Nepali-speaking, and tribal communities (Government of Assam, 2019). Dhing Mahkhuti, a semi-rural locality within this district, continues to rely extensively on natural resources for daily sustenance and healthcare. In the absence of advanced medical facilities, residents have utilized native medicinal plants for generations to address common ailments such as fevers, coughs, gastrointestinal issues, skin infections, wounds, and bone fractures (Borthakur, 1997; Das & Tag, 2006). This knowledge is transmitted orally and refined through practical experience within the community (Kala, 2005; Jain, 1991).

Although modern medicine is increasingly prevalent, the use of traditional medicinal plants remains significant, particularly among older individuals and those residing in remote areas. However, changing lifestyles, urban migration, and deforestation threaten the preservation of this knowledge. Many younger community members are less engaged with traditional practices, placing both the knowledge and the associated plant species at risk. While several ethnobotanical surveys have been conducted in Assam (Baruah & Sarma, 2015; Borah & Prasad, 2017; Deka et al., 2016), limited scientific attention has been given to Dhing Mahkhuti, despite its rich cultural and biological diversity. This research gap underscores the necessity of documenting the area's medicinal plant knowledge before it is lost.

This study aims to systematically document the medicinal plants used by people in Mahkhuti, Dhing, Nagaon district, Assam. It records the plant species, their uses, local names, parts used, preparation

methods, and treated ailments. This research supports conserving both biodiversity and cultural heritage, and may promote future studies based on local knowledge.

Materials and methods

Study Area

Dhing Mahkhuti is a semi-rural area in Nagaon district, Assam, located around 26.4532° N latitude and 92.5107° E longitude. The region has a subtropical monsoon climate with plenty of rain and moderate humidity, supporting varied vegetation and animal life. Local vegetation includes farms, gardens, grasslands, roadside bushes, and semi-forested areas where many medicinal plants grow naturally or with little human care.

