

Ethnobotanical documentation of medicinal plant resources in Assam, Northeast India

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Summary

Assam, a northeastern state of India, is renowned for its exceptional biodiversity and the deep-rooted traditions of indigenous communities who have long relied on medicinal plants for primary healthcare. This review synthesizes ethnobotanical knowledge of medicinal plants documented across the region, highlighting their therapeutic properties, preparation methods, and cultural relevance. A total of 149 plant species belonging to 64 families were identified, reflecting remarkable taxonomic diversity and the richness of traditional medical practices. Prominent families such as Fabaceae, Lamiaceae, Asteraceae, and Malvaceae dominate the inventory, consistent with global ethnobotanical trends due to their wide distribution and abundance of bioactive compounds. The study reveals that leaves are the most frequently utilized plant part, indicating a relatively sustainable approach to harvesting. However, reliance on roots, bark, and whole plants—particularly from species categorized as Vulnerable, Endangered, or Critically Endangered—raises serious conservation concerns. The documented species address a wide spectrum of ailments, including inflammation, infections, metabolic disorders, and wound healing, underscoring their pharmacological potential. The recurrence of similar therapeutic uses across unrelated taxa suggests long-term empirical validation through traditional practice and highlights the need for phytochemical and pharmacological studies to scientifically substantiate these claims. Furthermore, the integration of medicinal plants into daily diets, such as tea (*Camellia sinensis* var. *assamica*), papaya (*Carica papaya*), and curry leaves (*Murraya koenigii*), reflects the holistic nature of traditional medicine, where nutrition and prevention are closely linked. This review emphasizes the importance of preserving ethnomedicinal knowledge while promoting sustainable harvesting and conservation strategies to safeguard biodiversity and support the development of plant-based therapeutics.

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Introduction

Assam, situated in northeastern India, boasts of a unique blend of biodiversity and cultural heritage. The state's diverse flora includes numerous medicinal plants used in traditional healing practices by various indigenous communities. These communities have developed a rich ethnobotanical knowledge base that uses local plants to treat a wide range of ailments. Ethno-medicinal studies are of significant value to discover modern-day drugs from indigenous medicinal resources (Baruah & Baruah 2021). It is evident by studies that many high-value medicinal plant species have declined due to continuous exploitation of several medicinal plant species (Sajem et al. 2008). The medicinal plants occupy a significant sector in both traditional and modern health care systems and hence they represent a major part in the national resource (Baruah et al. 2017). The medicinal plants of the Himalayas are threatened due to various such as high demand for essential oils, herbal medicines, and pharmaceuticals, unsustainable harvesting (Badola & Aitken 2003). The study reveals that there is acute pressure on the natural habitat of medicinal plants due to

unsystematic collection and habitat destruction of medicinal plants. Important medicinal plants used in the formulation are being threatened in North-East India (Shankar & Rawat 2013). Proper documentation of biological diversity is essential for conservation and sustainable use of this natural wealth for the benefit of mankind (Roy & Roy 2015). The study suggests that herbal remedies constitute an important and effective component of the health care system among the ethnic communities (Terangpi et al. 2014). Studies also reveal the pattern of people-plant interactions in the region and the importance of plant medicines playing a vital role in the health care practices and survival of the forest dwellers (Das et al. 2023). Sajem et al. (2008), documented 32 species of plants, out of which 19 species have also been reported from other regions of the country about its threat status. More than 6 species of plants are included in the Red Data Book of Indian Plants, 5 number of species have already been included in the Red Data Book of the IUCN. Paul et al. (2011)), studied and documented the medicinal plants of Ultapani forest range under Holtugaon division, Manas Biosphere Reserve (Assam) and emphasized on the need to be surveyed, conserved and protected in their natural

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habitat. Ray & Saini (2022), on their study indicates an urgent action to protect these threatened medicinal plants species and prevent the loss of its medicinal value.

Materials and Methods

Data Collection and Sources

Data were collected from the existing literature, including ethnobotanical surveys, historical texts, and scientific articles. The primary sources of information include academic journals, books, and local herbalist knowledge. A total of 149 plant species from 64 families were documented, with a focus on the plant parts used, medicinal applications, and traditional preparation methods.

Inclusion Criteria

Geographical Focus: This study specifically focuses on the medicinal plants used in Assam.

Ethnobotanical Relevance: Plants documented for their medicinal uses by local communities.

Availability of Data: Only species with sufficient ethnobotanical information have been included.

Results

A. Species Diversity and Taxonomic Composition

This study reviewed 149 medicinal plants representing 64 different plant families. The recorded taxa included herbs, shrubs, trees, climbers, and cultivated species, demonstrating that medicinal plant use spans both wild and domesticated flora. Herbaceous species formed a significant proportion, reflecting their abundance and accessibility in local ecosystems. Commonly used plant parts include leaves, roots, bark, seeds, flowers, rhizomes, and whole plants. Among the plant families, Fabaceae was the most predominant with 10 species, followed by Malvaceae with 8 species, Asteraceae with 7 species, and Apocynaceae with 5 species. These families are well known for their pharmacological importance and richness in secondary metabolites such as alkaloids, flavonoids, terpenoids, and phenolic compounds. The high representation of these families suggests their long-standing therapeutic relevance and frequent selection in traditional medical practices.

Key medicinal uses of these plants were identified, with anti-inflammatory properties found in 90 species, digestive aid properties in 34 species, antimicrobial properties in 59 species, and antioxidant properties in 21 species. These findings highlight the diverse therapeutic potentials of medicinal plants.

