



Floristic inventory and ethnopharmacological insights of angiosperms in the Jokai Reserve Forest, Dibrugarh, North-East, India, with special reference to threat categorization of some species

Damini Dey, Kaushik Kumar Mech, Bikash Singh, Pankaj Chetia

Correspondence

Damini Dey¹, Kaushik Kumar Mech¹, Bikash Singh¹, Pankaj Chetia^{1*}

¹Molecular Plant Taxonomy and Bioinformatics Laboratory, Department of Life Sciences, Dibrugarh University, Dibrugarh, 786004, Assam, India.

*Corresponding Author: chetiapankaj@dibru.ac.in

Ethnobotany Research and Applications 32:32 (2025)- <http://dx.doi.org/10.32859/era.32.32.1-28>

Manuscript received: 13/08/2025 - Revised manuscript received: 26/11/2025 - Published: 28/11/2025

Research

Abstract

Background: Jokai Reserve Forest, located only a few kilometers from the heart of Dibrugarh town in Assam, India, harbors a rich diversity of flora and fauna that remains largely unexplored in terms of floristic research. This study represents the first comprehensive attempt to compile a checklist of the flowering plants found in the reserve forest, with a particular focus on documenting the ethnomedicinal utilities allied with the therapeutic flora as practiced by the local communities residing around the forest.

Methods: Surveys from June 2022 to May 2024 documented plants mainly collected during flowering/fruitlet stages, with identification confirmed by taxonomy experts and regional floras. The data on the ethnobotanical utilities were gathered through structured field interviews with inhabitants.

Results: A total of 353 angiosperms (270 dicots, 83 monocots) from 81 families and 273 genera were recorded. Herbs were most dominant (168 spp.), followed by trees (103) and shrubs (82). Most of the species found in this forest are not only valuable for the pharmaceutical biosphere but also found to be beneficial economically, especially as sources of timber, fuel wood, fruits, vegetables, ornamental plants, and as fodders. A total of 31 species fall under the Rare Endangered Threatened (RET) categories including 15 Critically Endangered (CR), 3 Endangered (EN), 3 Vulnerable (VU), and 11 Least Concern (LC) category.

Conclusion: The present study is the first attempt to encounter, identify, and record the plant variety in Jokai Reserve Forest, making the initiative a significant scope to explore and comprehend the floral wealth and their potential ethnomedicinal properties.

Keywords: Angiosperms, Checklist, Dibrugarh, Ethnomedicinal, Jokai, RET (Rare Endangered Threatened)

Background

Tropical rainforests are comprised of one of the most biologically diverse terrestrial ecosystems. Despite populating only about 6% of the Earth's surface, these provinces are home to approximately 50-90% of the world's plant and animal species, indicating an startlingly diverse range of vegetation and other life forms (Seppälä *et al.* 2009). In India, tropical rainforests originate in the Western Ghats bordering the Arabian Sea coastline of peninsular India, the Andaman and Nicobar Islands, and Assam in the North-East. Regarding India's wide range of ecoclimatic and physiographic conditions, North-East India serves as a geographical gateway, as it is sanctified with much of the former's indigenous flora and fauna. Forest coverage in this region is about 54.16% of the country's total geographical area, which is about 14.2 million ha, eloquently higher than the nationwide average of 19.39 % (A. Roy *et al.* 2015). For the fantastic range of ecological habitats prevailing in this region of the country, various climatic, edaphic, and altitudinal variations are verified as the leading players. The tropical vegetation spanning all over the seven sister states of North-East India characteristically occurs at an altitude of up to 900 meters (3000 feet approx.), embracing a variety of forest forms such as evergreen and semi-evergreen forests, moist deciduous monsoon forests, riparian forests, swamps, and grasslands. (S. Kumar 2018). Tropical rainforests in North-East India are circumscribed to the faraway eastern part of the region, particularly the Tirap and Changlang districts of Arunachal Pradesh and the Tinsukia and Dibrugarh districts of Assam (Rajbonshi & Islam 2018). Although this segment was once relatively one of the undisturbed sections of the world, currently, due to constant anthropogenic pressures, they are under the threat of suffering permanent biodiversity loss in the tropics. There is still a large percentage of biological wealth unknown to us. Many species are reported to be lost mainly from these tropical regions, even before they were known to science (Tripathi 2016). The Jokai Reserve Forest, situated about 15 Kilometers from Dibrugarh town, is a rich treasure trove of various species of flora and fauna and has not yet undergone a comprehensive floristic study to date. The present study is the first attempt to encounter, identify, and record the plant variety in this biodiversity-rich area, making the initiative a significant scope to explore and comprehend the floral wealth and their potential ethnomedicinal properties.

Materials and Methods

Study area

The Jokai Reserve Forest extends from 27°22'59.9" North to 094°55'37.2" East and covers an area of approximately 1848.60 hectares (Fig.1.); it is a small, protected broadleaf forest situated 12 kilometers South of Dibrugarh town. Apart from being the storehouse of germplasm of some of the treasured and scarce species of flora in this region, this reserve forest cum botanical garden is a testament to the rich flora and fauna that this area nurtures, serving as a haven for various plant species and wildlife. The center is divided into different zones like medicinal and aromatic plants, orchid houses, rainforest specimens, and many more. Numerous low-altitude tropical and subtropical plant species are found in this area. The reserve forest is rich in diverse flora, including medicinal trees, oil-producing plants, aromatic plants, and fruit trees. Numerous low-altitude tropical species of fauna that inhabit this reserve forest include Oriental Pied Hornbill, Crested Serpent Eagle, Red-wattled Lapwing, Small Niltava, Little Pied Flycatcher, Black-winged Cuckooshrike, Asian Emerald Dove, Common Myna, Crimson Sunbird, Assamese macaque, various species of butterflies, leopards, elephants, wild buffalos etc.

Study design

Plant specimens were collected from the reserve forest and the adjoining village areas, covering all the seasons from June 2022 to May 2024. Samples were collected during their flowering and fruiting stages for proper identification, and the vernacular names along with their ethnomedicinal applications were recorded with help from the local inhabitants and forest officials through field interviews. During the field study, apart from collecting the specimens, their photographs were taken, and field characters of the same were also recorded. Collected specimens were then processed and mounted on herbarium sheets following standard protocols (Jain & Rao 1977).

Botanical identification

Identification of the plants has been done by taxonomy experts and consulting several regional and local floras (Kanjilal *et al.* 1934-1940, Barooha & Ahmed 2014). Collected specimens were also equated directly with herbarium deposits of the Department of Life Sciences, Dibrugarh University, and virtual herbarium deposits of the NYBG Steere Herbarium (Assam, Cal). For the up-to-date nomenclature of their taxa, famous plant databases such as *Tropicos*, *International Plant Names Index*, and *Plants of the World Online | Kew Science*, have been consulted. For global extinction risk and international trade assessments of the species, essential databases such as *IUCN Red List of Threatened Species*, and *CITES*, have been used.

Species documentation

In this paper, a listing of the taxa has been done, according to the Angiosperm Phylogeny Group IV classification (Chase *et al.* 2016), and the voucher specimens of the same were deposited in the Herbarium of the Department of Life Sciences, Dibrugarh University, Assam.

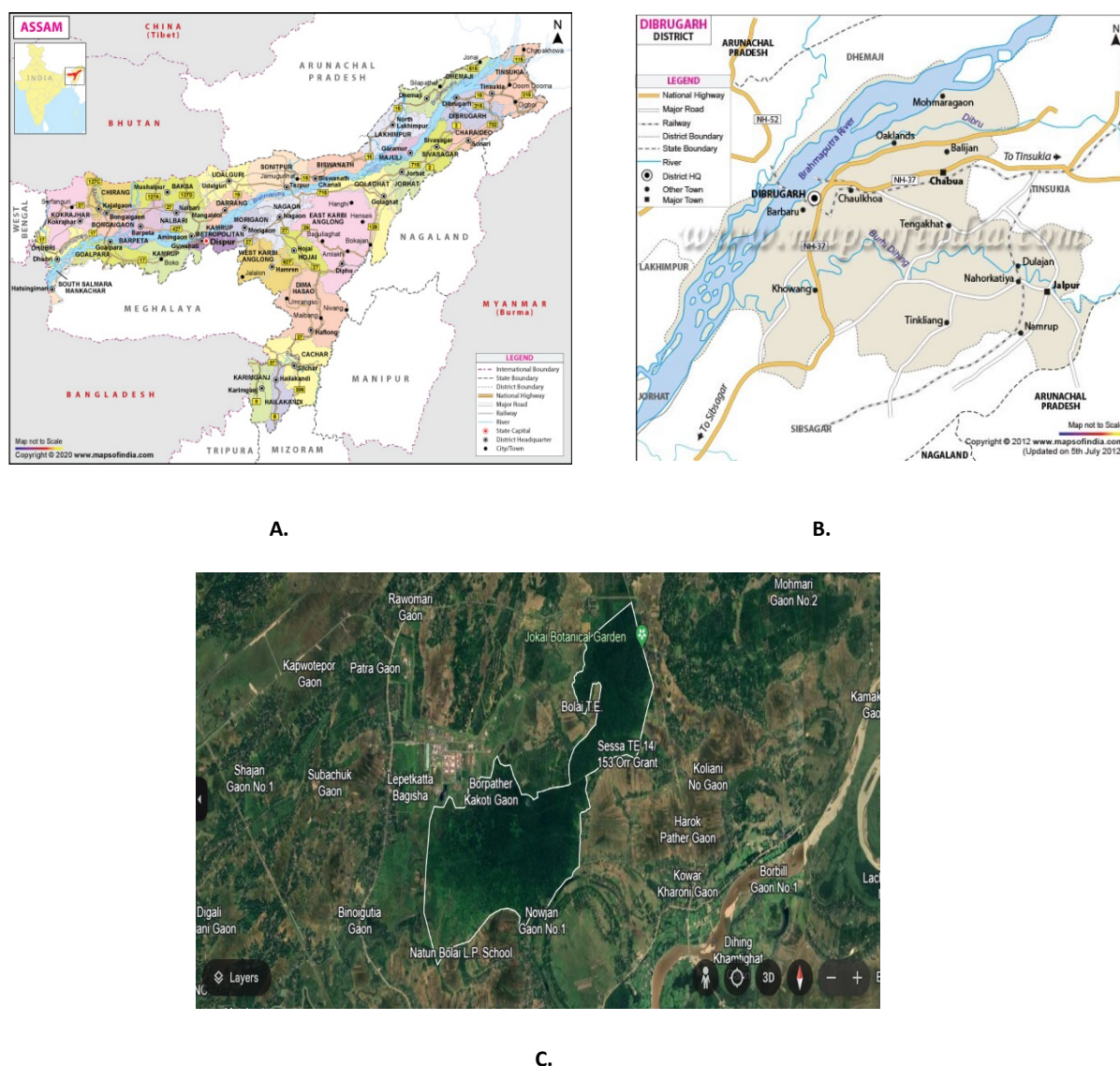


Figure 1. Map of Assam highlighting Dibrugarh district (A.), Map of Dibrugarh district (B.), Satellite map of Jokai Botanical Garden{From Google Earth}(C.). Source: www.mapsofindia.com

Results

The study area owns a total of 353 Angiosperms belonging to 81 families and 273 genera. Dicotyledons among these belong to 62 families, 214 genera, and 270 species, whereas Monocotyledons belong to 19 families, 59 genera, and 83 species (Table 1). In this study, all the recorded species were native to their origin. The Angiosperms were distributed under 33 orders according to APG IV classification. Out of these, ten orders that represented the highest number of species are Lamiales (42), Fabales (35), Asparagales (30), Asterales (24), Malpighiales (20), Sapindales (18), Rosales (17), Malvales (16), Poales (14), Myrtales (14), Gentiales (14), Caryophyllales (14), and Zingiberales (12). Out of the 62 families in Eudicots, five dominating ones are Fabaceae (35), Asteraceae (24), Lamiaceae (15), Malvaceae (12), and Acanthaceae (13). Correspondingly, in Monocots, out of 19 families, the top five families with the highest number of species are Orchidaceae (26), Zingiberaceae (8), Poaceae (9), Araceae (8), and Cyperaceae (5). Among some of the ruling families of the Eudicots, the genus *Solanum* from Solanaceae and *Ficus* from Moraceae represented the highest number of species (5) each, followed by *Magnolia* (4), a member of the family Magnoliaceae. Out of all the 62 families of the Eudicots, a total of 15 families viz. Theaceae, Brassicaceae, Chloranthaceae, Cornaceae, Saururaceae, Thymelaceae, Dilleniaceae, Mazaceae, Fagaceae, Bixaceae,

Calophyllaceae, Plumbaginaceae, Lecythidiaceae, Burseraceae, and Moringaceae were found to have only a single species. Likewise, in some of the ruling families of the Monocots, the top two genera that were found to represent the highest number of species were namely *Dendrobium* (7) from the family Orchidaceae, followed by *Cyperus* (4) from the family Cyperaceae, out of the 18 families reported from the Monocots, 6 families viz. Cannaceae, Musaceae, Alismataceae, Asparagaceae, Acoraceae, and Smilacaceae represents only a single species under them. On analysing the habits of various species present in the reserve forest, a total of 168 species (land and aquatic) from both Monocots and Dicots were herbs, making it the highest proportion (47.6 %) among all the other types followed by 103 trees (29 %), 82 shrubs (23 %), 18 climbers (5 %), 12 lianas (4 %) and lastly 22 epiphytes (6 %) from the monocots (Figure 3).

