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Jadabendra Malakar

Plant Taxonomy and
Biodiversity Lab, Department of
Botany, Tripura University,
Suryamaninagar, Agartala,
Tripura, India

Badal Kumar Datta

Plant Taxonomy and
Biodiversity Lab, Department of
Botany, Tripura University,
Suryamaninagar, Agartala,
Tripura, India

Title of the article: Diversity of medicinal plant and their conservation Status of West Tripura District, Tripura, India

Jadabendra Malakar and Badal Kumar Datta

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Abstract

The scientific research paper presents the first comprehensive assessment of floristic diversity and the conservation status of medicinal plants in West Tripura District, Tripura, India. The study was conducted over a period spanning 2020 to 2023 and it involved the collection and documentation of 151 medicinal plant species belonging to 124 genera and 58 families. Interactions were conducted with local communities, with a special focus on elderly individuals and folk healers. The insights gained from these interviews revealed that the documented plant species were employed in the treatment of various ailments, including diabetes, high blood pressure, jaundice, menstrual disorders, heart disease, liver troubles, bone fractures and among others. Furthermore, the study also sought to assess the conservation status of the identified species. The conservation status of the medicinal plant species were determined by the IUCN Red List of Threatened Species, Version 2023-1. Out of total 151 plant species recorded in this study, 03 species under Data Deficient (DD) category, 51 species under Least Concern (51), 03 species under Near threatened. 03 species under Vulnerable, 01 species under Endangered & 01 species under Critically Endangered category.

Keywords: Conservation, diversity, medicinal plant, Traditional, West Tripura

Introduction

Floristic diversity refers to the variety and richness of plant species within a specific geographic area or ecosystem. It encompasses the composition, distribution and abundance of plant species, as well as their interactions with the environment. Floristic study can be done at any level from species population to ecosystem, community, and global diversity^[1]. Medicinal plants are botanical species that are utilized for their therapeutic properties and healing potential in various traditional and modern medical systems. Worldwide, more than 50,000 species are utilized for medical purposes^[2]. Herbal macrophytes have been utilized in traditional medicine due to their remarkable ability to provide physiologically active chemicals with therapeutic properties since ancient times^[3]. Ethno medicine is a kind of traditional medicine that has been used to treat a wide range of illnesses and has been passed down orally from generation to generation. It is closely related to the religious practices and beliefs of indigenous peoples^[4]. Plant knowledge that has been accumulated over thousands of years is known as traditional knowledge. These plants are found in the surrounding community forests, protected areas, and jungles. Tribal communities all over the world gather them for clothing, food, and shelter^[5]. According to an estimate from the World Health Organization (WHO), 80% of the populations in developing countries rely on traditional medicines, primarily plant-based drugs, for their basic medical needs^[6]. The significant pharmaceuticals developed in the last 50 years that have transformed contemporary medicine have been extracted from plants^[7]. Drugs derived from plants are generally safer than synthetic drugs, and they are a recognized source when looking for new drug sources^[8, 9].

Locals now sell their medicinal plants to larger marketplaces in addition to using them for personal use. The young plants are uprooted so as to collect the rhizomes, roots, and bulbs; this puts the population of medicinal plants in their natural habitat in threat^[10]. The world faces the primary challenge of minimizing loss of biodiversity through conservation efforts, which is exacerbated by the ever-increasing demand for medicinal plants and habitat destruction^[10, 11]. Many species of medicinal plants are currently categorized as being in various threat categories^[12] and until sufficient scientific data are obtained, many of these species may need

Corresponding Author:

Jadabendra Malakar

Plant Taxonomy and
Biodiversity Lab, Department of
Botany, Tripura University,
Suryamaninagar, Agartala,
Tripura, India

to be listed as threatened in the near future ^[13]. A very few number of studies have been conducted on medicinal plant diversity in Tripura. In Dharmanagar Subdivision 06 number of medicinal plant species ^[14] & 223 number of medicinal plant species were recorded ^[15] from North Tripura district of Tripura state. The study area was virtually unexplored for a very long time by the scientific community. So finding out the diversity of medicinal plants and their conservation status in the West Tripura District was the primary goal of this study. This study also will pave the way to future pharmaceutical research for the discovery of new sources of drugs.

Materials and Methods

Study area: West Tripura District is situated within the State of Tripura nestled in the north-eastern region of the India. The West Tripura District boasts an altitude of over 12.80 meters above sea level. Geographically, the district spans between the 23°16' and 24°14' North latitude and 91°09' and 91°47' East longitude. Total area of the district is 983.63 square kilometre.

Methodology: The research study was undertaken with the goal of thoroughly documenting and investigating the variety of medicinal plant species found in this area during 2020 to 2023. Comprehensive field surveys were conducted at various seasons of the year to assess the diversity of plant species in the West Tripura district. During these field surveys, plant samples were collected from their natural environments, and a detailed examination of the plants was carried out, noting their characteristics, where they grow, and their ecological relationships etc. The collected species were identified using various botanical floras ^[16, 17, 18, 19, 20]. To uncover the medicinal properties of these plants, in-depth interviews were conducted with local residents and traditional healers, with a particular focus on rural communities. These conversations revealed a wealth of traditional knowledge, showing that the local population has extensively used these medicinal plants

to treat a wide range of health conditions. The conservation status of the medicinal plant species were determined by the IUCN Red List of Threatened Species, Version 2023-1 ^[21].

