Phytology

Ethnobotanical survey of medicinal flora in campus of Rain Forest Research Institute (RFRI), Jorhat, Assam, India

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Received 6 May 2025; Accepted 24 Jun 2025; Published 3 July 2025

DOI: https://doi.org/10.64171/IJPR.2025.5.3.1-4

Abstract

This preliminary study at Rain Forest Research Institute (RFRI), Jorhat, Assam, documented 60 medicinal plant species across 55 genera and 37 families through systematic field surveys. The findings highlight RFRI's potential as a phototherapeutic repository and affirm the continued relevance of traditional healing practices in the community, despite the rise of modern medicine.

Keywords: Phototherapeutic, Medicinal plants, ICFRE–RFRI, India

1. Introduction

The exploration of medicinal plants plays a vital role in bridging traditional wisdom and modern healthcare. Assam, a state in Northeast India, is celebrated for its rich biodiversity, vibrant cultural heritage, and long-standing ethnobotanical practices. In the rural pockets of Assam, communities have historically relied on indigenous plant species for both nutritional and medicinal purposes (Polat et al., 2013) [7]. These remedies remain popular today due to their accessibility, affordability, minimal side effects (Sinha, 1996; Dubey et al., 2004) [8, 2], and strong cultural acceptance (Pal and Shukla, 2003). Interestingly, many modern pharmaceutical drugs trace their origins back to these traditional plant-based treatments (Dev, 1997; Fabricant and Farnsworth, 2001) [1, 3].

In this context, the Rain Forest Research Institute (RFRI) in Jorhat serves as an important center for the identification, conservation, and scientific study of plant resources. This preliminary survey was conducted to identify and document medicinal plant species found within the RFRI campus. The main objectives include cataloguing the plant species, determining the ailments they are traditionally used to treat, and documenting the variety of medicinal shrubs and herbs thriving within the campus ecosystem.

2. Methodology

2.1 Data collection

A systematic survey of medicinally important plants was carried out within the campus of ICFRE-Rain Forest Research Institute (RFRI), Jorhat, from January to July 2025. The study focused on natural and semi-managed areas within residential and general campus zones, deliberately excluding curated spaces such as the Botanical Garden, Medicinal Plant Garden, and nurseries to capture the spontaneous distribution of plant species. Commonly recognized plants were identified with assistance from botanical experts, while lesser-known species were verified using authoritative sources such as *Plants of the World Online* and standard reference books. This approach ensured both scientific accuracy and a well-rounded documentation of medicinal plant diversity present in the campus ecosystem.

2.2 Questionnaire survey

To assess the frequency of consumption and local awareness of medicinal plant species within the ICFRE-RFRI campus, a semi-structured questionnaire survey was conducted among residents. The survey targeted households primarily situated in the residential zones of the campus. A total of 15 individuals participated in the survey, comprising 9 females and 6 males. Their responses provided valuable insights into everyday usage patterns, cultural preferences, and gender-based perspectives on plant-based remedies, enriching the ethnobotanical relevance of the study.

2.3 Identification of plant collection

During the field study, medicinal plants were initially recognized by their local names, which played a crucial role in identifying species unfamiliar to the researchers. These local names served as a starting point for determining scientific nomenclature, especially for lesser-known plants. Taxonomic confirmation and species validation were conducted using a combination of online portals such as the India Biodiversity Portal, Assam Biodiversity Portal, and authoritative literature including Kanjilal et al. (1934, 1939) [4, 5]. Additionally, the Plants of the World Online database (https://powo.science.kew.org/) was consulted to obtain detailed insights into global species distribution, ensuring broader ecological and geographical context for each identified plant.

3. Results and discussion

3.1 Demographic features of informants

In this study, 15 people from the RFRI campus were interviewed. Among them, 60% were women and 40% were men. Their ages ranged from 40 to 75 years. Most of the participants were well educated and had good knowledge about how medicinal plants are used.