B. Conservation Status of Medicinal Plants

Assessment of conservation status revealed that the majority of documented species fall under the Least Concern (LC) category, indicating relatively stable populations. However, several species were categorized as Vulnerable (VU), Near Threatened (NT), Endangered (EN), and Critically Endangered (CR). Notable threatened taxa include *Hellenia speciosa*, *Lagerstroemia*

minuticarpa, *Vatica lanceifolia*, *Gleditsia assamica*, and *Ceropegia lucida*.

A considerable number of species were recorded as Not Evaluated (NE) or Data Deficient (DD), highlighting the lack of comprehensive conservation assessments for many medicinal plants. The presence of threatened and insufficiently evaluated species indicates potential risks associated with overharvesting, habitat loss, and increasing dependence on wild plant resources for medicinal use.

C. Plant Parts Used

Analysis of plant parts utilized revealed a clear predominance of leaves, which were the most frequently used plant part across species. This was followed by roots, bark, rhizomes, fruits, seeds, stems, flowers, and whole plants. Leaf-based remedies were widely preferred due to their ease of collection, availability throughout much of the year, and reduced impact on plant survival.

Nevertheless, the use of underground parts such as roots, tubers, and rhizomes, as well as bark and whole plants, was also significant for certain species. Such practices may pose long-term sustainability concerns, particularly for slow-growing or threatened taxa, as harvesting these parts often results in plant mortality.

D. Therapeutic Applications

The documented plant species were used to treat a broad spectrum of ailments. The most frequently reported therapeutic categories included anti-inflammatory, antimicrobial, digestive, respiratory, antioxidant, antidiabetic, wound-healing, analgesic, diuretic, and antipyretic applications.

Inflammatory conditions, infections, gastrointestinal disorders, and respiratory ailments were among the most commonly treated health problems, indicating their prevalence in the community. Several plants were reported for managing chronic and lifestyle-related disorders such as diabetes, hypertension, liver disorders, bone fractures, and immune-related conditions. The repeated use of different species for similar ailments suggests a strong empirical basis for these traditional practices.

E. Preparation Methods and Modes of Administration

Traditional preparation methods varied depending on the plant species and ailment treated. The most common forms of preparation included decoctions and infusions, followed by pastes, powders, juices, oils, and direct consumption of fresh or cooked plant materials.

Oral administration was the predominant mode, particularly for systemic ailments such as digestive, metabolic, and respiratory disorders. Topical application was commonly employed for skin diseases, wounds, inflammations, and pain relief. Additionally, several medicinal plants were integrated into daily diets as vegetables, spices, teas, or fruits, reflecting the close relationship between food and medicine in traditional healthcare systems.

Table 1. List of medicinal plants in Assam

S. No.	Scientific Name	Common/Local Name	Family	Status/ category	Plant Part Used	Medicinal Uses	How it is used
1	<i>Abroma augustum</i> (L.)	Ulatkambal	Malvaceae	Least Concern	Bark, roots	Diabetes, menstrual	Bark and roots are

	L.f.			(LC)		disorders, general tonic	boiled to make a decoction, consumed orally
2	<i>Abrus precatorius</i> L.	Ratti, Gunja	Fabaceae	Least Concern (LC)	Seeds, roots, leaves	Fevers, cough, colds, contraceptive	Seeds processed to remove toxins and used in traditional medicine; leaves and roots made into a paste or decoction
3	<i>Acacia sinuata</i> (Lour.) Merr.	Shikakai	Fabaceae	Data Deficient (DD)	Pods, bark, leaves	Natural shampoo (shikakai), skin diseases, anti- dandruff	Pods dried and powdered for hair cleanser; bark and leaves made into a decoction for skin applicatio ns
4	<i>Acacia pennata</i> (L.) Willd.	Climbing Wattle, Tinggiri	Fabaceae	Least Concern (LC)	Leaves	Gastrointestin al issues, diuretic	Leaves cooked and consumed as a vegetable or made into a tea
5	<i>Achyranthes aspera</i> L.	Chirchita, Apamarga	Amaranthaceae	Least Concern (LC)	Roots, leaves, seeds	Asthma, cough, snake bites, skin infections	Roots and leaves made into a paste or decoction; seeds consumed directly
6	<i>Acmella paniculata</i> (Wall. ex DC.) R.K. Jansen	Akarkara	Asteraceae	Least Concern (LC)	Flowers, leaves	Toothaches, sore throat, stimulant	Flowers and leaves chewed or made into a paste for topical applicatio n
7	<i>Acorus calamus</i> L.	Vacha, Bach	Acoraceae	Least Concern (LC)	Rhizomes	Digestive disorders, respiratory issues, sedative	Rhizomes dried and powdered, taken with water or made into

							a decoction
8	<i>Acranthera tomentosa</i> R. Br. ex Hook.f.	-	Rubiaceae	Vulnerable (VU)	Roots, leaves	Fever, pain, anti-inflammatory	Roots and leaves made into a decoction or paste
9	<i>Adhatoda vasica</i> Nees	Vasaka, Adulsa	Acanthaceae	Least Concern (LC)	Leaves, roots	Respiratory issues, cough, bronchitis	Leaves boiled to make a decoction or juice; roots made into a powder
10	<i>Aesculus assamica</i> Griff.	-	Sapindaceae	Vulnerable (VU)	Seeds, bark	Rheumatism, anti-inflammatory	Seeds and bark dried and powdered, taken with water
11	<i>Ageratum houstonianum</i> Mill.	Blue Billygoat Weed	Asteraceae	Least Concern (LC)	Leaves	Wound healing, anti-inflammatory	Leaves crushed and applied topically or made into a poultice
12	<i>Allium sativum</i> L.	Lahsun (Garlic)	Amaryllidaceae	Not Evaluated (NE)	Bulbs (garlic cloves)	Cardiovascular health, antimicrobial, immune booster	Cloves eaten raw, cooked, or made into a paste or oil
13	<i>Alpinia nigra</i> (Gaertn.) B.L. Burtt	Tara	Zingiberaceae	Least Concern (LC)	Rhizomes	Digestive issues, anti-inflammatory, respiratory problems	Rhizomes dried and powdered or made into a decoction
14	<i>Alternanthera brasiliana</i> (L.) Kuntze	Brazilian Joyweed	Amaranthaceae	Least Concern (LC)	Leaves	Wound healing, anti-inflammatory, antimicrobial	Leaves made into a paste or decoction for topical or oral use
15	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Sessile Joyweed	Amaranthaceae	Least Concern (LC)	Leaves	Digestive issues, skin conditions, anti-inflammatory	Leaves consumed as a vegetable or made into a paste or decoction
16	<i>Amaranthus spinosus</i> L.	Thorny Amaranth	Amaranthaceae	Least Concern (LC)	Leaves, roots	Inflammation, digestive issues, diuretic	Leaves cooked as vegetable or made into tea;