Out of the 353 species found, 40 plant species were found to hold medicinal importance, which were exclusively used by the local communities residing in the vicinity of the reserve forest. The data on the ethnobotanical utilities of these recorded medicinal plant species were collected from structured field interviews of the residents, based on which a table has been prepared (Table 2). Some of the most common disorders or ailments curable by all these plants are cough, fever, sinusitis, gastrointestinal disorders, cardiovascular disorders, and bacterial, viral, and fungal infections. This survey found that, out of many plants possessing both medicinal and economic importance, Teak or *Tectona grandis* L.f. is the most prominent species in this reserve forest, which holds maximum utilization among the forest locals medicinally and economically. Teak is generally known for its high-quality timber-yielding property, which helps construct houses, furniture, and bridges. The detailed usage of some of the medicinal plants found in the reserve forest is listed in Table 2.

Table 1. List of angiosperms recorded from Jokai Reserve Forest

Scientific name	Family	Vernacular name	Habit
Nymphaeales			
<i>Nymphaea elegans</i> Hook.	Nymphaeaceae		Herb (Aquatic)
<i>Nymphaea nouchali</i> Burm.f.	Nymphaeaceae	Boga-bhet, Bhet-phul	Herb (Aquatic)
Piperales			
<i>Peperomia pellucida</i> (L.) Kunth	Piperaceae		Herb
<i>Piper longum</i> L.	Piperaceae	Pipoli	Herb (Climber)
<i>Piper nigrum</i> L.	Piperaceae	Jaluk	Herb (Climber)
<i>Houttuynia cordata</i> Thunb.	Saururaceae	Mosundari	Herb
Magnoliales			
<i>Annona squamosa</i> L.	Annonaceae	Ata phal, Atakothal	Tree
<i>Millettia adioeca</i> (Roxb.) Chaowasku & Kessler	Annonaceae		Tree
<i>Monoonlongifolium</i> (Sonn.) B.Xue & R.M.K.Saunders	Annonaceae		Tree
<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	Titachopa	Tree
<i>Magnolia griffithii</i> Hook.f. & Thomson	Magnoliaceae		Tree
<i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H.Keng	Magnoliaceae	Borhomthuri	Tree
<i>Magnolia insignis</i> Wall.	Magnoliaceae	Phul sopa	Tree
Laurales			
<i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet	Lauraceae	Bon tezpaat	Tree
<i>Litsea monopetala</i> (Roxb.) Pers.	Lauraceae	Hengalu	Tree
<i>Litsea salicifolia</i> (Roxb. ex Nees) Hook.f.	Lauraceae	Dighloti	Tree
Chloranthales			
<i>Chloranthus erectus</i> (Buch.-Ham.) Wall.	Chloranthaceae		Shrub
Acorales			
<i>Acorus calamus</i> L.	Acoraceae		Herb
Alismatales			
<i>Sagittaria sagittifolia</i> L.	Alismataceae		Herb
<i>Alocasia indica</i> (Lour.) Spach	Araceae		Herb
<i>Alocasia macrorrhizos</i> (L.) G.Don	Araceae	Man Kochu	Herb
<i>Colocasia esculenta</i> (L.) Schott	Araceae	Kola kochu	Herb
<i>Colocasia mannii</i> Hook.f.	Araceae		Herb

<i>Lemna perpusilla</i> Torr.	Araceae		Herb (Aquatic)
<i>Pistia stratiotes</i> L.	Araceae		Herb (Aquatic)
<i>Pothos scandens</i> L.	Araceae		Herb (Climber)
<i>Rhaphidophora hookeri</i> Schott	Araceae		Herb (Climber)
<i>Blyxa octandra</i> (Roxb.) Planch. ex Thwaites	Hydrocharitaceae		Herb (Aquatic)
<i>Ottelia alismoides</i> (L.) Pers.	Hydrocharitaceae		Herb (Aquatic)
Liliales			
<i>Smilax ovalifolia</i> Roxb. ex D.Don	Smilacaceae		Herb (Climber)
Asparagales			
<i>Crinum bulbispermum</i> (Burm.f.) Milne-Redh. & Schweick.	Amaryllidaceae		Herb
<i>Crinum moorei</i> Hook.f.	Amaryllidaceae		Herb
<i>Hippea strumpunctum</i> (Lam.) Voss	Amaryllidaceae		Herb
<i>Asparagus racemosus</i> Willd.	Asparagaceae		Herb (Climber)
<i>Acampe carinata</i> (Griff.) Panigrahi	Orchidaceae		Herb (Epiphyte)
<i>Aerides odorata</i> Lour.	Orchidaceae	Boga kopouphool	Herb (Epiphyte)
<i>Aerides rosea</i> Lodd. ex Lindl. & Paxton	Orchidaceae		Herb (Epiphyte)
<i>Bulbophyllum affine</i> Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	Mota kopouphool	Herb (Epiphyte)
<i>Dendrobium aduncum</i> Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch.	Orchidaceae	Mota kopou	Herb (Epiphyte)
<i>Dendrobium fimbriatum</i> Hook.	Orchidaceae		Herb (Epiphyte)
<i>Dendrobium lituiflorum</i> Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Dendrobium moschatum</i> (Banks) Sw.	Orchidaceae		Herb (Epiphyte)
<i>Dendrobium nobile</i> Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Dendrobium transparens</i> Wall. ex Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Gastrochilus obliquus</i> (Lindl.) Kuntze	Orchidaceae		Herb (Epiphyte)
<i>Goodyera procera</i> (Ker Gawl.) Hook.	Orchidaceae		Herb
<i>Liparis viridiflora</i> (Blume) Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Micropera obtusa</i> (Lindl.) Tang & F.T.Wang	Orchidaceae		Herb (Epiphyte)
<i>Micropera pallida</i> (Roxb.) Lindl.	Orchidaceae		Herb (Epiphyte)
<i>Micropera rostrata</i> (Roxb.) N.P.Balakr.	Orchidaceae		Herb (Epiphyte)
<i>Oberonia mucronata</i> (D.Don) Ormerod & Seidenf.	Orchidaceae		Herb (Epiphyte)
<i>Papilionanthe teres</i> (Roxb.) Schltr.	Orchidaceae	Bhatouthutiakopou	Herb (Epiphyte)
<i>Phaius tankervilleae</i> (Banks) Blume	Orchidaceae		Herb
<i>Rhynchostylis retusa</i> (L.) Blume	Orchidaceae	Kopouphool / Foxtail	Herb (Epiphyte)
<i>Thrixspurmoma cuminatissimum</i> (Blume) Rchb.f.	Orchidaceae		Herb (Epiphyte)
<i>Zeuxine lindleyana</i> A.N.Rao	Orchidaceae		Herb
<i>Zeuxine nervosa</i> (Wall. ex Lindl.) Benth. ex Trimen	Orchidaceae		Herb (Epiphyte)
<i>Zeuxine strateumatica</i> (L.) Schltr.	Orchidaceae		Herb
Arecales			
<i>Areca catechu</i> L.	Arecaceae	Tamul	Tree
<i>Calamus tenuis</i> Roxb.	Arecaceae		Herb (Lianus)
<i>Cocos nucifera</i> L.	Arecaceae	Narikol	Tree
<i>Livistona jenkinsiana</i> Griff.	Arecaceae	Tokou	Tree
Commelinales			
<i>Commelina benghalensis</i> L.	Commelinaceae	Kona simalu	Herb
<i>Commelina diffusa</i> Burm.f.	Commelinaceae	Kona simolu	Herb
<i>Floscopa scandens</i> Lour.	Commelinaceae	Kona simolu	Herb
<i>Murdannia nudiflora</i> (L.) Brenan	Commelinaceae	Kandoli	Herb

<i>Pontederia crassipes</i> Mart.	Pontederiaceae		Herb (Aquatic)
<i>Pontederia hastate</i> L.	Pontederiaceae	Meteka	Herb (Aquatic)
<i>Pontederia vaginalis</i> Burm.f.	Pontederiaceae		Herb (Aquatic)
Zingiberales			
<i>Canna indica</i> L.	Cannaceae	Parijat	Herb
<i>Hellenia speciosa</i> (J.Koenig) S.R.Dutta	Costaceae	Jomlakhuti	Herb
<i>Phrynium pubinerve</i> Blume.	Marantaceae	Kou paat	Herb
<i>Schumannianthus benthamianus</i> (Kuntze) Veldkamp & I.M.Turner.	Marantaceae	Patidoi	Shrub
<i>Musa balbisiana</i> Colla	Musaceae	Kol	Herb
<i>Alpinia nigra</i> (Gaertn.) Burt	Zingiberaceae	Tora	Herb
<i>Alpinia roxburghii</i> Sweet	Zingiberaceae		Herb
<i>Curcuma aromatic</i> Salisb.	Zingiberaceae	Keturi	Herb
<i>Curcuma caesia</i> Roxb.	Zingiberaceae		Herb
<i>Curcuma zedoaria</i> (Christm.) Roscoe	Zingiberaceae	Keturi	Herb
<i>Hedychium coccineum</i> Buch.-Ham. ex Sm.	Zingiberaceae		Herb
<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Zingiberaceae	Bon-ada	Herb
Poales			
<i>Cyperus brevifolius</i> (Rottb.) Hassk.	Cyperaceae	Keya bon	Herb
<i>Cyperus distans</i> L.f.	Cyperaceae		Herb
<i>Cyperus involucratus</i> Poir.	Cyperaceae		Herb
<i>Cyperus rotundus</i> L.	Cyperaceae	Mutha bon	Herb
<i>Eleocharis palustris</i> (L.) Roem. & Schult.	Cyperaceae	Sesur	Herb
<i>Axonopus compressus</i> (Sw.) P.Beauv.	Poaceae	Dolisa bon	Herb
<i>Chrysopo gonaciculatus</i> (Retz.) Trin.	Poaceae	Bonguti	Herb
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Dubori bon	Herb
<i>Digitaria sanguinalis</i> (L.) Scop.	Poaceae		Herb
<i>Eleusine indica</i> (L.) Gaertn.	Poaceae	Bobosa bon	Herb
<i>Opismenus composites</i> (L.) P.Beauv.	Poaceae	Bonguti	Herb
<i>Panicum trichanthum</i> Nees.	Poaceae		Herb
<i>Paspalum distichum</i> L.	Poaceae		Herb
<i>Saccharum aegyptiacum</i> Willd.	Poaceae		Herb
Ranunculales			
<i>Pericampylus glaucus</i> (Lam.) Merr.	Menispermaceae	Goria loti	Herb (Lianus)
<i>Stephania glandulifera</i> Miers	Menispermaceae		Herb (Climber)
<i>Stephania japonica</i> (Thunb.) Miers	Menispermaceae	Tubuki lota	Herb (Climber)
<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson	Menispermaceae	Giloy	Herb (Lianus)
<i>Tinosporacrispa</i> (L.) Hook.f. & Thomson	Menispermaceae	Hoguni lota	Herb (Lianus)
<i>Tinospora sinensis</i> (Lour.) Merr.	Menispermaceae	Sudarshana	Herb (Lianus)
Dilleniales			
<i>Dillenia indica</i> L.	Dilleniaceae	Ou-tenga	Tree
Fabales			
<i>Adenanthera pavonina</i> L.	Fabaceae	Ku sandan	Tree
<i>Albizia lebbeck</i> (L.) Benth.	Fabaceae	Sirish	Tree
<i>Albizia lucida</i> (Jacques) Benth.	Fabaceae	Mojjgos	Tree
<i>Bauhinia acuminata</i> L.	Fabaceae	Kanchon	Tree
<i>Bauhinia purpurea</i> L.	Fabaceae	Kanchon	Tree
<i>Bauhinia variegata</i> L.	Fabaceae	Kanchon	Tree
<i>Butea monosperma</i> (Lam.) Kuntze	Fabaceae	Polakhgos	Tree
<i>Caesalpinia pulcherrima</i> (L.) Sw.	Fabaceae	Radhachura	Tree
<i>Cassia fistula</i> L.	Fabaceae	Hunaru	Tree
<i>Cassia javanica</i> L.	Fabaceae	Radhachura	Tree