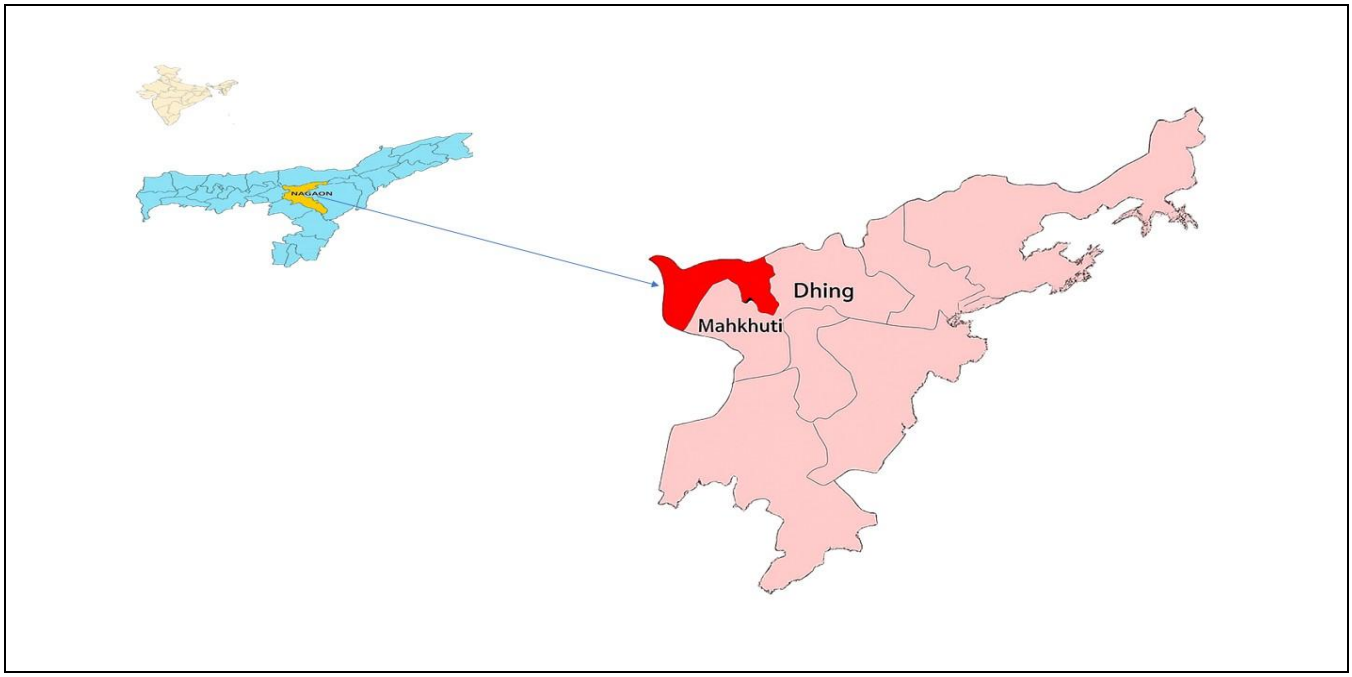

Fig. 1: Map of Study area- Mahkhuti, Dhing

Methods

This ethnobotanical study was undertaken to document the medicinal plant knowledge practiced by local people in Dhing Mahkhuti, Nagaon District, Assam. The methods combined traditional ethnobotanical approaches with modern scientific documentation to ensure accurate data collection. The study was carried out in 2025. A total of 25 informants were selected using purposive sampling to include knowledgeable people. The informant group included five traditional healers (Kabiraj), ten elderly residents (aged 50 and above) with experience in herbal medicine, and ten villagers from various age groups familiar with plant use in daily life. Prior to data collection, verbal consent was obtained from all

informants. Ethical codes were strictly followed, with due respect for the indigenous knowledge system and the intellectual community rights of the community.

Data Collection Techniques

The following methods were used to gather thorough and reliable information:

Semi-structured interviews used a questionnaire covering plant names (local and scientific, if known), parts used, preparation methods, dosage, ailments treated, and cultural importance. Interviews were held in Assamese and the local Nepali dialect to ensure clear communication.

Walk-in-the-Woods Method

Informants guided researchers to places where medicinal plants are collected. This allowed for quick identification, specimen collection, and direct observation of plant habitats.

Group discussions: Small focus groups with elderly villagers were used to cross-check and confirm the information collected in individual interviews.

Plant specimens were gathered, tagged, and pressed following standard botanical practices. They were identified using regional floras (Kanjilal et al., 1934–1940) and verified at the Assam Agricultural University Herbarium with expert help.

Plant Identification and Verification

Collected plants were identified through morphological observation and by consulting relevant literature viz., Borthakur et al., 2018; Baruah & Ahmed, 2014; Kanjilal et al., 1934 – 1940), POWO (https://powo.science.kew.org/) and by comparison with the authenticated digital herbarium specimens accessed through the virtual herbarium of Kew's Herbarium.

Data Arrangement and Analysis

Researchers recorded the data in tables with fields for local and scientific plant names, family, parts used (leaf, root, bark, flower, seed, whole plant), preparation method (paste, decoction, juice, powder, raw), ailments treated, and mode of administration (oral, topical, inhalation, etc.). Descriptive statistics were used to analyze how often different plant parts and preparations were used, and which plants were linked to specific diseases. Results were compared according to previous studies to find similarities or new findings.

Ethical Consideration

Researchers took all necessary steps to document indigenous knowledge respectfully and ethically. Informants' identities were kept confidential unless they agreed to be named. The study follows principles of traditional knowledge preservation and fair benefit-sharing, identifying the local community's

ownership of the information. This organized procedure, combining interviews, specimen collection, and scientific checks, ensured accurate and culturally sensitive documentation, forming the basis of this study.

Results and Discussion

The ethnobotanical survey in Mahkhuti, Dhing, Nagaon district, Assam, documented valuable traditional knowledge about medicinal plant use among Nepali-speaking and Assamese communities. The study recorded a total of 35 medicinal plant species under 33 genera and 25 families, commonly used to treat different health conditions. Several plant species documented in this study have previously been recognized for their economic and medicinal importance in earlier floristic assessments of the region (Nath & Sarma, 2008).

Among the documented medicinal plants, herbs were the most common, making up 40% of the species, followed by shrubs at 30%, trees at 20%, and climbers at 10% and Leaves were the most regularly used plant part, making up 50% of uses followed by Roots in 20%, bark in 10%, fruits and seeds together in 15%, and whole plants in about 5% of remedies.