							roots boiled to make a decoction
17	<i>Ananas comosus</i> (L.) Merr.	Pineapple	Bromeliaceae	Not Evaluated (NE)	Fruit, leaves	Digestive problems, anti-inflammatory, wound healing	Fruit eaten fresh or juiced; leaf extracts applied topically
18	<i>Antidesma acidum</i> Retz.	-	Phyllanthaceae	Least Concern (LC)	Leaves, fruits	Fever, digestive disorders, skin diseases	Leaves made into tea or paste; fruits consumed fresh
19	<i>Anoectochilus roxburghii</i> (Wall.) Lindl.	Jewel Orchid	Orchidaceae	Data Deficient (DD)	Whole plant	Liver disorders, diabetes, immune booster	Whole plant made into decoction or consumed as tea
20	<i>Begonia tessaricarpa</i> Clarke	-	Begoniaceae	Vulnerable (VU)	Leaves, stems	Wounds, anti-inflammatory	Leaves and stems crushed to make a poultice
21	<i>Bidens frondosa</i> L.	Common Beggar Ticks	Asteraceae	Least Concern (LC)	Leaves, stems	Digestive issues, respiratory conditions, anti-inflammatory	Leaves and stems made into tea or decoction
22	<i>Bixa orellana</i> L.	Annatto, Sindur Tree	Bixaceae	Cultivated	Seeds, leaves	Burns, digestive issues, anti-inflammatory	Seeds processed to extract annatto; leaves made into tea
23	<i>Bomax ceiba</i> L.	Red Silk Cotton Tree, Semal	Malvaceae	Least Concern (LC)	Bark, flowers	Anti-inflammatory, wound healing	Decoction, infusion
24	<i>Bridelia retusa</i> (L.) A. Juss.	Spiked Tree	Phyllanthaceae	Not Evaluated (NE)	Bark, leaves	Skin diseases, ulcers, anti-inflammatory	Bark and leaves made into decoction or paste for topical application
25	<i>Brucea mollis</i> Wall. ex Kurz	-	Simaroubaceae	Near Threatened (NT)	Seeds, bark	Malaria, dysentery, anti-inflammatory	Seeds and bark made into decoction or powder
26	<i>Cajanus cajan</i> (L.) Millsp.	Pigeon Pea, Arhar	Fabaceae	Domesticated	Leaves, seeds	Digestive issues,	Leaves made into

						respiratory problems, anti-inflammatory	tea; seeds cooked and consumed as a pulse
27	<i>Camellia sinensis</i> var. <i>assamica</i> (J.W. Mast.) Kitam.	Assam Tea	Theaceae	Cultivated	Leaves	Antioxidant properties, cardiovascular health, stimulant	Leaves processed to make tea, consumed as a beverage
28	<i>Capsicum annuum</i> L.	Chilli Pepper	Solanaceae	Cultivated	Fruits	Pain relief, anti-inflammatory, digestive aid	Fruits are consumed raw, cooked, or dried and powdered to make a spice (paprika); can be used in topical creams
29	<i>Capsicum frutescens</i> L.	Birds Eye Chilli	Solanaceae	Cultivated	Fruits	Pain relief, anti-inflammatory, digestive aid	Fruits are consumed raw, cooked, or dried and powdered to make a spice (cayenne); can be used in topical creams
30	<i>Careya arborea</i> Roxb.	Kumbhi	Lecythidaceae	Least Concern (LC)	Bark, leaves, flowers	Wound healing, anti-inflammatory, astringent	Bark and leaves are made into a paste or decoction; flowers can be used in topical applications
31	<i>Carica papaya</i> L.	Papaya	Caricaceae	Domesticated	Fruits, seeds, leaves	Digestive aid, anti-inflammatory, antimicrobial	Fruits eaten raw or cooked; seeds dried and powdered or eaten raw; leaves made into a tea or juice