<i>Clitoria ternatea</i> L.	Fabaceae	Oporajita	Herb (Climber)
<i>Crotalaria juncea</i> L.	Fabaceae		Shrub
<i>Crotalaria pallida</i> Aiton	Fabaceae		Shrub
<i>Crotalaria retusa</i> L.	Fabaceae		Shrub
<i>Dalbergia assamica</i> Benth.	Fabaceae		Tree
<i>Dalbergia ramosa</i> Roxb.	Fabaceae		Shrub
<i>Delonix regia</i> (Bojer ex Hook.) Raf.	Fabaceae	Krishnochura	Tree
<i>Erythrina stricta</i> Roxb.	Fabaceae		Tree
<i>Erythrina variegata</i> L.	Fabaceae	Modar	Tree
<i>Flemingia strobilifera</i> (L.) W.T.Aiton	Fabaceae	Makhiyoti	Shrub
<i>Grona triflora</i> (L.) H. Ohashi & K. Ohashi	Fabaceae		Shrub
<i>Guilandina bonduc</i> L.	Fabaceae	Leta guti	Tree
<i>Lablab purpureus</i> (L.) Sweet	Fabaceae		Herb (Climber)
<i>Lathyrus aphaca</i> L.	Fabaceae		Herb
<i>Mimosa pudica</i> L.	Fabaceae	Nilaji bon	Shrub
<i>Ohwia caudata</i> (Thunb.) H. Ohashi	Fabaceae		Shrub
<i>Parkia timoriana</i> (DC.) Merr.	Fabaceae	Manipuri been	Tree
<i>Peltophorum pterocarpum</i> (DC.) Backer ex K. Heyne	Fabaceae		Tree
<i>Saraca asoca</i> (Roxb.) W.J. de Wilde	Fabaceae	Ashok gos	Tree
<i>Senna alata</i> (L.) Roxb.	Fabaceae	Khor gos	Shrub
<i>Senna siamea</i> (Lam.) H.S. Irwin & Barneby	Fabaceae		Tree
<i>Senna tora</i> (L.) Roxb.	Fabaceae	Medeluwa	Herb
<i>Sesbania cannabina</i> (Retz.) Poir.	Fabaceae		Shrub
<i>Sesbania grandiflora</i> (L.) Poir.	Fabaceae		Shrub
<i>Tamarindus indica</i> L.	Fabaceae	Teteli	Tree
Rosales			
<i>Artocarpus chama</i> Buch.-Ham.	Moraceae	Sam kothal	Tree
<i>Ficus benjamina</i> L.	Moraceae		Tree
<i>Ficus heterophylla</i> L.f.	Moraceae		Shrub
<i>Ficus hispida</i> L.f.	Moraceae	JogyaDimoru/ Khokshadimoru	Tree
<i>Ficus racemosa</i> L.	Moraceae		Tree
<i>Ficus religiosa</i> L.	Moraceae	Aahotgos	Tree
<i>Morus alba</i> L.	Moraceae	Nuni gos	Shrub, Tree
<i>Gouania leptostachya</i> DC.	Rhamnaceae		Herb (Lianus)
<i>Rhamnus napalensis</i> (Wall.) M.A. Lawson	Rhamnaceae		Shrub, Tree
<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Bogori	Tree
<i>Potentilla indica</i> (Andrews) Th. Wolf	Rosaceae		Herb
<i>Prunus domestica</i> L.	Rosaceae	Ahom bogori	Tree
<i>Prunus jenkinsii</i> Hook.f. & Thomson	Rosaceae		Tree
<i>Prunus persica</i> (L.) Batsch	Rosaceae	Nora bogori	Tree
<i>Rubus moluccanus</i> L.	Rosaceae		Shrub
<i>Dendrocnide sinuata</i> (Blume) Chew	Urticaceae	Bor-Suraat pat	Tree
<i>Pilea microphylla</i> (L.) Liebm.	Urticaceae		Herb
<i>Pouzolzia zeylanica</i> (L.) Benn.	Urticaceae	Borali-bokua	Herb
Fagales			
<i>Castanopsis indica</i> (Roxb. ex Lindl.) A. DC.	Fagaceae	Hingori	Tree
Oxalidales			
<i>Elaeocarpus floribundus</i> Blume	Elaeocarpaceae		Tree
<i>Elaeocarpus serratus</i> L.	Elaeocarpaceae	Jolphai	Tree
<i>Elaeocarpus varunua</i> Buch.-Ham. ex Mast.	Elaeocarpaceae		Tree
<i>Biophytum sensitivum</i> (L.) DC.	Oxalidaceae		Herb

<i>Oxalis corniculata</i> L.	Oxalidaceae	Tengesi	Herb
<i>Oxalis debilis</i> Kunth	Oxalidaceae	Tengesi	Herb
Malpighiales			
<i>Mesua ferrea</i> L.	Calophyllaceae	Nahor	Tree
<i>Garcinia cowa</i> Roxb. ex Choisy	Clusiaceae	Kauri thekera	Tree
<i>Garcinia lanceifolia</i> Roxb.	Clusiaceae	Rupohithekera	Tree
<i>Acalypha indica</i> L.	Euphorbiaceae		Shrub
<i>Balakatabaccata</i> (Roxb.) Esser	Euphorbiaceae	Seleng	Tree
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Gakhiroti bon	Herb
<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Era gos	Shrub
<i>Mallotus philippensis</i> (Lam.) Müll.Arg.	Euphorbiaceae	Jorot/ henduriguti	Tree
<i>Mallotus tetracoccus</i> (Roxb.) Kurz	Euphorbiaceae		Tree
<i>Ricinus communis</i> L.	Euphorbiaceae	Era gos	Shrub, Small tree
<i>Passiflora edulis</i> Sims	Passifloraceae	Lotabel	Herb (Climber)
<i>Passiflora foetida</i> L.	Passifloraceae	Junuka-lota	Herb (Climber)
<i>Baccaurea ramiflora</i> Lour.	Phyllanthaceae	Leteku	Tree
<i>Bischofia javanica</i> Blume	Phyllanthaceae	Uriyam	Tree
<i>Brideliastipularis</i> (L.) Blume	Phyllanthaceae		Shrub, Tree
<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Aamlokhi	Tree
<i>Phyllanthus reticulatus</i> Poir.	Phyllanthaceae		Shrub, Tree
<i>Phyllanthus urinaria</i> L.	Phyllanthaceae	Bona amlokhi	Herb
<i>Flacourtia ajangomas</i> (Lour.) Raeusch.	Salicaceae	Poniyol	Tree
<i>Xylosma longifolia</i> Clos	Salicaceae		Tree
Myrtales			
<i>Combretum indicum</i> (L.) DeFilipps	Combretaceae	Bonoriyaphool	Tree
<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjun goss	Tree
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Bhumura	Tree
<i>Terminalia chebula</i> Retz.	Combretaceae	Hilikha	Tree
<i>Cuphea carthagenensis</i> (Jacq.) J.F.Macbr.	Lythraceae	Pani jetuka	Herbs
<i>Duabanga grandiflora</i> (Roxb. ex DC.) Walp.	Lythraceae	Khakon	Tree
<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Aazar	Tree
<i>Blastus cochinchinensis</i> Lour.	Melastomataceae	Phutkola	Shrub
<i>Melastoma malabathricum</i> L.	Melastomataceae	Ronga-phutkola	Shrub
<i>Osbeckia stellata</i> Buch.-Ham. ex D.Don	Melastomataceae		Shrub
<i>Melaleuca citrina</i> (Curtis) Dum.Cours.	Myrtaceae		Shrub
<i>Psidium guajava</i> L.	Myrtaceae	Modhuriam	Tree
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Kamuk	Tree
<i>Syzygium jambos</i> (L.) Alston	Myrtaceae	Bogi-jamuk	Tree
Sapindales			
<i>Drimycarpus sracemosus</i> (Roxb.) Hook.f. ex Marchand	Anacardiaceae		Tree
<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae		Tree
<i>Mangifera indica</i> L.	Anacardiaceae	Aam goss	Tree
<i>Pegia nitida</i> Colebr.	Anacardiaceae		Herb (Lianus)
<i>Spondias pinnata</i> (L.f.) Kurz	Anacardiaceae	Omora	Tree
<i>Canarium bengalense</i> Roxb.	Burseraceae	Dhuna goss	Tree
<i>Azadirachta indica</i> A.Juss.	Meliaceae	Moha neem	Tree
<i>Chisocheton cumingianus</i> (C.DC.) Harms	Meliaceae		Tree
<i>Chukrasia tabularis</i> A.Juss.	Meliaceae	Bogipoma	Tree
<i>Melia azedarach</i> L.	Meliaceae	Ghura neem	Tree
<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Bel goss	Tree
<i>Bergera koenigii</i> L.	Rutaceae	Norohingho	Shrub
<i>Citrus maxima</i> (Burm.) Merr.	Rutaceae	Robab-Tenga	Tree

<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae		Shrub, Tree
<i>Micromelum minutum</i> (G.Forst.) Wight & Arn.	Rutaceae		Shrub
<i>Zanthoxylum nitidum</i> (Roxb.) DC.	Rutaceae	Tezmuri	Shrub
<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Kopalfuta	Herb (Lianus)
<i>Dimocarpus longan</i> Lour.	Sapindaceae		Tree
Malvales			
<i>Bixa orellana</i> L.	Bixaceae		Tree
<i>Dipterocarpus retusus</i> Blume	Dipterocarpaceae	Hollong, Hulung	Tree
<i>Shorea robusta</i> C.F.Gaertn.	Dipterocarpaceae	Xaal goss	Tree
<i>Abelmoschus moschatus</i> Medik.	Malvaceae	Gorokhiakoroi	Shrub
<i>Abroma augustum</i> (L.) L.f.	Malvaceae	Hati/ piola	Shrub
<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Perapeteri	Shrub
<i>Bombax ceiba</i> L.	Malvaceae	Himolugos	Tree
<i>Corchorus aestuans</i> L.	Malvaceae		Shrub
<i>Grewia sapida</i> Roxb. ex DC.	Malvaceae		Shrub
<i>Grewia serrulata</i> DC.	Malvaceae		Shrub, Tree
<i>Hibiscus tiliaceus</i> L.	Malvaceae		Tree
<i>Sida cordifolia</i> L.	Malvaceae	Sun-boriola	Herb
<i>Sterculia lanceifolia</i> Roxb.	Malvaceae		Shrub, Tree
<i>Triumfetta rhomboidea</i> Jacq.	Malvaceae		Herb
<i>Urena lobata</i> L.	Malvaceae		Shrub
<i>Aquilaria malaccensis</i> Lam.	Thymelaeaceae	Hasi goss	Tree
Brassicales			
<i>Rorippa dubia</i> (Pers.) H.Hara	Brassicaceae		Herb
<i>Cleome gynandra</i> L.	Cleomaceae		Shrub
<i>Cleome rutidosperma</i> DC.	Cleomaceae		Herb
<i>Cleome viscosa</i> L.	Cleomaceae		Shrub
<i>Moringa oleifera</i> Lam.	Moringaceae	Sojina goss	Tree
Caryophyllales			
<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Mati kaduri	Herb
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Hatikhutura	Herb
<i>Amaranthus viridis</i> L.	Amaranthaceae	Khutura	Herb
<i>Chenopodium album</i> L.	Amaranthaceae	Jilimili	Herb
<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Caryophyllaceae	Lai jabori	Herb
<i>Polycarpon prostratum</i> (Forssk.) Asch. & Schweinf.	Caryophyllaceae		Shrub
<i>Stellaria media</i> (L.) Vill.	Caryophyllaceae		Herb
<i>Plumbago auriculata</i> Lam.	Plumbaginaceae		Shrub
<i>Persicaria capitata</i> (Buch.-Ham. ex D.Don) H.Gross	Polygonaceae		Herb
<i>Persicaria chinensis</i> (L.) H.Gross	Polygonaceae		Herb
<i>Persicaria perfoliata</i> (L.) H.Gross	Polygonaceae		Herb
<i>Rumex maritimus</i> L.	Polygonaceae		Herb
<i>Rumex palustris</i> Sm.	Polygonaceae		Herb
Cornales			
<i>Alangium chinense</i> (Lour.) Harms	Cornaceae	Sika-moroliya	Tree
Ericales			
<i>Impatiens balsamina</i> L.	Balsaminaceae		Herb
<i>Impatiens tripetala</i> Roxb. ex DC.	Balsaminaceae	Koria bijol	Herb
<i>Couroupita guianensis</i> Aubl.	Lecythidaceae	Naagmoni	Tree
<i>Ardisia solanacea</i> Roxb.	Primulaceae		Shrub
<i>Ardisia thyrsoflora</i> D.Don	Primulaceae		Shrub, Tree

<i>Camellia sinensis</i> (L.) Kuntze	Theaceae	Saah goss	Tree
<i>Pyrenaria barringtoniifolia</i> (Griff.) Seem.	Theaceae		Tree
Gentinales			
<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	Sotiyona	Tree
<i>Calotropis gigantea</i> (L.) W.T.Aiton	Apocynaceae	Aakon	Shrub
<i>Hoya verticillate</i> (Vahl) G.Don	Apocynaceae		Herb (Climber)
<i>Plumeria rubra</i> L.	Apocynaceae	Kath gulaap	Tree
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Horpogondha	Shrub
<i>Coffea benghalensis</i> B.Heyne ex Roth	Rubiaceae	Sagoliphool	Shrub
<i>Ixora finlaysoniana</i> Wall. ex G.Don	Rubiaceae		Shrub
<i>Mussaenda incana</i> Wall.	Rubiaceae		Shrub
<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	Kodomgos	Tree
<i>Oldenlandia corymbosa</i> L.	Rubiaceae	Bon jaluk	Herb
<i>Paederia foetida</i> L.	Rubiaceae	Vedailota	Herb (Climber)
<i>Rubia cordifolia</i> L.	Rubiaceae		Herb
<i>Spermacoce hispida</i> L.	Rubiaceae		Herb
<i>Spermacoce latifolia</i> Aubl.	Rubiaceae		Herb
Boraginales			
<i>Cordia dichotoma</i> G.Forst.	Boraginaceae		Tree
<i>Ehretia acuminata</i> R.Br.	Boraginaceae	Bhowal	Tree
<i>Heliotropium indicum</i> L.	Boraginaceae	Hatihuriya bon	Herb
Solanales			
<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Omor lota	Herb (Climber)
<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae		Herb (Climber)
<i>Datura metel</i> L.	Solanaceae	Dhotura	Shrub
<i>Solanum anguivii</i> Lamk	Solanaceae		Shrub
<i>Solanum myriacanthum</i> Dunal	Solanaceae		Shrub
<i>Solanum nigrum</i> L.	Solanaceae	Loskosi	Herb
<i>Solanum torvum</i> Sw.	Solanaceae		Shrub
<i>Solanum violaceum</i> Ortega	Solanaceae		Shrub
Lamiales			
<i>Andrographis paniculata</i> (Burm.f.) Wall. ex Nees	Acanthaceae		Herb
<i>Barleria cristata</i> L.	Acanthaceae		Shrub
<i>Ecbolium viride</i> (Forssk.) Alston	Acanthaceae		Shrub
<i>Eranthemum griffithii</i> (T.Anderson) Bremek. &Nann.-Bremek.	Acanthaceae		Shrub
<i>Justicia adhatoda</i> L.	Acanthaceae	Boga-bahok	Shrub
<i>Justicia gendarussa</i> Burm.f.	Acanthaceae		Shrub
<i>Phlogacanthuscurviflorus</i> (Nees) Nees	Acanthaceae		Shrub
<i>Rostellularia procumbens</i> (L.) Nees	Acanthaceae		Herb
<i>Rungia pectinata</i> (L.) Nees	Acanthaceae		Herb
<i>Strobilanthes cusia</i> (Nees) Kuntze	Acanthaceae		Shrub
<i>Thunbergia coccinea</i> Wall. ex D.Don	Acanthaceae		Herb (Lianus)
<i>Thunbergia grandiflora</i> Roxb.	Acanthaceae		Herb (Climber)
<i>Thunbergia laurifolia</i> Lindl.	Acanthaceae		Herb (Climber)
<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Bhat-ghila	Tree
<i>Spathodea campanulata</i> P.Beauv.	Bignoniaceae		Tree
<i>Stereospermum chelonoides</i> (L.f.) DC.	Bignoniaceae		Tree
<i>Anisomeles indica</i> (L.) Kuntze	Lamiaceae		Shrub
<i>Clerodendrum glandulosum</i> Lindl.	Lamiaceae		Shrub
<i>Clerodendrum indicum</i> (L.) Kuntze	Lamiaceae		Shrub
<i>Gmelina arborea</i> Roxb. ex Sm.	Lamiaceae	Gomaari	Tree