The study also recorded several preparation Tradional medicine practices, Paste preparation method was the widely utilized, (35%) involving crushing of leaves, roots, bark and applied directly to the skin for cuts, wounds, boils, and skin conditions; Decoction (30%) were made by boiling plant parts in water, frequently used for internal ailments such as stomach ache, fever, cough, and cold; Juice (20%) extracted from fresh leaves or stems and consumed orally to help with digestive issues, liver problems, and infections; Powdered forms (10%), prepared from dried plant parts and taken with water or honey for chronic conditions; Raw consumption method (5%) where plants were eaten directly without processing, usually for stomach issues or as immunity boosters. The details of used Percentage (%) of plants against aliments are listed in table 1. and Modes of Administration (%) were listed table -2. Oral interviews with community showed that elderly community members and traditional healers hold most of the traditional medicinal knowledge. Younger informants possess less familiarity with these practices, which indicates a decline in knowledge due as a result of concerning trend of modernization, lifestyle changes, and less reliance on natural healthcare resources.

Table. 1: Percentage (%) of Recorded Medicinal Plants Used for Different Ailments

Sl. No.	Ailments	Percentage (%) of Recorded Plants Used

1	Gastrointestinal disorders (stomach ache, diarrhoea, indigestion)	25%
2	skin diseases and wounds	20%
3	respiratory ailments (such as asthma, cough, bronchitis)	15%
4	Bone fractures and joint pain -;	10%
5	Snake bites and insect stings	5%.
6	infections and urinary problems	7%

Table. 2.: Modes of Administration (%) for Medicinal Plants Used in Disease Treatment

Sl. No.	Mode of Administration	Percentage (%) of Recorded Administration
1	Oral use (decoctions, juices, & powders)	60%
2	Topical use (pastes and oils applied to wounds, cuts, skin diseases, and fractures)	(35%)
3	Other uses (inhalation for respiratory relief or as an insect repellent)	(5%) -

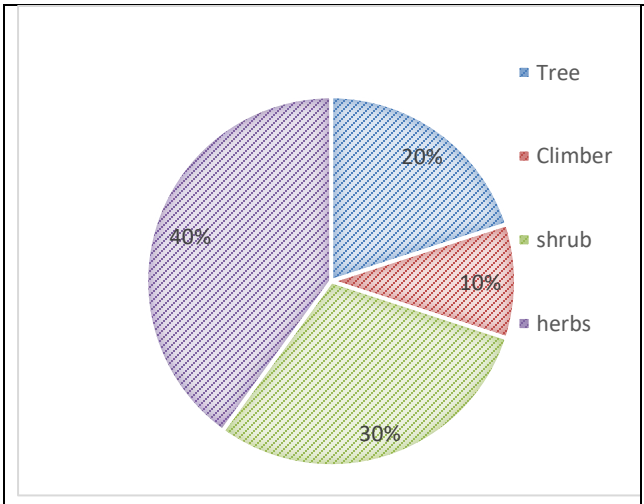

Fig. 2: Percentage Use of Plants by Habit (Herb, Shrub, Tree, Climber)

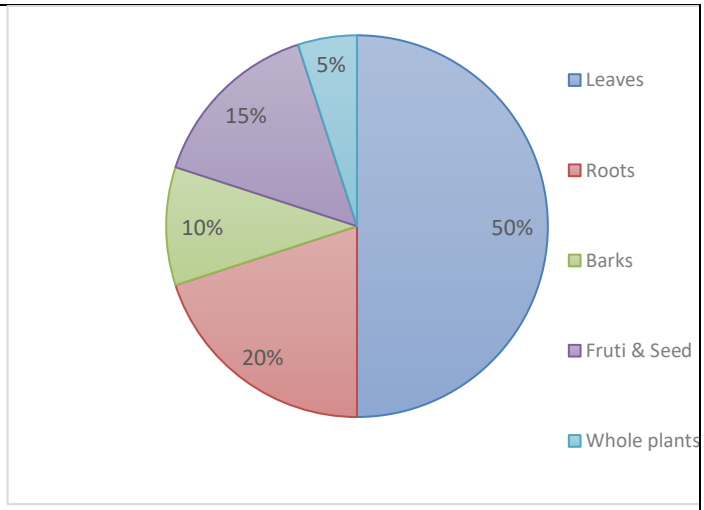

Fig. 3: Percentage of parts of Plants used in Tradional medicine

Table. 3: List of Medicinal Plants by Local Communities of Mahkhuti, Dhing, Nagaon District