32	<i>Cassia alata</i> L.	Candle Bush	Fabaceae	Least Concern (LC)	Leaves, flowers	Skin infections, fungal infections, laxative	Leaves and flowers made into a paste or decoction; can be applied topically or consumed orally
33	<i>Ceropegia angustifolia</i> Wight	-	Apocynaceae	Least Concern (LC)	Roots, tubers	Digestive aid, tonic	Roots and tubers boiled or cooked and consumed
34	<i>Ceropegia lucida</i> Wall.	-	Apocynaceae	Vulnerable (VU)	Roots, tubers	Digestive aid, tonic	Roots and tubers boiled or cooked and consumed
35	<i>Cheilocostus speciosus</i> (J.Koenig) C.Specht	Crepe Ginger	Costaceae	Least Concern (LC)	Rhizomes	Digestive aid, diuretic, anti-inflammatory	Rhizomes dried and powdered or made into a decoction
36	<i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & C.H.Eberm.	Tejpat	Lauraceae	Least Concern (LC)	Leaves, bark	Digestive aid, antimicrobial, anti-inflammatory	Leaves and bark dried and used as a spice; can be made into a tea or decoction
37	<i>Cinnamomum verum</i> J. Presl.	True Cinnamon	Lauraceae	Cultivated	Bark	Digestive aid, anti-inflammatory, anti-diabetic	As a spice in food, as a tea
38	<i>Cissampelos pareira</i> L.	Velvetleaf	Menispermaceae	Least Concern (LC)	Root, leaves	Diuretic, anti-inflammatory, anti-microbial	Decoction, infusion
39	<i>Cissus quadrangularis</i> L.	Hadjod	Vitaceae	Least Concern (LC)	Stem	Bone healing, anti-inflammatory, weight management	Capsules, powder, decoction
40	<i>Citrus grandis</i> L.	Pomelo	Rutaceae	Least Concern (LC)	Fruit, peel	Digestive aid, immune booster, antioxidant	Fresh fruit, juice, zest
41	<i>Clerodendrum colebrookianum</i> Walp.	East Indian Glory Bower	Lamiaceae	Least Concern (LC)	Leaves	Hypertension, anti-inflammatory	Leaf extract, infusion
42	<i>Clerodendrum infortunatum</i> L.	Hill Glory Bower	Lamiaceae	Not Evaluated	Leaves, root	Anti-inflammatory,	Leaf juice, root

				(NE)		antimicrobial, hepatoprotective	decoction
43	<i>Coelogyne rossiana</i> Reichb. f.	-	Orchidaceae	Not Evaluated (NE)	Whole plant	Traditional uses in various cultures	Extracts, infusions
44	<i>Commelina benghalensis</i> L.	Benghal Dayflower	Commelinaceae	Least Concern (LC)	Leaves	Anti-inflammatory, wound healing	Topical application, infusions
45	<i>Cordyline fruticosa</i> (L.) A. Chev.	Ti Plant	Asparagaceae	Least Concern (LC)	Leaves	Antioxidant, traditional medicinal uses	Leaf extract, infusion
46	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Redflower Ragleaf	Asteraceae	Least Concern (LC)	Leaves	Anti-inflammatory, wound healing	Leaf extract, infusion
47	<i>Crataeva nurvala</i> Buch-Ham	Varuna, Three-leaved Caper	Capparaceae	Not Evaluated (NE)	Bark, root	Diuretic, anti-inflammatory, lithotriptic	Decoction, infusion
48	<i>Crotalaria pallid</i> Aiton.	Smooth Rattlebox	Fabaceae	Least Concern (LC)	Whole plant	Anti-inflammatory, antimicrobial	Decoction, infusion
49	<i>Cymbopogon citratus</i> (DC.) Stapf.	Lemongrass	Poaceae	Not Evaluated (NE)	Leaves	Digestive aid, anti-anxiety, antimicrobial	Tea, essential oil, infusion
50	<i>Cynodon dactylon</i> (L.) Pers.	Doob Grass	Poaceae	Least Concern (LC)	Whole plant	Diuretic, anti-inflammatory, anti-diabetic	Juice, infusion
51	<i>Datura stramonium</i> L.	Thorn Apple, Dhatura	Solanaceae	Not Evaluated (NE)	Leaves, seeds	Pain relief, antispasmodic, sedative	External application, with caution
52	<i>Dichrocephala bicolor</i> Schltldl.	-	Asteraceae	Not Evaluated (NE)	Leaves	Anti-inflammatory, antimicrobial	Infusion, decoction
53	<i>Dioscorea deltoidea</i> Wall. ex Kunth	Nepal Yam	Dioscoreaceae	Near Threatened (NT)	Tuber	Anti-inflammatory, antioxidant, contraceptive	Cooked, powdered
54	<i>Dysoxylum binectariferum</i> Hiern.	-	Meliaceae	Not Evaluated (NE)	Bark, leaves	Anti-cancer, anti-inflammatory	Extracts, decoction
55	<i>Erythrina stricta</i> Roxb.	Coral Tree	Fabaceae	Not Evaluated (NE)	Bark, leaves	Sedative, anti-inflammatory, antimicrobial	Decoction, infusion
56	<i>Euphorbia neriifolia</i> L.	Hedge Euphorbia	Euphorbiaceae	Least Concern (LC)	Leaves, latex	Anti-inflammatory, antimicrobial, laxative	Extracts, topical application
57	<i>Ficus benghalensis</i> L.	Banyan Tree	Moraceae	Least Concern (LC)	Bark, leaves, fruit	Anti-diabetic, anti-inflammatory, wound healing	Decoction, powder, paste
58	<i>Flacourtia jangomos</i> (Lour.) Raeusch.	Governor's Plum	Salicaceae	Not Evaluated (NE)	Fruit	Antioxidant, anti-inflammatory	Fresh, juice
59	<i>Garcinia pedunculata</i>	Assam Lemon	Clusiaceae	Not Evaluated	Fruit	Antioxidant, anti-obesity,	Fresh, dried, juice