3.2 Diversity of medicinal plants

In this study, 60 medicinal plant species commonly used in traditional remedies were recorded. These species belonged to 55 genera across 37 families, with Asteraceae and Lamiaceae being the most dominant, each represented by five species (Table 3.1). The study focused specifically on herbs and shrubs, as they grow quickly, are easy to cultivate in home gardens, and are more commonly found in small spaces and along roadsides than tree species.

Table 3.1: List of the medicinal plants found in the campus of ICFRE-RFRI

Sl no	Species Name	Vernacular Name (Assamese)	Family	Parts Use	Utilization
1	*Alternanthera sessili (L.) R.Br.*	Mati-Kaduri	Amaranthaceae	Leaves, roots, stem, flower	Treatment of skin diseases & improve digestion
2	*Acmella peniculata*	Sohani bon	Asteraceae	Flower, Leaves, roots,	Dental pain relief
3	*Ageratum conizoides*	Gondhoa bon	Asteraceae	Leaves, roots,	Cuts and all types of pain
4	*Aloe sp.*	Aloe vera	Asphodelaceae	Leaves	Skin conditions
5	*Alpina allughas*	Tora	Zingiberaceae	Rhizomes	Digestive issues respiratory problems
6	*Centella asiatica (L.)*	Bor manimuni	Apiaceae	Leaves, roots, stems, whole plants	Stomachache, dizziness, diarrhea, boil, fever, piles
7	*Clitoria ternata*	Aparajita	Fabaceae	Leaves, roots, flowers,	Snake bite, azoospermia
8	*Fiery costus*	Insulin plant	Costaceae	Leaves, roots	Diabetes
9	*Hydrocotyl sibthopiodes*	Horu manimun	Araliaceae	Leaves, roots, stems,	Diarrhea, stomach ache, piles
10	*Lippia alba*	Pohukota bon	Vernaceae	Leaves	Fever, digestive issues and respiratory ailments
11	*Smilax megacarpa*	Big thorny	Smilaceae	Roots, and rhizomes	Leprosy, Tumors, Cancer
12	*Solanum nigrum*	Lachakuchi	Solanaceae	Leaves, berries,roots	Liver disorders, skin conditions, fevers, eye infections
13	*Bryophyllum pinnatum*	Dupor tenga	Crassulaceae	leaves	Kidney stones, wound healing
14	*Catharanthus roseus*	Nayantara	Apocynaceae	Leaves, roots	Diabetes, cancer
15	*Colocasia esculanta*	Kola kosu	Araceae	Tubers, leaves	Brain booster, hair loss
16	*Drymaria diandra*	Lai jabori	Caryophyllaceae	Leaves, stems, flowers	Fever, malaria, cancer, hepatoma
17	*Hibiscus rosa-sinensis*	Jobaphul	Malvaceae	Leaves, flowers, roots, bark	Hair care
18	*Houttuynia cordata*	Masundari	Saururaceae	Leaves, rhizoms	Dysentery, stomach pain and infections
19	*Leucas aspera*	Durunbon	Lamiaceae	Roots, stems, leaves, flower	Fevers, cough, colds, skin diseases
20	*Mimosa pudica (L.)*	Lajuki lota	Fabaceae	Whole plant	Jaundice and stomach pain
21	*Murraya koeniggi*	Narasingha	Rutaceae	leaves	Piles, dysentery, skin problem
22	*Oxalis corniculata*	Xoru tengesi	Oxalidaceae	leaves	Nasal bleeding, dysentery
23	*Oxalis corymbosa*	Bor tengesi	Oxalidaceae	leaves	Jaundice, headaches, inflammation
24	*Tegetes erecta*	Narji	Asteraceae	Leaves, flowers	Fever, epileptic fits, liver complaints, blood purify
25	*Chromolaena odorata*	Bagh dhoka	Asteraceae	Leaves	Cold, cough, skin infections, diabetes
26	*Cinamomum tamala*	Tezpaatt	Lauraceae	leaves	High pressure
27	*Citrus x lemon*	Kajinemu	Rutaceae	Whole plant	Body pain, intestine worm, diarrhea, ringworm
28	*Cynodon dactylon (L). Pers.*	Dubori	Poaceae	Whole plant	Dizziness, cut and wounds, jaundice, azoospermia
29	*Diplazium esculantum*	Dhekia	Aspleniaceae	Whole plant	Cut and wounds, loose motion
30	*Mentha villosa*	Pudina	Lamiaceae	Leaves	Digestive issue, headaches and respiratory problems
31	*Mikania micrantha*	Japani lota	Asteraceae	Stem, leaf, whole plant	Insect bites, skin diseases
32	*Oscimum gratissimum Linn.*	Ram tulokhi	Lamiaceae	Leaves, stems, seeds	Hair care, dysentery
33	*Oscimum tenuiflorum*	Tulokhi	Lamiaceae	Leaves, stems, seeds	Kidney stones, heart issues, headache, diabetes
34	*Paederia foetida*	Bhedailota	Rubiaceae	Whole plant	Stomach ache, dizziness, fever
35	*Ricinus communis L.,*	Era	Euphorbiaceae	Seeds, leaves, roots	Vomiting, boil, fever, dizziness, urine problem
36	*Solanum lycopersicum*	Kon bilahi	solanaceae	Fruits, leaves, root	Cancer, heart disease, skin damage
37	*Bidens pilosa*	Spanish needle	Asteraceae	Leaves, flowers, stems roots,	Diabetes, urinary infection
38	*Capsicum chinese*	Bhoot jolokia	Solanaceae	Fruit	Skin disease
39	*Chenopodium album*	Jilmil sak	Amaranthaceae	Leaves	Skin problem, digestive system
40	*Clerodendm colebrookeanum*	Nephaphu	Lamiaceae	Leaves	Gastric disorders, diarrhea, diabetes
41	*Eryngium foetidum*	Man dhonia	Apiaceae	Leaves	Pain relief, digestive system
42	*Impatiens tripetala*	Dumduga	Balsaminaceae	Leaves	Wound healing, bone fracture
43	*Melastoma malabathricum*	Futukola	Malastomaceae	Leaves, shoot, bark, roots, flower, fruits	Diarrhea, skin infection, stomach ulcers
44	*Persicaria microcephala*	Modhuhuleng	Polygonaceae	Leaves	Diarrhea, dyspepsia, respiratory disorders
45	*Phlogacanthus thrysiformis*	Titaphul	Acanthaceae	Leaves, roots, flower,	Fever, colds, asthma, skin diseases
46	*Piper betle*	Paan	Piperaceae	Leaves	Gastrointestinal disorder, pain relief
47	*Pouzolzia zeylanica*	Nasreng khoro	Urticaceae	Leaves	Boil
48	*Scoparia dulcis*	Bon-dhania	Scorphulariaceae	Root, leaves, whole plant	Diabetes, kidney stones, hypertension