Sl. No.	Botanical Name	Local Name (Assamese)	Plant Part Utilized	Therapeutic Applications	Mode of Preparation

1	*Abrus precatorius* L. Fabaceae Coll.no. DC0001	Rati	seeds, foliage	Relief from joint discomfort & cough	Ground powder, topical paste
2	*Achyranthes aspera* L. Amaranthaceae Coll. no. DC0002	Apang	Entire plant	Management of asthma, piles, & minor injuries	Herbal decoction, external paste
3	*Aegle marmelos* (L.) Rutaceae Corrêa Coll. no. DC0003	Bel	Fruits and leaves	Used against diarrhea, dysentery, & diabetes	Boiled extract, raw pulp
4	*Aloe vera* (L.) Burm.f. Asphodelaceae Coll. no. DC0004	Ghrit Kumari	Leaf gel	Treatment of burns, skincare, & bowel regulation	Gel application, oral juice
5	*Andrographis paniculata* (Burm.f.) Nees Acanthaceae Coll. no. DC0005	Kalmegh	Leaves	Helpful in fever control & liver ailments	Herbal decoction
6	*Azadirachta indica* A. Juss Meliaceae Coll. no. DC0006	Neem	Leaves & bark	Beneficial for skin disorders, blood sugar control, and fever	Extracted juice, boiled preparation
7	*Calotropis gigantea* (L.) Dryand. Apocynaceae Coll. no. DC0007	Akon	Leaves & latex	Alleviates joint pain & dermatological problems	Poultice, latex use
8	*Carica papaya* L. Caricaceae Coll. no. DC0008	Amita	Whole plant	Supports cholesterol reduction & digestion	Herbal drink, extract
9	*Cassia fistula* L. Fabaceae Coll. no. DC0009	Sonaru	Fruit pulp	Natural remedy for constipation & skin issues	Paste, medicinal brew
10	*Catharanthus roseus* (L.) G. Don Apocynaceae Coll. no. DC0010	Nayantara	Leaves & roots	Used in diabetes and blood pressure regulation	Herbal decoction
11	*Centella asiatica* (L.) Urban Apiaceae Coll. no. DC0011	Manimuni	Leaves	Enhances memory & aids wound repair	Fresh extract, paste
12	*Cissus quadrangularis* L. Vitaceae Coll. no. DC0012	Harjor	Stem	Promotes bone healing & joint strength	Paste, liquid extract

13	*Clerodendrum infortunatum* L. Lamiaceae Coll. no. DC0013	Dhopat tita	Roots & leaves	Applied in malaria and skin-related conditions	Decoction, herbal paste
14	*Cocculus hirsutus* (L.) W. Theob. Menispermaceae Collection no. DC0014	Hikmora	Leaves & stem	Useful in fever reduction & skin treatment	Boiled extract, paste
15	*Curcuma longa* L. Zingiberaceae Coll. no. DC0015	Halodhi	Rhizome	Acts as anti-inflammatory & wound healer	Powder, paste, decoction
16	*Eclipta prostrata* L. Asteraceae Coll. no. DC0016	Kehraj	Leaves	Encourages hair growth & supports liver health	Juice, medicated oil
17	*Emblica officinalis* L. Phyllanthaceae Coll. no. DC0017	Amlakhi	Fruit	Strengthens immunity & digestion	Raw, powdered, decoction
18	*Hibiscus rosa-sinensis* L. Malvaceae Coll. no. DC0018	Joba	Flowers & leaves	Used in hair care & menstrual regulation	Paste, liquid extract
19	*Justicia adhatoda* L. Acanthaceae Collection no. DC0019	Bahak	Leaves	Effective for respiratory conditions	Decoction, leaf juice
20	*Lawsonia inermis* L. Lythraceae Coll. no. DC0020	Jetuka	Leaves	Improves skin, hair, & nail health	Crushed leaf paste
21	*Leucas aspera* L. Lamiaceae Coll. no. DC0021	Dronpushpi	Leaf gel	Applied to burns, wounds, & digestion issues	Gel, juice
22	*Livistona chinensis* (Jacq.) R.Br. ex Mart. Arecaceae Coll. no. DC0022	Japee pat	Leaves	Reported anticancer properties	Paste
23	*Mentha arvensis* L. Lamiaceae Coll. no. DC0023	Pudina	Leaves	Relieves indigestion & nausea	Juice, infusion
24	*Mimosa pudica* L. Fabaceae Coll. no. DC0024	Lajuki lota	Leaves & roots	Used for piles and wound care	Paste, decoction