	Roxb. ex Buch.-Ham			(NE)		hepatoprotective	
60	<i>Gleditsia assamica</i> Bor	-	Fabaceae	Vulnerable (VU)	Pods	Anti-inflammatory, antimicrobial	Decoction, infusion
61	<i>Hedyotis scabra</i> Wall. ex Kurz	-	Rubiaceae	Least Concern (LC)	Whole plant	Anti-inflammatory, antipyretic	Decoction, infusion
62	<i>Hellenia speciosa</i> (J. Koenig) S.R. Dutta	False Cardamom	Costaceae	Critically Endangered (CR)	Rhizome	Anti-inflammatory, diuretic	Decoction, infusion
63	<i>Hibiscus acetosella</i> Welw. ex Hiern.	Red Hibiscus	Malvaceae	Not Evaluated (NE)	Leaves, flowers	Antioxidant, anti-inflammatory	Fresh, infusion
64	<i>Hibiscus sabdariffa</i> L.	Roselle	Malvaceae	Not Evaluated (NE)	Calyx	Antioxidant, antihypertensive, digestive aid	Tea, juice, syrup
65	<i>Hibiscus rosa-sinensis</i> L.	China Rose, Gurhal	Malvaceae	Not Evaluated (NE)	Flowers, leaves	Antioxidant, anti-inflammatory, hair care	Tea, topical application
66	<i>Houttuynia cordata</i> Thunb.	Chameleon Plant, Maniman	Saururaceae	Not Evaluated (NE)	Leaves, roots	Anti-inflammatory, antimicrobial	Salad, decoction, infusion
67	<i>Hoya parasitica</i> Wall ex Wight	Wax Plant	Apocynaceae	Not Evaluated (NE)	Leaves	Traditional medicinal uses	Extract, infusion
68	<i>Hydrocotyle sibthorpioides</i> Lam.	Lawn Pennywort	Araliaceae	Least Concern (LC)	Whole plant	Antimicrobial, anti-inflammatory	Juice, infusion
69	<i>Hylocereus undatus</i> (Haw.) Britton & Rose	Dragon Fruit	Cactaceae	Data Deficient (DD)	Fruit	Antioxidant, digestive aid	Fresh fruit, juice
70	<i>Hypericum japonicum</i> Thunb.	Japanese St. John's Wort	Hypericaceae	Not Evaluated (NE)	Whole plant	Antidepressant, anti-inflammatory	Tea, extract
71	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Black Creeper	Apocynaceae	Not Evaluated (NE)	Leaves, roots	Antioxidant, anti-inflammatory	Decoction, extract
72	<i>Indopolysolenia wallichii</i> (Hook.f.) Bennet	-	Araliaceae	Not Evaluated (NE)	Leaves, roots	Anti-inflammatory, antimicrobial	Decoction, infusion
73	<i>Ipomoea quamoclit</i> L.	Cypress Vine	Convolvulaceae	Not Evaluated (NE)	Leaves, stems	Antioxidant, antimicrobial	Decoction, infusion
74	<i>Justicia gendarussa</i> Burm.f.	Nilgiri Adusa	Acanthaceae	Least Concern (LC)	Leaves, stems	Anti-inflammatory, analgesic	Decoction, infusion
75	<i>Kaempferia rotunda</i> L.	Round Zedoary	Zingiberaceae	Not Evaluated (NE)	Rhizome	Anti-inflammatory, digestive aid	Decoction, infusion
76	<i>Kaempferia galangal</i> L.	Aromatic Ginger	Zingiberaceae	Data Deficient (DD)	Rhizome	Digestive aid, anti-inflammatory	Decoction, culinary spice, infusion
77	<i>Kalanchoe pinnata</i> (Lam.)	Miracle Leaf, Patharchatta	Crassulaceae	Least Concern	Leaves	Wound healing, anti-	Leaf juice, topical

	Pers.			(LC)		inflammatory	applicatio n
78	<i>Lagerstroemia minuticarpa</i> Debberm. ex. P. C. Kanjilal	-	Lythraceae	Endangered (EE)	Leaves, bark	Antidiabetic, antimicrobial	Decoction, infusion
79	<i>Lawsonia inermis</i> L.	Henna	Lythraceae	Least Concern (LC)	Leaves, bark	Antimicrobial, anti- inflammatory, dye	Topical applicatio n, paste
80	<i>Leea indica</i> (Burm.f.) Merr.	Bandicoot Berry	Vitaceae	Least Concern (LC)	Leaves, roots	Antimicrobial, anti- inflammatory	Decoction, infusion
81	<i>Leucas aspera</i> (Willd.) Link.	Thumbai	Lamiaceae	Not Evaluated (NE)	Leaves, flowers	Antimicrobial, anti- inflammatory	Decoction, infusion
82	<i>Livistona jenkinsiana</i> Griff. (Assam Fan Palm)	Tokou Palm	Arecaceae	Near threatened (NT)	Leaves, sap	Traditional medicinal uses	Fresh sap, decoction
83	<i>Ixonanthes khasiana</i> Hook. f.	-	Ixonanthaceae	Vulnerable (VU)	Leaves, bark	Traditional medicinal uses	Decoction, infusion
84	<i>Macaranga peltata</i> (Roxb.) Müll. Arg.	Macaranga	Euphorbiaceae	Least Concern (LC)	Leaves, bark	Antimicrobial, anti- inflammatory	Decoction, infusion
85	<i>Manihot esculenta</i> Crantz.	Cassava	Euphorbiaceae	Least Concern (LC)	Roots, leaves	Carbohydrate source, digestive aid	Cooked roots, leaf infusion
86	<i>Maranta arundinacea</i> L.	Arrowroot	Marantaceae	Not Evaluated (NE)	Rhizome	Digestive aid, anti- inflammatory	Arrowroot powder, decoction
87	<i>Melastoma affine</i> D. Don	Blue Tongue	Melastomatace ae	Not Evaluated (NE)	Leaves, flowers	Antimicrobial, wound healing	Leaf extract, infusion
88	<i>Melia azadirachta</i> L.	Neem Tree	Meliaceae	Not Evaluated (NE)	Leaves, bark, seeds	Antimicrobial, anti- inflammatory, skin disorders	Decoction, oil, paste
89	<i>Merremia umbellata</i> L.	Yellow Morning Glory	Convolvulaceae	Least Concern (LC)	Leaves, stems	Antimicrobial, anti- inflammatory	Decoction, infusion
90	<i>Micromelum minutum</i> (G. Forst.) Wight & Arn.	Chinese Croton	Rutaceae	Least Concern (LC)	Leaves, fruits	Antimicrobial, anti- inflammatory	Decoction, infusion
91	<i>Micromelum integerrimum</i> (Roxb. ex DC.)	-	Rutaceae	Least Concern (LC)	Leaves, bark	Traditional medicinal uses	Decoction, infusion
92	<i>Mikania scandens</i> (L.) Willd.	Climbing Hempweed	Asteraceae	Not Evaluated (NE)	Leaves, stems	Antimicrobial, wound healing	Decoction, infusion
93	<i>Morus nigra</i> L.	Black Mulberry	Moraceae	Data Deficient (DD)	Leaves, fruits	Antioxidant, anti- inflammatory, diabetes management	Fresh fruit, tea, leaf extract
94	<i>Mucuna nigricans</i> (Lour.) Steud.	Black Velvet Bean	Fabaceae	Least Concern (LC)	Seeds, leaves	Nervous disorders, anti- inflammatory	Decoction, extract
95	<i>Murraya</i>	Curry Leaf Tree	Rutaceae	Not	Leaves	Digestive aid,	Fresh