<i>Leonurus sibiricus</i> L.	Lamiaceae	Rockto Durun	Shrub
<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Durun bon	Herb
<i>Leucas lavandulifolia</i> Sm.	Lamiaceae		Herb
<i>Mentha longifolia</i> (L.) L.	Lamiaceae		Herb, Shrub, Tree
<i>Mesosphaerum suaveolens</i> (L.) Kuntze	Lamiaceae		Herb
<i>Ocimum tenuiflorum</i> L.	Lamiaceae		Shrub
<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze	Lamiaceae		Shrub
<i>Premna bengalensis</i> C.B. Clarke	Lamiaceae		Tree
<i>Tectona grandis</i> L.f.	Lamiaceae	Segun	Tree
<i>Vitex negundo</i> L.	Lamiaceae		Shrub
<i>Volkameria inermis</i> L.	Lamiaceae		Shrub
<i>Bonnaya ciliata</i> (Colsm.) Spreng.	Linderniaceae		Herb
<i>Torenia crustacea</i> (L.) Cham. & Schltdl.	Linderniaceae		Herb
<i>Mazus pumilus</i> (Burm.f.) Steenis	Mazaceae		Herb
<i>Mecardonia procumbens</i> (Mill.) Small	Plantaginaceae		Herb
<i>Plantago major</i> L.	Plantaginaceae		Herb
<i>Scoparia dulcis</i> L.	Plantaginaceae		Herb
<i>Duranta erecta</i> L.	Verbenaceae		Shrub, Tree
<i>Lantana camara</i> L.	Verbenaceae		Shrub
<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P. Wilson	Verbenaceae		Shrub
<i>Stachytarpheta indica</i> (L.) Vahl	Verbenaceae		Shrub
<i>Verbena officinalis</i> L.	Verbenaceae		Shrub
Asterales			
<i>Acmella oleracea</i> (L.) R.K. Jansen	Asteraceae		Herb
<i>Acmella paniculata</i> (Wall. ex DC.) R.K. Jansen	Asteraceae		Herb
<i>Acmella uliginosa</i> (Sw.) Cass.	Asteraceae		Herb
<i>Ageratum conyzoides</i> L.	Asteraceae	Gendheli Bon	Herb
<i>Ageratum houstonianum</i> Mill.	Asteraceae	Gendheli bon	Herb, Shrub
<i>Bidens pilosa</i> L.	Asteraceae		Herb
<i>Blumea lacera</i> (Burm.f.) DC.	Asteraceae		Herb
<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob.	Asteraceae	Jarmoni bon	Shrub
<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Asteraceae	Bon kopah	Herb
<i>Crepis capillaris</i> (L.) Wallr.	Asteraceae		Herb
<i>Cyanthillium cinereum</i> (L.) H. Rob.	Asteraceae		Herb
<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Kenhraj	Herb
<i>Elephantopus scaber</i> L.	Asteraceae	Bon dhopa	Herb
<i>Emilia sonchifolia</i> (L.) DC.	Asteraceae		Herb
<i>Galinsoga parviflora</i> Cav.	Asteraceae		Herb
<i>Gamochaeta purpurea</i> (L.) Cabrera	Asteraceae		Herb
<i>Mikania micrantha</i> Kunth	Asteraceae	Pengeri lota	Herb (Climber)
<i>Parthenium hysterophorus</i> L.	Asteraceae		Herb
<i>Sonchus brachyotus</i> DC.	Asteraceae		Herb
<i>Sphagnetol atrilobata</i> (L.) Pruski	Asteraceae		Herb
<i>Synedrella nodiflora</i> (L.) Gaertn.	Asteraceae		Herb
<i>Tridax procumbens</i> L.	Asteraceae		Herb
<i>Xanthium strumarium</i> L.	Asteraceae	Agora	Herb
<i>Youngia japonica</i> (L.) DC.	Asteraceae		Herb
Apiales			
<i>Centella asiatica</i> (L.) Urb.	Apiaceae		Herb
<i>Oenanthe javanica</i> (Blume) DC.	Apiaceae		Herb
<i>Heptapleurum venulosum</i> (Wight & Arn.) Seem.	Araliaceae		Tree
<i>Hydrocotyle sibthorpioides</i> Lam.	Araliaceae	Horu mani-muni	Herb

Table 2. Medicinal importance of a few plant species found in the Reserve Forest

Name of the Species	Family	Plant part(s) used	Mode of use	Drugs and its properties
<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Root, seeds, and leaves	Root decoction is prescribed for the treatment of urethritis and fever, and seeds are useful as laxatives in piles and to treat severe cough (Rajeshwari & Sevarkodiyone, 2018)	Active compounds found are alkaloids, saponins, hexoses, flavonoids, coumarins, sesquiterpene lactones, sterols, and essential oils. Anti-inflammatory, anticancer and antibacterial properties are majorly exhibited (Dowluru <i>et al.</i> 2014)
<i>Aerides odorata</i> Lour.	Orchidaceae	Whole plant	Root paste is used to cure pain in joints; leaf paste is used against cuts, wounds, boils in ears and noses; whole plant is used for digestive disorders (Jhansi <i>et al.</i> 2023; Tsering <i>et al.</i> 2017)	Fatty acids, ketones, diketones, esters, phenols show anti-microbial, antioxidant, anti-cancer activities (Parasteet <i>et al.</i> 2023)
<i>Albizia lebbeck</i> (L.) Benth.	Fabaceae	Stem bark	Stem bark decoction is helpful to treat cough, ulcer, and arthritis (Balkrishna <i>et al.</i> 2022)	Glycosides, tannin, alkaloids, saponin, flavonoids, amino acids, and carbohydrates are present, which show antibiotic, anti-helminthic, anti-diarrheal, and antimicrobial activities (Mishra <i>et al.</i> 2010)
<i>Alocasia macrorrhizos</i> (L.) G.Don	Araceae	Whole plant	Stem juice is applied to prevent edema, pain, and bleeding from cuts and wounds; leaves are used to cure iron deficiency and eyesight (Arbain <i>et al.</i> 2022)	Carbohydrates, alkaloids, saponins, phytosterols, phenol, tannins, flavonoids, proteins, and terpenes show pharmacological activities like thrombolytic, antimicrobial, anti-helminthic activities (Banik <i>et al.</i> 2014)
<i>Alpinia nigra</i> (Gaertn.) Burt	Zingiberaceae	Entire plant	Aqueous extract of shoot and rhizome is used to cure bone weakness, irregular menstruation, jaundice, and gastric ulcers (B. Roy <i>et al.</i> 2012)	Phenolics, flavonoids, alkaloids, and cardiac glycosides show potential anti-oxidant, analgesic, antibacterial, and cytotoxic effects (Abu Ahmed <i>et al.</i> 2015;Sahoo <i>et al.</i> 2013)
<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	Bark, leaves	Decoction of the bark is used to treat diarrhea and malaria. Leaf extracts help treat beriberi and mixed with pepper to cure cough (Baliga, 2012;Meena <i>et al.</i> 2011)	Alkaloids, glycosides, saponins, terpenoids, anthraquinones, carbohydrates, and steroids exhibit anti-inflammatory, analgesic, and antiulcer effects Shang <i>et al.</i> 2010)
<i>Bauhinia purpurea</i> L.	Fabaceae	Root, stem, and flowers	Decoction of the bark and fresh flowers are used as an astringent in treating diarrhea. Root infusion is a	Saponin, glycoside, steroid and sterol, tannin, and phenolic compounds show antiproliferative and antioxidant activities (Zakaria <i>et al.</i> 2011)

			common remedy for liver trouble (Ragasa <i>et al.</i> 2004)	
<i>Bombax ceiba</i> L.	Malvaceae	Bark and roots	Bark paste used in treatment of muscle injury in legs; root extract is used to treat impotency, against sexual disability and as nerve tonic (Namsaet <i>et al.</i> 2009; Chaudhary & Khadabadi, 2012)	Napthol, napthoquinones, polysachharides, anthocyanins, lupeol, shamimin showing pharmacological activities like hepatoprotective, anti-inflammatory, anti-cancer, anti-HIV, antiangiogenic, analgesic hypoglycemic and antimicrobial activity (Chaudhary & Tawar, 2018)
<i>Chukrasia tabularis</i> A.Juss.	Meliaceae	Entire plant	Bark decoction heals stretch marks, minor skin irritations, insect bites; whole plant extract is used for skeletal fractures, leaves tonic is used to cure malaria (Kaur & Arora, 2009)	Limonoids, terpenes, phenolics, gallic acid, catechin, quercitin, epicatechin all exhibit anti-diabetic, anti-inflammatory, anti-malarial, anti-oxidant activities (Andrade <i>et al.</i> 2022)
<i>Commelina benghalensis</i> L.	Commelinaceae	Entire plant	The plant is used as a mythical remedy to treat headache, constipation, leprosy, fever, mouth thrush, and epilepsy; a paste of leaves is used to cure burns, and root juice to treat digestive disorders in Nepal (Kansagara & Pandya, 2019)	Polyphenols, flavonoids, tannins, alkaloids, oils and fats, lactones, catechol, resorcinol, and coumarins are some of the active compounds; analgesic, antibacterial, anti-inflammatory and hepatoprotective activities are shown (Ghosh <i>et al.</i> 2019)
<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	Whole plant	Plant tonic is useful in treating chronic illness, vertigo, eyes, burns and sores; rhizome is used in born fracture; leaves used to cure boils and fever (Sujin <i>et al.</i> 2021; Tsering <i>et al.</i> 2017)	Flavonoids, phenols, quinones, coumarins, saponins, alkaloids, cardiac glycosides, carbohydrates, oxalates, mucilage present which show analgesic, anti-inflammatory, anti-microbial, anti-oxidant activities (Rampilla& Khasim, 2023)
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Whole plant	Extracts of this plant are used to treat bacterial infections, ulcers, arthritis, and inflammations (Ashokkumar <i>et al.</i> 2013)	Minerals, carbohydrates, proteins, carotenoids, phenols, terpenoids, flavonoids, alkaloids, etc., show antidiabetic, cardiovascular, anti-arrhythmic, antiulcer, and antimicrobial activities (Das <i>et al.</i> 2021)
<i>Dipterocarpus retusus</i> Blume	Dipterocarpaceae	Bark	Bark extract is used to cure rheumatism, liver diseases, diabetes, diarrhea, tuberculosis, ringworm (Aslam <i>et al.</i> 2015)	Viniferin, vaticanol, scopoletin and bergenin, pausifloroside, exhibit cytotoxic, anti-cancer, anti-inflammatory activities (Aslam <i>et al.</i> 2015; Hung <i>et al.</i> 2021)