25	*Moringa oleifera* Lam. Moringaceae Coll. no. DC0025	Sohjona	Leaves & pods	Enhances strength, reduces inflammation, controls sugar	Cooked food, juice
26	*Ocimum sanctum* L. Lamiaceae Coll. no. DC0026	Tulsi	Leaves	Common remedy for cold, cough, & fever	Infusion, juice
27	*Phyllanthus emblica* L. Phyllanthaceae Coll. no. DC0027	Amla	Entire plant	Supports liver function & treats jaundice	Decoction, juice
28	*Piper longum* L. Piperaceae Coll. no. DC0028	Pipoli	Fruits	Useful in asthma & digestive disorders	Powder, decoction
29	*Piper nigrum* L. Piperaceae Coll. no. DC0029	Jaluk	Fruits	Aids digestion & respiratory health	Powder, boiled extract
30	*Solanum nigrum* L. Solanaceae Collection no. DC0030	Mati kanduri	Leaves & fruits	Helpful in liver ailments & ulcers	Paste, decoction
31	*Terminalia bellirica* (Gaertn.) Roxb. Combretaceae Coll. no. DC0031	Bhomora	Fruits	Treats cough and digestive imbalance	Powder, decoction
32	*Terminalia chebula* Retz. Combretaceae Coll. no. DC0032	Hilikha	Fruits	Promotes bowel movement & gut health	Powder, decoction
33	*Tinospora cordifolia* (Thunb.) Miers Menispermaceae Coll. no. DC0033	Amrakhilata	Stem	Boosts immunity & controls fever	Decoction
34	*Withania somnifera* (L.) Dunal Solanaceae Coll. no. DC0034	Ashwagandha	Roots	Reduces stress & improves vitality	Powder, decoction
35	*Zingiber officinale* Roscoe Zingiberaceae Coll. no. DC0035	Ada	Rhizome	Effective against cold, cough, & indigestion	Infusion, paste

Fig. 4: a. *Hibiscus rosa-sinensis,* b. *Mimosa pudica,* c. *Ocimum sanctum,* d. *Clerodendron infortunatum,* e. *Mentha arvensis,* f. *Phylanthus emblica*

Conclusion

This ethnobotanical study in Dhing Mahkhuti, Nagaon District, Assam, recorded how the local community uses medicinal plants. The results show that even as modern medicine becomes more common, many rural residents especially elders and traditional healers, still depend on plant-based remedies for a range of health issues, from colds and fevers to bone fractures. The research identified 35 medicinal plant species used for both prevention and treatment, showing the community's deep knowledge of local plants. People use simple but effective methods like making pastes, decoctions, juices, and powders, based on generations of experience. Leaves are the most used part, and most treatments address stomach problems, skin diseases, fevers, breathing issues, and wounds. These results show that local plant-based healthcare works well and reflect the adaptability and resourcefulness of Dhing Mahkhuti's people. However, the study also found that traditional plant knowledge is fading, especially among younger people. Modernization, habitat loss, and more use of commercial medicines are weakening ties to these traditions. This study highlights the urgent need to protect and record both medicinal plant species and the oral traditions linked to their use (Hamilton, 2004). Ethnobotanical knowledge is a valuable cultural and scientific resource that helps the community and supports research into plant-based medicines and sustainable healthcare. By preserving this knowledge and continuing research, future generations can benefit from natural remedies and help keep the ecological balance in biodiverse areas like Dhing Mahkhuti.

Declaration

Conflict of Interest: The authors declare that they have no conflict of interest.

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