	<i>koenigii</i> (L.) Spreng.			Evaluated (NE)		antimicrobial, antioxidant	leaves, dried leaves, powder
96	<i>Murraya paniculata</i> (L.) Jack	Orange Jessamine	Rutaceae	Not Evaluated (NE)	Leaves, bark	Antimicrobial, anti-inflammatory	Decoction, infusion
97	<i>Musa paradisiaca</i> L.	Banana	Musaceae	Not Evaluated (NE)	Fruit, leaves	Nutrient-rich, digestive aid	Fresh fruit, cooked, leaf decoction
98	<i>Musa assamica</i> W. Bull	Assam Banana	Musaceae	Least Concern (LC)	Fruit, leaves	Nutrient-rich, digestive aid	Fresh fruit, cooked, leaf decoction
99	<i>Musa gigantean</i> Kuntze	Giant Banana	Musaceae	Least Concern (LC)	Fruit, leaves	Nutrient-rich, digestive aid	Fresh fruit, cooked, leaf decoction
100	<i>Myristica fragrans</i> Houtt.	Nutmeg	Myristicaceae	Data Deficient (DD)	Seeds (nutmeg), arils (mace)	Digestive aid, anti-inflammatory, sedative	Spice in cooking, essential oil
101	<i>Nelsonia canescens</i> (Lam.) Spreng.	-	Acanthaceae	Least Concern (LC)	Leaves, stems	Antimicrobial, anti-inflammatory	Decoction, infusion
102	<i>Nicotiana tabacum</i> L.	Tobacco	Solanaceae	Not Evaluated (NE)	Leaves	Traditional uses, insect repellent	Smoking, insecticide, topical application
103	<i>Nyctanthes arbor-tristis</i> L.	Night-flowering Jasmine	Oleaceae	Not Evaluated (NE)	Leaves, flowers	Antimicrobial, anti-inflammatory, antipyretic	Decoction, infusion
104	<i>Ocimum americanum</i> L.	American Basil	Lamiaceae	Not Evaluated (NE)	Leaves	Antimicrobial, digestive aid	Fresh leaves, infusion, tea
105	<i>Ocimum sanctum</i> L.	Holy Basil, Tulsi	Lamiaceae	Least Concern (LC)	Leaves, seeds	Adaptogen, antimicrobial, anti-inflammatory	Tea, fresh leaves, extract
106	<i>Oldenlandia corymbosa</i> L.	Diamond Flower	Rubiaceae	Not Evaluated (NE)	Whole plant	Antimicrobial, anti-inflammatory	Decoction, infusion
107	<i>Ophiorrhiza hispida</i> Hook. f.	-	Rubiaceae	Least Concern (LC)	Roots, leaves	Anticancer, antimicrobial	Decoction, infusion
108	<i>Ophiorrhiza tingens</i> Clarke ex Fischer	-	Rubiaceae	Least Concern (LC)	Roots, leaves	Anticancer, antimicrobial	Decoction, infusion
109	<i>Oroxylum indicum</i> (L.) Vent	Indian Trumpet Flower	Bignoniaceae	Least Concern (LC)	Bark, seeds, leaves	Antimicrobial, anti-inflammatory, digestive aid	Decoction, infusion, fresh leaves
110	<i>Oryza sativa</i> L.	Rice	Poaceae	Not Evaluated (NE)	Seeds (rice)	Nutrient-rich, digestive aid	Cooked as staple food
111	<i>Paederia foetida</i>	Skunkvine	Rubiaceae	Not	Leaves	Digestive aid,	Fresh