<i>Eclipta aprostrata</i> (L.) L.	Asteraceae	Leaf	Leaf extract mixed with honey is usually taken to cure cough (Chung <i>et al.</i> 2017)	Active compounds include alkynes, alkaloids, cardiac glycosides, flavonoids, coumestans, lipids, polyacetylene, steroids, saponins, and triterpenes (Chung <i>et al.</i> 2017)
<i>Ficus hispida</i> L.f.	Moraceae	Whole plant	Decoction of leaves is used to cure dysmenorrhea, to clean wounds and ulcers; fruit used for diarrhea and constipation; bark is to treat dental issues, hemoptysis, diabetes; root sap in gonorrhea and topical application in case of mumps (Ahmed & Urooj, 2010)	Alkaloids, carbohydrates, sterols, phenols, flavonoids, mucilage, glycosides, saponins show anti-neoplastic, cardioprotective, neuroprotective and anti-inflammatory properties (Ali & Chaudhary, 2011)
<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae	Whole plant	Plant decoction is employed for the treatment of cough, fever, bronchitis, chest pain, anemia, jaundice, liver disorders, 7 rheumatism, and urinary tract infections (Khandokar <i>et al.</i> 2021)	Alkaloids, glycosides, steroids, terpenoids, flavonoids, tannins, carbohydrate, protein, and phenolic compounds are found to be present, which shows antibacterial, antioxidant, antidiabetic, and cytotoxic activities (Sivakumar & Chamundeeswari, 2014)
<i>Gmelina arborea</i> Roxb. ex Sm.	Lamiaceae	Bark, root, flower, and fruit	Extracts from bark, root, flowers, fruits improve digestion, memory, fever and help overcome giddiness (Warrier <i>et al.</i> 2021)	Iridoid, lignans,, flavonoids, glycoside, flavone glycoside, and sterols are some of the essential active compounds present and show antimicrobial and antioxidant activities (Arora & Tamrakar, 2017)
<i>Guilandina bonduc</i> L.	Fabaceae	Whole plant	In Unani, leaves and seeds are used against inflammation as blood purifiers to cure seasonal fever; ripened seeds are helpful in constipation, to cure chronic wounds with severe suffering (Srinivasan <i>et al.</i> 2023)	Diterpenoids, phenolics, biflavonoids, homoisoflavonoids, and phenolics show antiviral, leishmanicidal, antimicrobial, and antimalarial activities (do Nascimento & David, 2024)
<i>Hedychium coccineum</i> Buch.-Ham. ex Sm.	Zingiberaceae	Rhizome and leaves	Rhizome paste is used to treat swollen foot, to cure bronchial asthma, inflammation, jaundice, headache; leaves are used to treat diarrhea (Tian <i>et al.</i> 2024; Shifah <i>et al.</i> 2020)	Bioactive compounds like terpenes, phenols, terpenoids, saponins, volatile oils, flavonoids, glycosides exhibit cercaricidal properties, molluscicidal activity, anti-inflammatory, analgesic, and anti-microbial activity (Monton <i>et al.</i> 2025)

<i>Houttuynia cordata</i> Thunb.	Saururaceae	Entire plant	Decoction of the entire plant is used to treat stomach pain, dysentery, cholera, curing urinating problems, and allergy (Pradhan <i>et al.</i> 2023)	Alkaloids, phenolics, essential oils, polyphenols, fatty acids, and flavonoids show anti-tumour, antimicrobial, anticancer, antioxidative and anti-inflammatory activity (Rafiq <i>et al.</i> 2022)
<i>Lantana camara</i> L.	Verbenaceae	Soft tender leaves and flowers	Tea prepared from the tender leaves and flowers is used to treat dry cough, fever, and stomach ache (Ghisalberti, 2000)	Active compounds include terpenes, iridoid glycosides, Furano naphthoquinones, flavonoids, etc. showing antiproliferative, antibacterial, antifungal, and hemolytic activity (Reddy, 2013)
<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Whole plant	Decoction of the entire plant is used as a medicine for coughs, colds, sinusitis, painful swellings, and chronic skin eruptions (Islam & Kato-Noguchi, 2012)	Triterpenoids, oleanolic acid, ursolic acid, b-sitosterol, nicotine, glucoside, diterpenes, phenolic compounds exhibiting pharmacological activities such as antifungal, antioxidant, antimicrobial, antinociceptive and cytotoxic activities (Chew <i>et al.</i> 2012)
<i>Mallotus philippensis</i> (Lam.) Müll.Arg.	Euphorbiaceae	Entire tree	Bark is used to treat helminthic infestations, dermatological and digestive problems (A. Kumar <i>et al.</i> 2020)	Oleic acid, palmitic acid, citric acid, tannins, mallotoxin, and oxalic acid show antioxidant, anti-fungal, antibacterial, and hepatoprotective activities (J. Sharma & Varma, 2011)
<i>Mimosa pudica</i> L.	Fabaceae	Bark, root	Root extracts taste bitter which is helpful in treating leprosy, dysentery, and vaginal and uterine complaints; extracts of bark are taken as mood enhancers and for easy blood circulation (Joseph <i>et al.</i> 2013)	Alkaloids, chalcones, flavonoids, indoles, terpenes, terpenoids, saponins, steroids, amino acids, glycosides, phenols, lignoids, polysaccharides are some of the secondary metabolites found which exhibit antiprotozoal, antimicrobial, antiviral, antioxidant, antiproliferative as well as cytotoxic properties (Rizwan <i>et al.</i> 2022)
<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Whole plant	Root and stem bark are used against fever, bronchitis, intestinal worms, leukoderma, asthma, and dysentery, whereas fruits and seeds are useful as an expectorant, purgative, and bitter tonic (Dinda <i>et al.</i> 2015)	It has essential oils, which mainly contain phenols, fatty acids, and aldehydes; polyphenolics, flavonoids, and alkaloids are also present; antibacterial, antioxidant, analgesic, hepatoprotective, anti-inflammatory activities are shown (Siddiqui <i>et al.</i> 2012)

<i>Oxalis</i> .	Oxalidaceae	Leaves	Leaf decoction is used to treat liver and digestive problems. The entire plant paste is applied on wounds and used as antivenom. The juice of leaves mixed with castor oil is used to treat insomnia (Badwaik <i>et al.</i> 2011)	Isovitexine, flavonoids, vitexine-2-O-beta-D-glucopyranoside, palmitic acid, stearic acid, linolenic acids are found which exhibit antioxidant, anticancer, anthelmintic, astringent, and diuretic like activities (Sarkar <i>et al.</i> 2020)
<i>Paederia foetida</i> L.	Rubiaceae	Leaves, roots, and fruit	Leaf decoction is used to cure urinary bladder stones and antirheumatic purposes, roots for flatulence, and fruits for toothache and stiffness in joints (Macwan, 2010)	Sitosterol, iridoid glycosides, alkaloids, carbohydrates, volatile oils, etc. present in the plant shows antioxidant activity (Wang <i>et al.</i> 2014)
<i>Phlogacanthus curviflorus</i> (Nees) Nees	Acanthaceae	Leaves and flowers	Leaves are boiled to use as a drink to cure cough and cold, and flowers are eaten raw or fried and used as a condiment (Phurailatpam <i>et al.</i> 2014)	Terpenoidal glycosides, diterpene lactones, and diterpene lactone glucosides are found as active compounds (Phurailatpam <i>et al.</i> 2014)
<i>Prunus domestica</i> L.	Rosaceae	Leaves and roots	Leaves are used to treat dyspepsia, enteritis, diarrhea, dysentery, and hemafecia, and decoction of fresh roots is used to treat excessive leukorrhea and irregular menstruation (Zheng <i>et al.</i> 2021)	Tannins, alkaloids, steroids, flavonoids, phenols, and terpenoids show cytotoxic, antioxidant, antiviral, and antibacterial activities (Danladi <i>et al.</i> 2015)
<i>Prunus persica</i> (L.) Batsch	Rosaceae	Fruits, leaves	Fruits are rich in antioxidants and are sold commercially; leaves are dried and smoked for asthma (Bento <i>et al.</i> 2022;Khiangte & Lalramnghinglova, 2017)	Alkaloids, steroids, terpenoids, tannins, flavonoids, coumarins, and fatty acids exhibiting antioxidant, antimicrobial, antiparasitic, and antidiabetic activity (Ashraf <i>et al.</i> 2011)
<i>Sagittaria sagittifolia</i> L.	Alismataceae	Tuber	Tuber decoction helps cure cough and cold (Maroyi, 2022)	Tannins, saponins, alkaloids, terpenoids, phenol, glycoside, and sterols are some of the secondary metabolites present that exhibit antioxidant and immunostimulatory activities (Gu <i>et al.</i> 2020)
<i>Syzygium jambos</i> (L.) Alston	Myrtaceae	Leaves, fruit, and bark	Leaf decoctions are used in the treatment of diabetes, expectorant in the treatment of rheumatism; fruit is used as a tonic for the brain and liver as a diuretic, and flowers are believed	Squalene, ursolic acid, and triterpenoids exhibiting antibacterial activity were reported (R. Sharma <i>et al.</i> 2013)

			to reduce fever (Mohanty & Cock, 2010)	
<i>Tectona grandis</i> L.f.	Lamiaceae	Leaf, bark, flower	Decoction of bark, leaves, and flowers is used in bronchitis, hyper acidity, dysentery, leprosy, and other skin diseases (Vyas <i>et al.</i> 2019)	The main active compounds found are tectoquinone, lapachol, betulinic acid, and squalene showing antibacterial, antioxidant, antiasthmatic, and analgesic family (Khera & Bhargava, 2013)
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Fruit	Dried fruit crushed with hot water is taken to cure common cold and asthma (Deb <i>et al.</i> 2016)	It contains phytoconstituents such as glycosides, flavonoids, tannins, phenolic acids, and saponins responsible for anticancer, hepatoprotective, antimicrobial, and antipyretic activities (Kumari <i>et al.</i> 2017)
<i>Terminalia chebula</i> Retz.	Combretaceae	Fruit and stem bark	Fruit and bark are useful in anti-tumor activity, eye disorders, treatment of cough and cold, digestive disorders etc (Cock, 2015).	Tannins, anthraquinones, ethaedioic acid, sennoside, 4-2-4 chebulyl-d-glucopyranose, terpinenes, and terpinols show antibacterial, antifungal, antidiabetic, antimutagenic, antioxidant, antiulcer and wound healing properties (Gupta, 2012)
<i>Tridax procumbens</i> L.	Asteraceae	Flower	Flower heads are consumed to treat cough and cold (Sabita, 2019)	Active compounds include flavone glycosides, chromone glycosides, sterols, and polysaccharides (Agrawal <i>et al.</i> 2010). Antimicrobial, Anti-inflammatory, and Antioxidant properties are also reported
<i>Vitex negundo</i> L.	Lamiaceae	Leaves, bark, roots	Leaves are used for the treatment of eye diseases, inflammation, leukoderma, toothache, spleen enlargement, and rheumatoid arthritis; Bark is useful verminosis, ophthalmopathy; root is useful demulcent in dysentery (Gill <i>et al.</i> 2018 ;Tandon, 2005)	Volatile oils, flavonoids, lignans, iridoids, terpenes, and steroids exhibit anti-inflammatory, antioxidant, antidiabetic, anticancer and antimicrobial activity (Gill <i>et al.</i> 2018)
<i>Xylosma longifolia</i> Clos	Salicaceae	Leaves, stem bark, and fruits	In Assam, fruits are consumed for intoxication and also to cure insomnia, dysentery, restlessness and in Manipur, the fresh leaf and stem barks are used against ringworm, acne, and scabies (Devi <i>et al.</i> 2013)	Secondary metabolites like alkaloids, flavonoids, phenols, tannins, terpenoids, and saponins are present in considerable amounts, which shows antimalarial, analgesic, anti-cough remedy, immune regulative, anti-tumor, anti-diarrhetic, and anti-ulcer activities (Bhattacharyya <i>et al.</i> 2020)

<i>Zanthoxylum nitidum</i> (Roxb.) DC.	Rutaceae	Root	Root paste mixed with shoots of <i>Ocimum basilicum</i> L. is taken for asthma treatment (Nath <i>et al.</i> 2008)	Phenanthridine alkaloids, quinolines, phenyl propanoids, lignans, coumarins, zanthonitides, are found to show cytotoxic effects against human cancer cell lines (Van <i>et al.</i> 2019)
<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Zingiberaceae	Rhizome	Rhizomes are used as food flavoring and appetizer in Malays and Indian cuisines; also, the fresh juice of rhizomes are consumed to cure inflammation, toothache, stomach ache, and indigestion (Yob <i>et al.</i> 2011)	Terpenes, phenols, flavonoids showing antipyretic, analgesic, antioxidant, anti-bacterial, antiallergic, and anti-hypersensitivity activity (Ghasemzadeh <i>et al.</i> 2016)

While evaluating the IUCN status of the plants of Jokai Reserve Forest, it was found that, three species, namely *Tectona grandis* L.f. or commonly known as Teak, and the state tree of Assam *Dipterocarpus retusus* Blume, and *Dendrobium nobile* Lindl. are listed under Endangered (EN) category of the IUCN Red List, with a distinct declining trend in their population. Fourteen species viz. *Nymphaea nouchali* Burm.f., *Ottelia alismoides* (L.) Pers., *Zeuxine strateumatica* (L.) Schltr., *Musa balbisiana* Colla, *Cyperus brevifolius* (Rottb.) Hassk., *Cyperus distans* L.f., *Cyperus rotundus* L., *Eleusine indica* (L.) Gaertn., *Erythrina variegata* L., *Melia azedarach* L., *Hibiscus tiliaceus* L., *Gmelina arborea* Roxb. e Sm., *Torenia crustacea* (L.) Cham. & Schltdl., and *Eclipta aprostrata* (L.) L. are listed under Critically Endangered (CR) category in the IUCN Red List (Gowthami *et al.* 2021). Agarwood or *Aquilaria malaccensis* Lam., which is also listed under the category of Critically Endangered (CR) species in the IUCN Red List, is part of Appendix II of CITES, which ensures strictly controlled international trade and over-exploitation of the species.

Eleven species viz. *Colocasia esculenta* (L.) Schott, *Commelina benghalensis* L., *Commelin adiffusa* Burm.f., *Bauhinia acuminata* L., *Bauhinia purpurea* L., *Bischofia javanica* Blume., *Brideliastipularis*(L.), *Azadirachta indica* A.Juss., *Chukrasia tabularis* A. Juss., *Alternanthera sessilis* (L.) R.Br. ex DC., and *Centella asiatica* (L.) Urb. are listed under the Least Concern (LC) category and three species namely *Oroxylum indicum* (L.) Kurz., and *Rauvolfia serpentina* (L.) Benth.ex Kurz, and *Saracaasoca* (Roxb.) W.J.de Wilde, are listed under Vulnerable (VU) of International Union for Conservation of Nature (IUCN) Red List (Gowthami *et al.* 2021). The need for in-depth and rapid assessments of the regional flora should be prioritized to establish accurate knowledge on the species that are more likely to meet the IUCN thresholds for which proper conservation methods need to be applied.