49	*Sambacus javanica*	Xukloti	Adoxaceae	Leaf, fruit	Tuberculosis, skin disease, swelling
50	*Amaranthus tricolor*	Ronga moricha	Amaranthaceae	Leaf	Inflammation, bladder distress
51	*Amaranthus viridis*	Khutura hak	Amaranthaceae	Leaf, root	Fever, asthma, urinary problem
52	*Ipomoea aquatica*	Kolmou hak	Convolvulaceae	Leaf	Digestion, cough, asthma
53	*Cyperus rotundus*	Keya bon	Cyperaceae	Seed, rhizome	Fever, stomach & bowel problem
54	*Zingiber officinalis*	Ada	Zingiberaceae	Rhizome	Stomach disease, vomiting, indigestion
55	*Curcuma longa*	Halodhi	Zingiberaceae	Rhizome	Skin disease, inflammation
56	*Lawsonia inermis*	Jetuka	Lythraceae	Leaf	Skin disease
57	*Musa balbisiana*	Bhimkol	Musaceae	Fruit, leaf	Diarrhea, Dysentery, wound
58	*Psidium guajava*	Modhuri aam	Myrtaceae	Leaf	Dysentery, Diarrhea, teeth problem
59	*Nyctanthes arbortristis*	Sewali	Oleaceae	Leaf, flower	Malaria, diabetes, ringworm, skin disease
60	*Citrus aurentiifolia*	Gulnemu	Rutaceae	Fruit, leaf	Skin disease, anti- oxidant property