1	L.			Evaluated (NE)		anti-inflammatory	leaves, infusion
11 2	<i>Parkia speciosa</i> Hassk.	Stink Bean	Fabaceae	Least Concern (LC)	Seeds, pods	Antioxidant, antimicrobial	Cooked seeds, fresh pods
11 3	<i>Passiflora edulis</i> Sims	Passionfruit	Passifloraceae	Not Evaluated (NE)	Fruit, leaves	Sedative, digestive aid	Fresh fruit, juice, tea from leaves
11 4	<i>Persicaria chinensis</i> (L.) H. Gross	Chinese Knotweed	Polygonaceae	Not Evaluated (NE)	Leaves, stems	Antimicrobial, anti-inflammatory	Decoction, infusion
11 5	<i>Phlogacanthus tubiflorus</i> Nees	Tita phool	Acanthaceae	Not Evaluated (NE)	Leaves, stems	Antimicrobial, anti-inflammatory	Decoction, infusion
11 6	<i>Pholidota wattii</i> King et Pantl.	-	Orchidaceae	Not Evaluated (NE)	Whole plant	Traditional medicinal uses	Decoction, infusion
11 7	<i>Phyllanthus emblica</i> L.	Indian Gooseberry, Amla	Phyllanthaceae	Least Concern (LC)	Fruit, leaves	Antioxidant, anti-inflammatory, digestive aid	Fresh fruit, juice, decoction
11 8	<i>Phyllanthus niruri</i> L.	Stonebreaker	Phyllanthaceae	Not Evaluated (NE)	Whole plant	Antiviral, antimicrobial, liver protection	Decoction, infusion
11 9	<i>Physalis peruviana</i> L.	Cape Gooseberry	Solanaceae	Not Evaluated (NE)	Fruit	Antioxidant, anti-inflammatory	Fresh fruit, juice
12 0	<i>Picrasma javanica</i> Blume	-	Simaroubaceae	Least Concern (LC)	Bark, leaves	Antimalarial, antimicrobial	Decoction, infusion
12 1	<i>Piper betel</i> L.	Betel Leaf	Piperaceae	Least Concern (LC)	Leaves	Digestive aid, antimicrobial	Chewed fresh, infusion
12 2	<i>Piper nigrum</i> L.	Black Pepper	Piperaceae	Least Concern (LC)	Fruit (peppercorn)	Digestive aid, antimicrobial, anti-inflammatory	Spice in cooking, decoction
12 3	<i>Piper longum</i> L.	Long Pepper	Piperaceae	Not Evaluated (NE)	Fruit, root	Digestive aid, respiratory issues, antimicrobial	Spice in cooking, decoction
12 4	<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze	-	Lamiaceae	Not Evaluated (NE)	Leaves, stems	Antimicrobial, anti-inflammatory	Decoction, infusion
12 5	<i>Polygonum</i> sp.	Knotweed	Polygonaceae	Least Concern (LC)	Whole plant	Anti-inflammatory, antimicrobial	Decoction, infusion
12 6	<i>Prunus persica</i> (L.) Batsch	Peach	Rosaceae	Not Evaluated (NE)	Fruit, leaves	Antioxidant, digestive aid, anti-inflammatory	Fresh fruit, tea from leaves
12 7	<i>Rhamnus napalensis</i> (Wall.) Lawson.	Nepal Buckthorn	Rhamnaceae	Not Evaluated (NE)	Fruit, bark	Laxative, antimicrobial	Decoction, infusion
12 8	<i>Rhaphidophora hongkongensis</i> Schott	-	Araceae	Not Evaluated (NE)	Leaves, stems	Traditional medicinal uses	Decoction, infusion
12 9	<i>Rhynchostylis retusa</i> L. Blume	Foxtail Orchid	Orchidaceae	Not Evaluated	Whole plant	Traditional medicinal uses	Decoction, infusion

				(NE)			
130	<i>Ricinus communis</i> L.	Castor Bean	Euphorbiaceae	Not Evaluated (NE)	Seeds (castor beans), leaves	Laxative, anti-inflammatory, hair growth	Castor oil, leaf extract
131	<i>Rotheca serrata</i> L. Steane and Mabb.	-	Lamiaceae	Not Evaluated (NE)	Leaves, flowers	Antimicrobial, anti-inflammatory	Decoction, infusion
132	<i>Saurauia napaulensis</i> DC.	-	Actinidiaceae	Not Evaluated (NE)	Leaves, fruit	Antioxidant, antimicrobial	Fresh fruit, tea
133	<i>Scleria alta</i> Boeck	-	Cyperaceae	Not Evaluated (NE)	Whole plant	Traditional medicinal uses	Decoction, infusion
134	<i>Scoparia dulcis</i> L.	Sweet Broomweed	Plantaginaceae	Not Evaluated (NE)	Whole plant	Antidiabetic, anti-inflammatory	Decoction, infusion
135	<i>Sida acuta</i> Burm.f.	Common Wireweed	Malvaceae	Not Evaluated (NE)	Leaves, stems	Antimicrobial, anti-inflammatory	Decoction, infusion
136	<i>Sida rhombifolia</i> L.	Arrowleaf Sida	Malvaceae	Not Evaluated (NE)	Leaves, stems	Antimicrobial, anti-inflammatory	Decoction, infusion
137	<i>Solanum aculeatissimum</i> Jacq.	Dutch Eggplant	Solanaceae	Not Evaluated (NE)	Fruit, leaves	Antimicrobial, anti-inflammatory	Decoction, infusion
138	<i>Solanum indicum</i> L.	Indian Nightshade	Solanaceae	Not Evaluated (NE)	Fruit, leaves	Antimicrobial, digestive aid	Decoction, infusion
139	<i>Solanum torvum</i> Sw.	Turkey Berry	Solanaceae	Not Evaluated (NE)	Fruit, leaves	Antioxidant, antimicrobial	Fresh fruit, cooked
140	<i>Sterculia villosa</i> Roxb. ex Sm.	Udar	Malvaceae	Least Concern (LC)	Bark, leaves	Anti-inflammatory, wound healing	Decoction, infusion
141	<i>Synotis simonsii</i> (C.B. Clarke)	-	Asteraceae	Data Deficient (DD)	Whole plant	Traditional medicinal uses	Decoction, infusion
142	<i>Syzygium aromaticum</i> L.	Clove	Myrtaceae	Least Concern (LC)	Flower buds (cloves)	Antimicrobial, analgesic, anti-inflammatory	Spice in cooking, essential oil
143	<i>Tabernaemontana divaricata</i> R.Br. ex Roem. &Schantz.	Crepe Jasmine	Apocynaceae	Least Concern (LC)	Leaves, flowers	Antimicrobial, anti-inflammatory, pain relief	Decoction, infusion
144	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Arjuna	Combretaceae	Least Concern (LC)	Bark	Cardioprotective, anti-inflammatory	Decoction, powder
145	<i>Terminalia chebula</i> Retz.	Haritaki	Combretaceae	Least Concern (LC)	Fruit	Digestive aid, antimicrobial, antioxidant	Decoction, powder
146	<i>Vanda coerulea</i> Griff. ex Lindl.	Blue Vanda	Orchidaceae	Least Concern (LC)	Whole plant	Traditional medicinal uses	Decoction, infusion
147	<i>Vatica lanceifolia</i> (Roxb.) Blume	-	Dipterocarpaceae	Critically Endangered	Leaves, bark	Antimicrobial, anti-inflammatory	Decoction, infusion
148	<i>Vitex negundo</i> L.	Chinese Chastetree,	Lamiaceae	Least Concern	Leaves, seeds,	Antimicrobial, anti-	Decoction, infusion,