Discussion

The Jokai Reserve Forest, as apparent from the above report, harbors a rich bio-resource, and it justifiably deserves exhaustive documentation of its plant taxa. A comparative evaluation with the findings of Gogoi and Nath (2021), who documented 462 species of plants from 334 genera, and which has been the only report made so far on the floral assemblage of the Dibrugarh district; our study shows a similar agreement with the former, comprising 353 angiosperms belonging to 272 genera and 353 species recorded from the Reserve Forest. Although most of the species recorded by the former authors throughout the district were also found in our study area, in addition to it, many more were found exclusively in our survey. In the order Nymphaeales, *Nymphaea nouchali* Burm.f. was recorded by both Gogoi and Nath, (2021) and us, whereas *Nymphaea elegans* Hook., we reported exclusively from our study area. A good number of species, with over 26 species belonging to the family Orchidaceae, are found in the forest. The genus *Dendrobium* is the most prolific, with over seven species. Additionally, the genus, namely *Micropera* and *Zeuxine*, contains 3 species each. *Dendrobium* and *Cymbidium* are the commonly observed genus in the forest. Among the orchids, 5 species that were found to be ground orchid are *Zeuxine nervosa* (Wall. Ex Lindl.) Benth. ex Trimen, *Z. strateumatica*(L.) Schltr., *Z. lindleyana* A.N. Rao, *Liparis viridifolia* (Blume) Lindl., and *Phaius tankervillea* (Banks) Blume, and the rest are found to thrive in bark or stems of other trees. (Fig. 2).

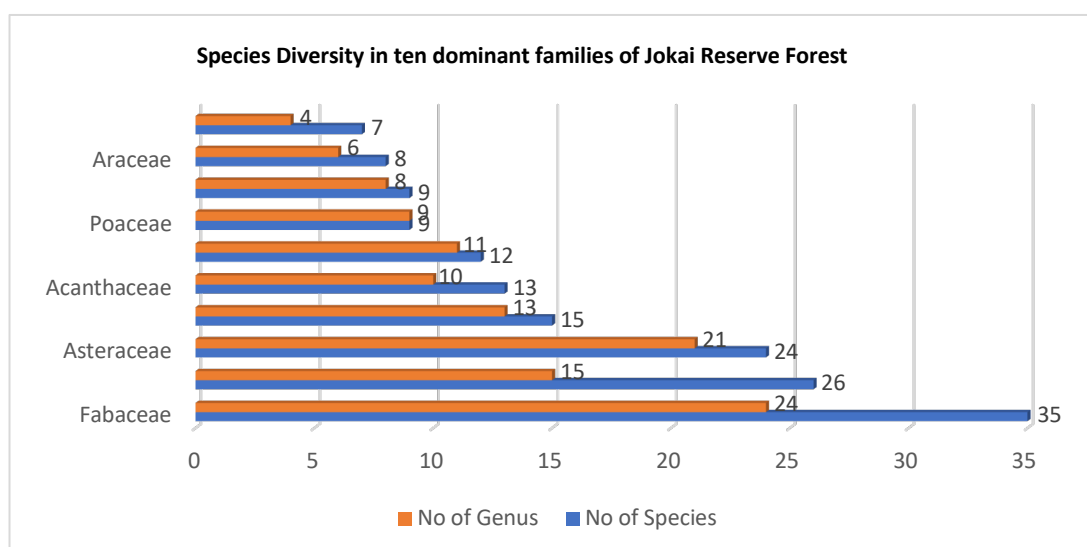


Figure 2. Graphical representation of the top ten dominant families in the flora of the Jokai reserve forest

A total of 19 species of Orchids, namely, *Acampe carinata* (Griff.) Panigrahi, *Aerides odorata* Lour., *Aerides rosea* Lodd. Ex Lindl. & Paxton, *Bulbophyllum affine* Lindl., *Dendrobium aduncum* Lindl., *Dendrobium fimbriatum* Hook., *Dendrobium lituiflorum* Lindl., *Dendrobium moschatum* (Banks) Sw., *Dendrobium nobile* Lindl., *Dendrobium transparens* Wall. Ex Lindl.,

Gastrochilus obliquus (Lindl.), *Micropera obtusa* (Lindl.) Tang & F.T. Wang, *Micropera pallida* (Roxb.) Lindl., *Micropera rostrata* (Roxb.) N.P. Balakr., *Oberonia mucronata* (D. Don) Ormerod & Seidenf., *Phaius tankervilleae* (Banks) Blume, *Thrixspermum acuminatissimum* (Blume) Rchb.f., *Zeuxine linleyana* A.N. Rao, and *Zeuxine strateumatica* (L.) Schltr were found in our survey in addition to the 7 species that were reported by the former.

In the order Fabales, Gogoi and Nath (2021) reported 9 species from the entire Dibrugarh district whereas adding to it, 27 species viz. *Albizia lucida* (Jacques) Benth., *Bauhinia acuminata* L., *Bauhinia variegata* L., *Caesalpinia pulcherrima* (L.) Sw., *Cassia javanica* L., *Clitoria ternatea* L., *Crotalaria juncea* L., *Crotalaria pallida* Aitton, *Crotalaria retusa* L., *Dalbergia assamica* Benth., *Dalbergia rimosa* Roxb., *Delonix regia* (Bojer ex Hook.) Raf., *Erythrina variegata* L., *Grona triflora* (L.) H. Ohashi & K. Ohashi, *Guilandina bonduc* L., *Lablab purpureus* (L.) Sweet, *Lathyrus aphaca* L., *Ohwia caudata* (Thunb.) H. Ohashi, *Parkia timoriana* (DC.) Merr., *Peltophorum pterocarpum* (DC) Backer ex K. Heyne, *Saraca asoca* (Roxb.) W.J. de Wilde, *Senna alata* (L.) Roxb., *Senna siamea* (Lam.) H.S. Irwin & Barneby, *Senna tora* (L.) Roxb., *Sesbania cannabina* (Retz.) Poir., *Sesbania grandiflora* (L.) Poir., and *Tamarindus indica* L., were recorded from Jokai Reserve Forest. Under the order Lamiales, 9 species from Lamiaceae and 7 species from Acanthaceae, which were recorded exclusively from our study area were namely *Anisomeles indica* (L.) Kuntze, *Clerodendrum glandulosum* Lindl., *Leonurus sibiricus* L., *Leucas aspera* (Willd.) Link, *Leucas lavandulifolia* Sm, *Mentha longifolia* (L.) L., *Mesosphaerum suaveolens* (L.) Kuntze, *Ocimum tenuiflorum* L., *Premna bengalensis* C.B. Clarke and *Barleria cristata* L., *Ecbolium viride* (Forssk.) Alston, *Eranthemum griffithii* (T. Anderson) Bremek. & Nann.-Bremek., *Rostellularia procumbens* (L.) Nees, *Rungia pectinata* (L.) Nees, *Strobilanthes cusia* (Nees) Kuntze, *Thunbergia laurifolia* Lindl., from Lamiaceae and Acanthaceae respectively. However, no member from the family Chloranthaceae was reported by Gogoi and Nath (2021) in their survey, a single genus viz. *Chloranthus erectus* (Buch.-Ham.) Wall.

It was revealed from our study area during exploration, from the family Asteraceae, three species viz. *Galinsoga parviflora* Cav., *Gamochaeta purpurea* (L.) Cabrera, *Sphagneticola trilobata* (L.) Pruski, and three species of *Acmella* viz. *Acmella paniculata* (Wall. ex DC.) R.K. Jansen, *Acmella oleracea* (L.) R.K. Jansen, and *Acmella uliginosa* (Sw.) Cass., were reported from our study in addition to the 17 species that were recorded from both the works. From the order Poales, although no members of the family Cyperaceae were reported previously by Gogoi & Nath from Dibrugarh District, five native species were found to be present at the Reserve Forest during our field study. They are namely *Cyperus brevifolius* (Rottb.) Hassk., *Cyperus ditans* L.f., *Cyperus involucratus* Poir., *Cyperus rotundus* L., and *Eleocharis palustris* (L.) Roem. & Schult. Under the same order, from the family Poaceae, the species recorded by the former authors were mostly either invasive or native in origin, which were not found in our study as they were mostly prevalent in open roadside or grassland areas. Instead, the native species which were found from the forest premises were *Axonopus compressus* (Sw.) P. Beauv., *Chrysopogon aciculatus* (Retz.) Trin., *Cynodon dactylon* (L.) Pers., *Digitaria sanguinalis* (L.) Scop., *Elusine indica* (L.) Gaertn., *Oplismenus compositus* (L.) P. Beauv., *Panicum trichanthum* Nees., *Paspalum distichum* L., and *Saccharum aegyptiacum* Willd., *Canna indica* L., a member of the family Cannaceae was recorded in our study while no species of this family was found to be reported by the former from Dibrugarh district. From the family Linderniaceae, under order Lamiales, two species, viz. *Bonnaya ciliata* (Colsm.) Spreng., and *Torenia crustacea* (L.) Cham. & Schldl. These were exclusively recorded from our study and were not reported earlier from the district by any authors.

Among the three diverse growth behaviors, viz. herbs, shrubs, and trees, the members of the herbaceous group signified the highest number of species (168), followed by trees (103) and shrubs (82). Most of the species found in this forest are not only useful in the pharmaceutical biosphere but also found to be beneficial economically, especially as sources of timber, fuel wood, fruits, vegetables, ornamental plants, and as fodders. Four species found in the forest, namely *Rubia cordifolia* L., a promising plant, which is also known as Indian Madder (Fig. 3).

Bixa orellana L., commonly known as the lipstick tree, *Butea monosperma* (Lam.) Kuntze, known as the flame of the forest, and *Mallotus philippensis* (Lam.) Müll. Arg. or generally known as the kamala tree, is very profitably used among the local inhabitants and also has worldwide utility for being a green and sustainable alternative to synthetic dyes in textile coloration (Yusuf et al. 2017, Rusdi et al. 2020, Shahid-ul-Islam et al. 2019, Qaiyum et al. 2023). *Dipterocarpus retusus* Blume., or Hollong, known as the state tree of Assam, is found to grow naturally in the forest in quite a good number. The state flower of Assam viz. *Rhynchostylis retusa* (L.) Blume is an endemic species from the state that has also been found to grow as epiphytes on large woody trees in the reserve forest. The study area possesses some economically important wild edible plants, namely *Dillenia indica* L., *Terminalia bellirica* (Gaertn.) Roxb., *Terminalia chebula* Retz., *Amaranthus viridis* L., *Chenopodium album* L., *Gmelina arborea* Roxb. ex Sm., and *Flacourtia jangomas* (Lour.) Raeusch.

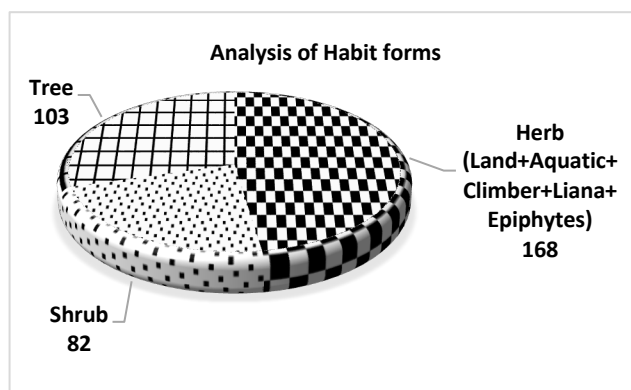


Figure 3. Graphical representation of habit forms in the flora of Jokai Reserve Forest

Conclusion

The overall species composition of Jokai Reserve Forest is very interesting from botanical point of view. Although our work chiefly focused only on angiosperm diversity, there are many varieties of pteridophytes present in abundance in both outlying and core forest areas, whose detailed survey and documentation have not been done until now from this forest area. It has been observed that anthropogenic pressures like the reduction of forest areas for agricultural land usage and the illicit chopping of trees for fuel, wood, and timber in reserve forests are highly accountable for the gradual cessation of many beneficial floras of the same. Considering the importance of these forests as a hub of medicines, food, and timber, mass awareness of their conservation is obligatory.

Our work is an attempt to list down the angiosperms currently existing in Jokai Reserve Forest focusing on their ethnomedicinal utilities, with no previous record of the same. Continued work is, however, needed to gain a complete understanding of the flora of this region. Due to the difficulty in conducting a more detailed survey and collection of species on account of unfavorable weather constraints during our fieldwork tenure, there might be many such zones inside the forest that could not be adequately sampled.

This work might be considered a quintessential survey since questions regarding the nature and dynamics of a plant community can never be successfully addressed without a comprehensive understanding of flora. Henceforth, a detailed study of a flora is not only valuable for a group of plant taxonomists but also for ethnobotanists, ecologists, forest managers, pharmacologists, anthropologists, and agriculturists

Declarations

List of abbreviations: RET- Rare Endangered Species; CR- Critically Endangered; EN-Endangered; VU- Vulnerable; LC- Least Concern; IUCN- International Union for Conservation of Nature

Ethics approval and consent to participate: Before beginning the ethnobotanical studies, we obtained verbal consent from all the participants.