3.3 Human ailments

In this study, a total of 60 medicinal plant species were recorded as being used to treat 18 categories of ailments (Fig. 3.2). The highest diversity of medicinal plants was associated with treatments for digestive system disorders, followed by other ailment categories. In contrast, the lowest diversity was observed in the categories related to the heart and vascular system and otolaryngology (ear, nose, and throat). All relevant data have been compiled and presented in Table 3.1.

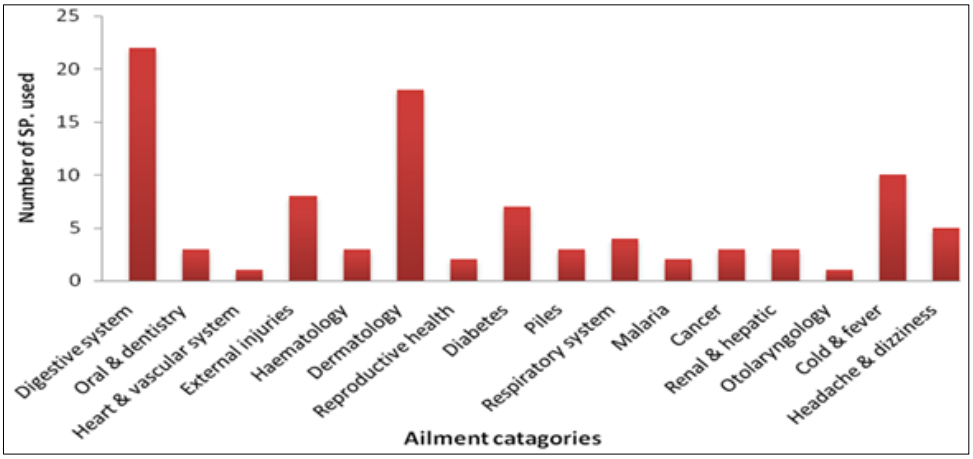

Fig 3.2: Number of medicinal plant species used for various ailment categories

- Digestive system: - Dysentery, diarrhoea, digestion, intestine worm, stomach ache, gastric, jaundice.
- Oral & dentistry: - Tooth ache, tooth decay, tongue bumps.
- Heart & vascular system: - Low pressure, high pressure.
- External injuries: - Cut & wounds, boil, wound healing, dog bite, insect bite, burning.
- Haematology: - Blood purification.
- Dermatology: - Allergy, ring worm, vertigo, pimples, hair fall.
- Reproductive health: - Azoospermia.
- Respiratory system: - Tuberculosis.
- Renal & hepatic: - Kidney stones.
- Otolaryngology: - Nasal bleeding, ear pain.
- Cold & fever: - Cough, fever, asthma.

Conclusion

The preliminary investigation of medicinal plants within the ICFRE–RFRI campus in Jorhat reveals a rich tapestry of floral diversity with deep ethnobotanical relevance. Surrounded by semi-natural vegetation and thoughtfully maintained green spaces, the campus serves as an ideal habitat for numerous herbs and shrubs commonly used in traditional healing practices. These plant species form an integral part of community healthcare, often relied upon to treat ailments such as skin infections, digestive issues, respiratory conditions, fever, wounds, and inflammation.

In total, the study documented 60 medicinal plant species spanning 55 genera and 37 families—highlighting the ecological and therapeutic potential embedded within the campus landscape. The findings reaffirm the cultural and scientific importance of preserving such plant resources, especially in an era of rapid modernization. Moving forward, research should prioritize detailed ethnobotanical documentation, phytochemical profiling, and sustainable management strategies to safeguard this knowledge and its natural foundations for future generations.

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