		Nirgundi		(LC)	roots	inflammatory, pain relief	topical applicatio n
14 9	<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Shampoo Ginger	Zingiberaceae	Not Evaluated (NE)	Rhizome	Digestive aid, anti- inflammatory, antimicrobial	Fresh, dried, powdered in cooking and teas

Discussion

The ethnomedicinal inventory of Assam presented in this study demonstrates remarkable taxonomic diversity, encompassing 149 species across more than 60 families. The dominance of Fabaceae, Lamiaceae, Asteraceae, and Malvaceae is consistent with global ethnobotanical surveys, where these families are frequently cited due to their wide distribution and rich phytochemical profiles (Neog & Borkataki 2025; Rajkhowa et al. 2025; Singh et al. 2023). Fabaceae species such as *Abrus precatorius*, *Cajanus cajan*, and *Mucuna nigricans* are widely used for respiratory, digestive, and nervous disorders, reflecting their pharmacological versatility. Similarly, Lamiaceae members (*Clerodendrum colebrookianum*, *Ocimum sanctum*, *Vitex negundo*) are prominent in cardiovascular, antimicrobial, and anti-inflammatory applications, aligning with their known essential oil and flavonoid content (Malick et al. 2022).

Plant Parts Used and Sustainability

Leaves were the most frequently utilized plant part, as seen in species like *Clerodendrum colebrookianum*, *Leucas aspera*, and *Ocimum sanctum*. This preference is ecologically significant, as leaf harvesting is generally less destructive compared to root or bark extraction (Neog & Borkataki 2025). However, reliance on roots (*Acranthera tomentosa*, *Ceropegia lucida*) and whole plants (*Anoectochilus roxburghii*, *Rhynchosyilis retusa*) raises conservation concerns, particularly for taxa categorized as Vulnerable (VU), Near Threatened (NT), or Critically Endangered (CR). For example, *Hellenia speciosa* (CR) and *Vatica lanceifolia* (CR) are at high risk due to destructive harvesting practices combined with habitat degradation (Borgohain & Gohain 2023). This underscores the need for community-based cultivation programs and ex-situ conservation strategies to reduce pressure on wild populations (Neog & Borkataki 2025).

Therapeutic Applications

The documented species address a wide spectrum of ailments, with notable emphasis on inflammation, infections, metabolic disorders, and wound healing. The recurrence of similar uses across unrelated taxa—for instance, anti-inflammatory properties reported in *Acmella paniculata* (Asteraceae), *Vitex negundo* (Lamiaceae), and *Cissus quadrangularis* (Vitaceae)—suggests long-term empirical validation through traditional practice (Malick et al. 2022; Haldhar et al. 2023 a&b; Sarangthem et al. 2025). Such cross-cultural consistency strengthens the case for phytochemical and pharmacological studies to validate traditional claims and identify novel bioactive compounds. Recent studies on *Ocimum sanctum* and *Phyllanthus emblica* have already demonstrated antioxidant and adaptogenic

properties, supporting their traditional uses (Malick et al. 2022).

Integration into Diet and Daily Life

Several plants, including *Camellia sinensis* var. *assamica* (Assam tea), *Carica papaya*, *Ananas comosus*, and *Murraya koenigii*, are integrated into daily diets, reflecting the holistic nature of traditional medicine where nutrition and prevention are closely linked. This dietary incorporation resonates with modern concepts of functional foods and nutraceuticals, bridging traditional wisdom with contemporary health paradigms (Malick et al. 2022).

Conservation and Knowledge Preservation

The presence of threatened species such as *Aesculus assamica* (VU), *Gleditsia assamica* (VU), and *Lagerstroemia minuticarpa* (EN) highlights the urgent need for conservation interventions. Unsustainable harvesting, coupled with limited cultivation, may accelerate biodiversity loss (Neog & Borkataki 2025). Documentation of ethnomedicinal knowledge, as undertaken in this study, is therefore critical for both cultural continuity and biodiversity protection. Participatory conservation approaches involving indigenous communities have been shown to be effective in safeguarding medicinal plant diversity (Neog & Borkataki 2025).

Conclusion

The ethnomedicinal flora of Assam reflects both pharmacological richness and conservation challenges. The dominance of Fabaceae, Lamiaceae, and Asteraceae families, the sustainable yet threatened harvesting practices, and the broad therapeutic applications collectively emphasize the need for a dual approach: Scientific validation of traditional claims through phytochemical and pharmacological research and Proactive conservation of medicinal plant diversity via sustainable harvesting, cultivation, and community engagement. Such efforts will ensure the continued relevance of ethnomedicine in primary healthcare while protecting vulnerable taxa for future generations.

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