Consent for publication: All authors provided oral prior informed consent.

Availability of data and materials: Voucher specimens have been deposited in the herbarium of Department of Life Sciences, Dibrugarh University.

Competing interests: The authors declared that they have no competing interests.

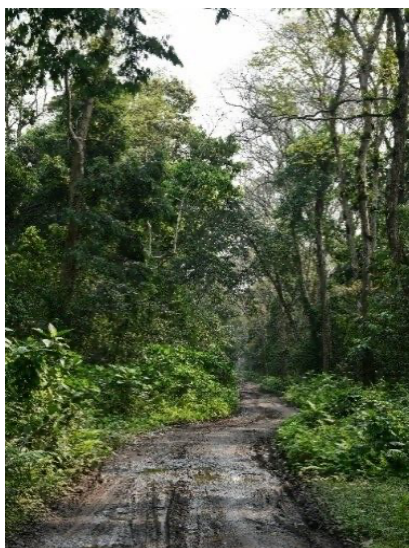
Funding: No funding was secured from any organization or institutions for this research. All expenses were borne by the author themselves to carry out the work.

Author contributions: Damini Dey, Kaushik Kumar Mech and Bikash Singh conducted the field surveys and data collection. Damini Dey and Kaushik Kumar Mech prepared the entire draft of the manuscript. Pankaj Chetia supervised the total work, reviewed the manuscript, provided valuable inputs, and assisted in interpretation of the results. All authors have equally contributed, read, and approved the final manuscript.

Acknowledgements

The authors extend their earnest thanks to the Molecular Plant Taxonomy and Bioinformatics Laboratory of the Department of Life Sciences, Dibrugarh University, for offering the required amenities that aided the successful conclusion of this research work. We also appreciatively acknowledge the support and cooperation of the forest officials and local inhabitants of Jokai reserve forest, Dibrugarh, during the field survey.

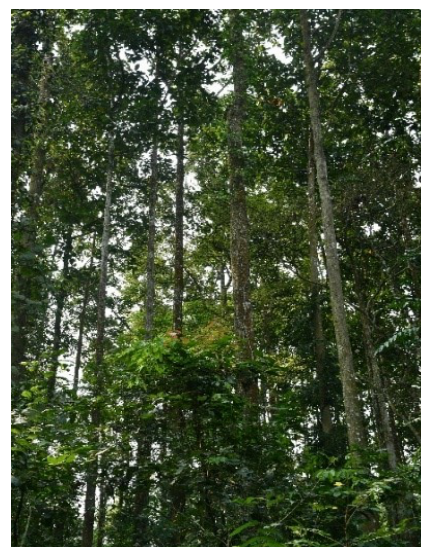
Photoplates



A.



B.



C.



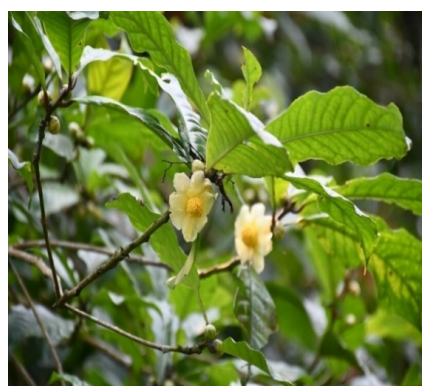
D.



E.



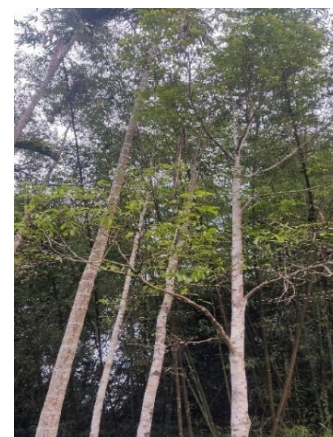
F.



G.



H.



I.



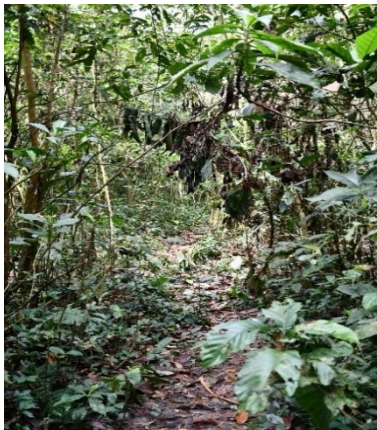
J.



K.



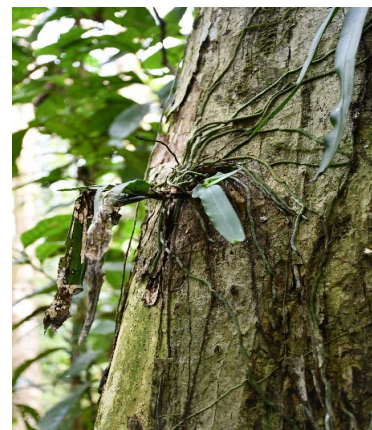
L.



M.



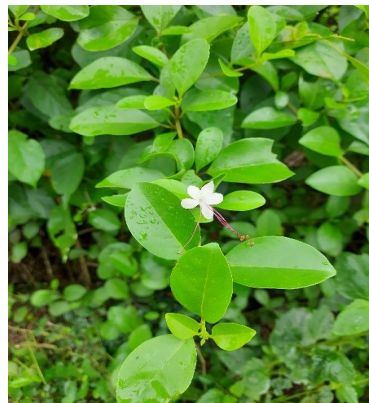
N.



O.



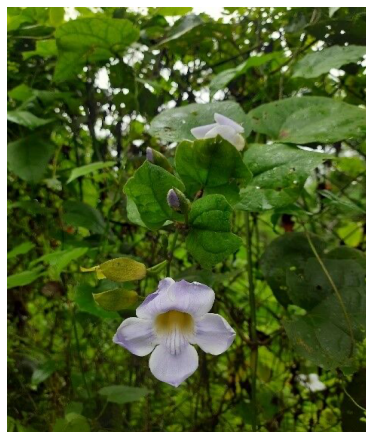
P.



Q.



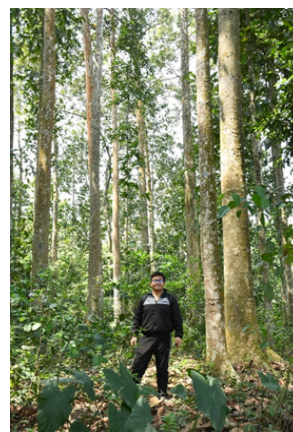
R.



S.



T.



U.



V.



W.

Photoplates. A. Approach Road to Jokai reserve forest, B. GPS machine showing coordinates of the reserve forest, C. *Dipterocarpus retusus* Blume, D. *Spathodea campanulata* P. Beauv., E. *Melastomama labathricum* L., F. *Alpinia roxburghii* Sweet, G. *Pyrenaria barringtoniifolia* (Griff.) Seem., H. Office of the forest beat officer, Jokai, I. *Aquilaria malaccensis* L., J. Seed of *Dipterocarpus retusus* Blume, K. *Cymbidium aloifolium* (L.) Sw., L. *Liparis viridiflora* (Blume) Lindl., M. A walk-through inside the forest, N. Sapling of *Liparis viridiflora* (Blume) Lindl., O. *Gastrochilus obliquus* (Lindl.) Kuntze, P. *Justicia adhatoda* L., Q. *Volkameria inermis* L., R. *Phlogacanthuscurviflorus* (Nees) Nees, S. *Thunbergia grandiflora* Roxb., T. *Bixa orellana* L., U-V. Pictures clicked during a field visit, W. Area surrounding the Reserve Forest inhabited by the locals.

Literature cited

- Abu Ahmed AM, Sharmen F, Mannan A, Rahman MA. 2015. Phytochemical, analgesic, antibacterial, and cytotoxic effects of *Alpinia nigra* (Gaertn.) Burt leaf extract. *Journal of Traditional and Complementary Medicine* 5(4): 248-252. doi: 10.1016/j.jtcme.2014.11.012
- Agrawal S, Mohale D, Talele GS. 2010. Pharmacological activities of *Tridax procumbens* (Asteraceae). *Medicinal Plants-International Journal of Phytomedicines and Related Industries* 2(2): 73-78.
- Arbain D, Sinaga LMR, Taher M, Susanti D, Zakaria ZA, Khotib J. 2022. Traditional uses, phytochemistry and biological activities of *Alocasia* Species: A systematic review. *Frontiers in Pharmacology* 13, 849704.
- Arora C, Tamrakar V. 2017. *Gmelina arborea*: Chemical constituents, pharmacological activities, and applications. *International Journal of Phytomedicine* 9, 528-542.
- Ashokkumar K, Selvaraj K, Muthukrishnan SD. 2013. *Cynodon dactylon* (L.) Pers.: An updated review of its phytochemistry and pharmacology. *Journal of Medicinal Plants Research* 7(48): 3477-3483.
- Ashraf CM, Iqbal S, Ahmed D. 2011. Nutritional and physicochemical studies on fruit pulp, seed and shell of indigenous *Prunus persica*. *Journal of Medicinal Plants Research* 5(16): 3917-3921.

- Badwaik H, Singh MK, Thakur D, Giri TK, Tripathi DK. 2011. The botany, chemistry, pharmacological and therapeutic application of *Oxalis corniculata* Linn-a review. International Journal of Phytomedicine 3(1): 01.
- Baliga MS. 2012. Review of the phytochemical, pharmacological and toxicological properties of *Alstonia scholaris* Linn. R. Br (Saptaparna). Chinese Journal of Integrative Medicine: 1-14.
- Balkrishna A, Sakshi U, Chauhan M, Dabas A, Arya V. 2022. A Comprehensive Insight into the Phytochemical, Pharmacological Potential, and Traditional Medicinal Uses of *Albizia lebbeck* (L.) Benth. Evidence-Based Complementary and Alternative Medicine, 2022 e5359669: doi: 10.1155/2022/5359669
- Banik S, Ibrahim M, Amin MN, Moghal MMR, Majumder MS, Alam MK, Anonna SN, Rashed MSU. 2014. Determination of biological properties of *Alocasia macrorrhizos*: A medicinal plant. World Journal of Pharmaceutical Research 3(9): 193-210.
- Barooha C, Ahmed I. 2014. Plant Diversity of Assam: A Checklist of Angiosperm & Gymnosperms. Guwahati: Assam Science Technology and Environment Council.
- Bento C, Goncalves AC, Silva B, Silva LR. 2022. Peach (*Prunus persica*): Phytochemicals and health benefits. Food Reviews International 38(8): 1703-1734.
- Bhattacharyya R, Boruah J, Medhi K, Borkataki S. 2020. Phytochemical Analysis of Leaves of *Xylosma longifolia* Clos.: A Plant of Ethnomedicinal Importance. International Journal of Pharmaceutical Science Research 11: 2065-2074.
- Chew AL, Jessica JJA, Sasidharan S. 2012. Antioxidant and antibacterial activity of different parts of *Leucas aspera*. Asian Pacific Journal of Tropical Biomedicine 2(3): 176-180.
- Chung IM, Rajakumar G, Lee JH, Kim SH, Thiruvengadam M. 2017. Ethnopharmacological uses, phytochemistry, biological activities, and biotechnological applications of *Eclipta prostrata*. Applied Microbiology and Biotechnology 101: 5247-5257.
- Cock IE. 2015. The medicinal properties and phytochemistry of plants of the genus *Terminalia* (Combretaceae). Inflammopharmacology 23(5): 203-229. doi: 10.1007/s10787-015-0246-z
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). <https://cites.org/eng> (1973 - Onwards).
- Danladi S, Wan-Azemin A, Sani YN, Mohd KS, Us M Mansor SM, Dharmaraj S. 2015. Phytochemical screening, antioxidant potential and cytotoxic activity of *Melastoma malabathricum* Linn. from different locations. International Journal of Pharmacy and Pharmaceutical Sciences 7(7): 408-413.
- Das S, Morya S, Neumann A, Chattu VK. 2021. A Review of the Pharmacological and Nutraceutical Properties of *Cynodon dactylon*. Pharmacognosy Research 13(3).
- Deb A, Barua S, Das DB. 2016. Pharmacological activities of Baheda (*Terminalia bellerica*): A review. Journal of Pharmacognosy and Phytochemistry 5(1): 194-197.
- Devi WR, Singh SB, Singh CB. (2013). Antioxidant and anti-dermatophytic properties leaf and stem bark of *Xylosma longifolium* Clos. BMC Complementary and Alternative Medicine 13: 1-9.
- Dinda B, SilSarma I, Dinda M, Rudrapaul P. 2015. *Oroxylum indicum* (L.) Kurz, an important Asian traditional medicine: From traditional uses to scientific data for its commercial exploitation. Journal of Ethnopharmacology 161: 255-278.
- do Nascimento BO, David JM. 2024. Chemical composition, biological activities and traditional uses of plants from the segregated genus *Caesalpinia* sensu lato. Phytochemistry Reviews 23(1): 1-93.
- Dowluru KS, KS Vadlapudi V, Yarla N Sastry. 2014. Evaluation of Anti-inflammatory and Anti-proliferative Activity of *Abutilon indicum* L. Plant Ethanolic Leaf Extract on Lung Cancer Cell Line A549 for System Network Studies. Journal of Cancer Science and Therapy 6, 195-201: doi: 10.4172/1948-5956.1000271
- Ghasemzadeh A, Jaafar HZ, Ashkani S, Rahmat A, Juraimi AS, Puteh A, Muda Mohamed MT. 2016. Variation in secondary metabolite production as well as antioxidant and antibacterial activities of *Zingiber zerumbet* (L.) at different stages of growth. BMC Complementary and Alternative Medicine 16: 1-10.
- Ghisalberti EL. 2000. *Lantana camara* L. (Verbenaceae). Fitoterapia 71(5): 467-486. doi: 10.1016/S0367-326X(00)00202-1

- Ghosh P, Dutta A, Biswas M, Biswas S, Hazra L, Nag SK, Sil S, Chatterjee S. 2019. Phytomorphological, chemical and pharmacological discussions about *Commelina benghalensis* Linn.(Commelinaceae): A review. The Pharma Innovation Journal 8(6): 12-18.
- Gill BS, Mehra R, Navgeet, Kumar S. 2018. *Vitex negundo* and its medicinal value. Molecular Biology Reports 45(6): 2925-2934.
- Gogoi P, Nath N. 2021. Diversity and inventorization of angiospermic flora in Dibrugarh District, Assam, Northeast India. Plant Science Today 8(3): 621-628.
- Gowthami R, Sharma N, Pandey R, Agrawal A. 2021. Status and consolidated list of threatened medicinal plants of India. Genetic Resources and Crop Evolution 68(6): 2235-2263.
- Gu J, Zhang H, Wen C, Zhang J, He Y, Ma H, Duan Y. 2020. Purification, characterization, antioxidant and immunological activity of polysaccharide from *Sagittaria sagittifolia* L. Food Research International 136: 109345. doi: 10.1016/j.foodres.2020.109345.
- Gupta P. 2012. Biological and pharmacological properties of *Terminalia chebula* Retz. (Haritaki) - An overview. International Journal of Pharmacy and Pharmaceutical Sciences 4: 62-68.
- International Plant Names Index (IPNI). <https://www.ipni.org>(2000 - Onwards)
- Islam A, Kato-Noguchi H. 2012. Allelopathic potentiality of medicinal plant *Leucas aspera*. International Journal of Sustainable Agriculture 4(1): 01-07.
- International Union for Conservation of Nature (IUCN) <https://www.iucnredlist.org> (1948- Onwards)
- Jain SK, Rao RR. 1977. A handbook of field and herbarium methods. Delhi.
- Joseph B, George J, Mohan J. 2013. Pharmacology and traditional uses of *Mimosa pudica*. International Journal of Pharmaceutical Sciences and Drug Research 5(2): 41-44.
- Kansagara PA, Pandya DJ. 2019. A complete review on medicinally active herbal weed: *Commelina benghalensis* L.(Commelinaceae). Journal of Pharmaceutical Sciences and Research 11(4): 1165-1171.
- Khandokar L, Bari MS, Seidel V, Haque MA. 2021. Ethnomedicinal uses, phytochemistry, pharmacological activities and toxicological profile of *Glycosmis pentaphylla* (Retz.) DC.: A review. Journal of Ethnopharmacology 278: 114313.
- Khera N, Bhargava S. 2013. Phytochemical and pharmacological evaluation of *Tectona grandis* Linn. International Journal of Pharmacy and Pharmaceutical Sciences 5(3): 923-927.
- Khiangte Z, Lalramnghinglova H. 2017. Inventorization of indigenous medicinal plants and practices in Mizoram, North-East India. Pleione.
- Kumar A, Patil M, Kumar P, Bhatti R, Kaur R, Sharma N, Singh A. 2020. *Mallotus philippensis* (Lam.) Müll. Arg.: A comprehensive review on ethnomedicinal uses. Ethnobiology and Conservation 19: 1-44doi: 10.15451/ec2020-05-9.
- Kumar S. 2018. Tropical Rainforests of India and World 5(3).
- Kumari S, Krishna MJ, Joshi AB, Gurav S, Bhandarkar AV, Agarwal A, Deepak M, GM G. 2017. A pharmacognostic, phytochemical and pharmacological review of *Terminalia bellerica*. Journal of Pharmacognosy and Phytochemistry, 6(5): 368-376.
- Macwan C. 2010. *Paederia foetida* Linn. As a potential medicinal plant: A Review. Journal of Pharmacy Research 3: 3135-3137.
- Maroyi A. 2022. Phytochemical, pharmacological, and socio-economic properties of *Sagittaria sagittifolia* L. Medicinal Plants - International Journal of Phytomedicines and Related Industries 14(4): 513-523. doi: 10.5958/0975-6892.2022.00057.0.
- Meena, A. K., Nitika, G., Jaspreet, N., Meena, R. P., & Rao, M. M. 2011. Review on ethanobotany, phytochemical and pharmacological profile of *Alstonia scholaris*. International Research Journal of Pharmacy 2(1): 49-54.
- Mishra SS, Gothecha VK, Sharma A. 2010. *Albizia lebbek*: A short review. Journal of Herbal Medicine and Toxicology 4(2): 9-15.

- Mohanty S, Cock IE. 2010. Bioactivity of *Syzygium jambos* methanolic extracts: Antibacterial activity and toxicity. *Pharmacognosy Research* 2(1): 4-9. doi: 10.4103/0974-8490.60577.
- Nath KK, Deka P, Borkataki S, Borthakur SK. 2008. Traditional remedies of respiratory disorders from Assam, India. *Pleione* 2(2): 211-216.
- Phurailatpam AK, Singh SR, Chanu TM, Ngangbam P. 2014. Phlogacanthus-An important medicinal plant of North East India: A review. *African Journal of Agricultural Research* 9(26): 2068-2072.
- Plants of the World Online (POWO). <https://powo.science.kew.org> (2017- Onwards).
- Qaiyum MA, Sahu PR, Samal PP, Dutta S, Dey B, Dey S. 2023. Towards a win-win chemistry: Extraction of C.I. orange from Kamala fruit (*Mallotus philippensis*), and simultaneous exercise of its peels for the removal of Methylene Blue from water. *International Journal of Phytoremediation* 25(7): 907-916. doi: 10.1080/15226514.2022.2119936
- Ragasa C, Hofilena J, Rideout. 2004. Secondary metabolite from *Bauhinia purpurea*. *Philippine Journal of Science* 133: 1-5.
- Rajbonshi B, Islam M. 2018. Plant Diversity of Jeypore Reserve Forest, of Assam, North East India. *International Journal for Advance Research and Development* 3(2): 132-139.
- Rajeshwari S, Sevakodiyone S. 2018. Medicinal properties of *Abutilon indicum*. *Open Journal of Plant Science* 3(1): 022-025
- Reddy NM. 2013. *Lantana camara* Linn. Chemical constituents and medicinal properties: A review. *Scholars Academic Journal of Pharmacy* 2(6): 445-448.
- Rizwan K, Majeed I, Bilal M, Rasheed T, Shakeel A, Iqbal S. 2022. Phytochemistry and diverse pharmacology of genus *Mimosa*: A review. *Biomolecules* 12(1): 83.
- Roy A, Das SK, Tripathi AK, Singh NU, Barman HK. 2015. Biodiversity in North East India and their Conservation. *Progressive Agriculture* 15(2): 182. doi: 10.5958/0976-4615.2015.00005.8
- Roy B, Swargiary A, Giri BR. 2012. *Alpinia nigra* (Family Zingiberaceae): An anthelmintic medicinal plant of north-east India. *Advances in Life Sciences* 2(3): 39-51.
- Rusdi S, Yogaswara H, Prabowo WT, Chafidz A. 2020. Extraction of Natural Dyes from Kesumba keling (*Bixa orellana*) Seed and Secang (*Caesalpinia sappan* Linn.) Wood for Coloring Fabrics. *Materials Science Forum* 981: 179-184. Postgraduate Symposium on Industrial Science and Technology 2019. doi: 10.4028/www.scientific.net/MSF.981.179
- Sabita D. 2019. Studies on traditional medicinal plants of Sikkim University. <https://shodhganga.inflibnet.ac.in:8443/jspui/handle/10603/256138>
- Sahoo S, Ghosh G, Das D, Nayak S. 2013. Phytochemical investigation and in vitro antioxidant activity of an indigenous medicinal plant *Alpinia nigra* BL Burt. *Asian Pacific Journal of Tropical Biomedicine*, 3(11): 871-876.
- Sarkar T, Ghosh P, Poddar S, Choudhury S, Sarkar A, Chatterjee S. 2020. *Oxalis corniculata* Linn.(Oxalidaceae): A brief review. *Journal of Pharmacognosy and Phytochemistry* 9(4): 651-655.
- Saxena N, Shrivastava PN, Saxena RC. 2012. Preliminary physico-phytochemical study of stem bark of *Alstonia scholaris* (L.) R. BR.-A medicinal plant. *International Journal of Pharmaceutical Science And Research* 3(4): 1071-1075.
- Seppälä R, Buck A, Katila P. 2009. Global Forest Expert Panel on Adaptation of Forests to Climate Change. Adaptation of forests and people to climate change: A global assessment report. IUFRO.
- Shahid-ul-Islam Rather LJ, Shabbir M, Sheikh J, Bukhari MN, Khan MA, Mohammad F. 2019. Exploiting the potential of polyphenolic biomordants in environmentally friendly coloration of wool with natural dye from *Butea monosperma* flower extract. *Journal of Natural Fibers*. <https://www.tandfonline.com/doi/abs/10.1080/15440478.2018.1426080>
- Shang JH, Cai XH, Feng T, Zhao YL, Wang JK, Zhang LY, Yan M, Luo XD. 2010. Pharmacological evaluation of *Alstonia scholaris*: Anti-inflammatory and analgesic effects. *Journal of Ethnopharmacology* 129(2): 174-181. doi: 10.1016/j.jep.2010.02.011
- Sharma J, Varma R. 2011. A review on endangered plant of *Mallotus philippensis* (Lam.) M. Arg. *Pharmacology Online* 3: 1256-1265.

- Sharma R, Kishore N, Hussein A, Lall N. 2013. Antibacterial and anti-inflammatory effects of *Syzygium jambos* L. (Alston) and isolated compounds on acne vulgaris. BMC Complementary and Alternative Medicine 13(1): 292. doi: 10.1186/1472-6882-13-292
- Siddiqui WA, Ahad A, Ganai AA, Sareer O, Najm MZ, Kausar MA, Mohd M. 2012. Therapeutic potential of *Oroxylum indicum*: A review. Journal of Research and Opinion 2(10): 163-172.
- Sivakumar M, Chamundeeswari D. 2014. Pharmacognostic Studies And Preliminary Phytochemical Screening on the root of *Glycosmis pentaphylla* (Retz.,) DC,(Rutaceae). Indo American Journal Pharmaceutical Research 4(7): 3337-3342.
- Srinivasan P, Karunanithi K, Muniappan A, Singamoorthy A, Kadaikunnan S, Narayanan SP, Thiruvengadam M, Nagamuthu P. 2023. Botany, traditional usages, phytochemistry, pharmacology, and toxicology of *Guilandina bonduc* L.: A systematic review. Naunyn-Schmiedeberg's Archives of Pharmacology 1-29.
- Tandon VR. 2005. Medicinal uses and biological activities of *Vitex negundo*. Natural Product Radiance 4(3): 162-165.
- Tripathi S. 2016. Perspectives of Forest Biodiversity Conservation in Northeast India. Journal of Biodiversity, Bioprospecting and Development 3(2). doi: 10.4172/2376-0214.1000157
- Tropicos. <https://www.tropicos.org>
- Van NTH, Tuyen TT, Quan PM, Long PQ, Nhiem NX, Tai BH, Inh CT, Hoang VD, Van Kiem P, Van Minh C. 2019. Alkaloid glycosides and their cytotoxic constituents from *Zanthoxylum nitidum*. Phytochemistry Letters 32: 47-51.
- Vyas P, Yadav DK, Khandelwal P. 2019. *Tectona grandis* (teak) - A review on its phytochemical and therapeutic potential. Natural Product Research, 33(16): 2338-2354. doi: 10.1080/14786419.2018.1440217
- Wang L, Jiang Y, Han T, Zheng C, Qin L. 2014. A phytochemical, pharmacological and clinical profile of *Paederia foetida* and *P. scandens*. Natural Product Communications 9(6): 1934578X1400900640.
- Warrier RR, Priya SM, Kalaiselvi R. 2021. *Gmelina arborea*- an indigenous timber species of India with high medicinal value: A review on its pharmacology, pharmacognosy and phytochemistry. Journal of Ethnopharmacology 267: 113593. doi: 10.1016/j.jep.2020.113593
- Yob NJ, Jofrry SM, Affandi MMR, Teh LK, Salleh MZ, Zakaria, ZA. 2011. *Zingiber zerumbet* (L.) Smith: A review of its ethnomedicinal, chemical, and pharmacological uses. Evidence-Based Complementary and Alternative Medicine, 2011.
- Yusuf M, Mohammad F, Shabbir M, Khan MA. 2017. Eco-dyeing of wool with *Rubia cordifolia* root extract: Assessment of the effect of *Acacia catechu* as biomordant on color and fastness properties. Textiles and Clothing Sustainability 2: 1-9.
- Zakaria ZA, Rofiee MS, Teh LK, Salleh MZ, Sulaiman MR, Somchit MN. 2011. *Bauhinia purpurea* leaves' extracts exhibited in vitro antiproliferative and antioxidant activities. African Journal of Biotechnology 10(1): 65-74.
- Zheng WJ, Ren YS, Wu ML, Yang YL, Fan Y, Piao XH, Ge YW, Wang SM. 2021. A review of the traditional uses, phytochemistry and biological activities of the *Melastoma* genus. Journal of Ethnopharmacology 264: 113322.