Results and Discussion

A total number of 151 medicinal plant species, taxonomically categorized into 124 numbers of genera and 58 numbers of families, were ascertained. (Figure 1) Among these species, the majority, 139 numbers of species fall under the Dicotyledons, distributed across 113 numbers of genera and 49 numbers of families. On the other hand, the Monocotyledons encompass 09 numbers of species, 08 numbers of genera & 06 numbers of families. 01 species was Gymnosperms, and 02 were Pteridophytes. These plants exhibit diverse growth patterns or habits, specifically; there were 51 numbers of herbs, 55 numbers of trees, 19 numbers of shrubs, 06 numbers of undershrubs, 15 numbers of climber and 04 numbers of creeper species. (Figure 2) Furthermore, the habitat preferences of these medicinal plants vary. The majority, 146 species were terrestrial, 2 species were hydrophytes, and 1 species was parasitic, while 1 species was epiphytic. (Table 1)

There were 22 numbers of species in family Fabaceae, 08 numbers of species in the family Apocynaceae, 07 numbers of species in each of the family Compositae & Euphorbiaceae, 6 numbers of species in each of the family Malvaceae, Moraceae & Rutaceae, 5 numbers of species in each of the family Rubiaceae & Lamiaceae, 4 numbers of species in each of the family Amaranthaceae, Cucurbitaceae & Combretaceae, 3 numbers of species in each of the family Apiaceae, Acanthaceae, Phyllanthaceae & Verbenaceae, 2 numbers of species in each of the family Solanaceae, Menispermaceae, Convolvulaceae, Lecythidaceae, Liliaceae, Meliaceae, Oxalidaceae, Piperaceae, Zingiberaceae, Poaceae, Polygalaceae. Maximum numbers of the families (33) were represented by single species (Monospecific family) (Figure 3)

Table 1: List of medicinal plants used by the local people in West Tripura district, Tripura

Scientific Name	Local Name	Family	Habitat	Habit	Plant Part	Medicinal Importance	IUCN Status
<i>Abroma augustum</i> (L.) L.f.	Ulotkombol	Malvaceae	Tr	Trees	Seed	Seeds are used in stomach pain.	
<i>Abutilon indicum</i> (L.) Sweet.	Petwri	Malvaceae	Tr	Herbs	Root, Leaf	Root is used in fever & leaves are used in inflammation.	
<i>Acalypha indica</i> L.	Khokli / Muktajhuri	Euphorbiaceae	Tr	Herbs	Leaf	Leaf paste is used in ringworm.	
<i>Achyranthes aspera</i> L.	Apang	Amaranthaceae	Tr	Herbs	Leaf	Leaves are used in insect bite.	
<i>Acmella paniculata</i> (Wall. ex DC.) R.K. Jansen	Nak Phul	Compositae	Tr	Herbs	Flower	Flower is used in toothache & inflammation.	
<i>Adhatoda zeylanica</i> Medik.	Basak	Acanthaceae	Tr	Shrubs	Leaf	The leaves are used in treatment of cough.	LC
<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	Tr	Trees	Leaf, Fruit	Leaves are used to treat diarrhea, promote bone & skin healing. Fruit is used in dysentery.	NT
<i>Aerides odorata</i> Lour.		Orchidaceae	Ep	Herbs	Leaf	Juice of leaves is used in treatment of boils & healing of wounds.	EN
<i>Albizia julibrissin</i> L.	Golapi Shirish	Fabaceae	Tr	Trees	Flower, Stem bark	Flowers & stem bark is used in insomnia.	VU
<i>Albizia lebbeck</i> (L.) Benth.	Shirish	Fabaceae	Tr	Trees	Stem bark	The stem bark is used for treatment of inflammation.	LC
<i>Allium cepa</i> L.	Peyaj	Liliaceae	Tr	Herbs	Bulb	Warm bulb juice used in treatment of cold and cough. Bulb juice used in hair fall.	
<i>Allium sativum</i>	Rasun	Liliaceae	Tr	Herbs	Bulb	Juice or pulp of the bulb used in treatment of fever & cough.	
<i>Alstonia scholaris</i> (L.) R. Br.	Chatim	Apocynaceae	Tr	Trees	Stem bark	Stem bark is used for treatment of malaria, jaundice & gastrointestinal troubles.	LC
<i>Alternanthera brasiliana</i>	Bishollokoroni	Amaranthaceae	Tr	Herbs	Leaf	Leaf juice is used in stop bleeding.	

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<i>Amaranthus spinosus</i> L.	Kanta nutia	Amaranthaceae	Tr	Herbs	Whole plant	Plant extract used in toothache. Leaves juice used in dysentery. Leaves paste is used in treatment of burning wounds.	
<i>Amaranthus viridis</i> L.	Shaknotey	Amaranthaceae	Tr	Herbs	Leaf, Root	Boiled leaves and roots are taken for acidity.	
<i>Ananas comosus</i> (L.) Merr.	Anaros	Bromeliaceae	Tr	Herbs	Fruit	Fruit juice is used in treatment of round worm.	
<i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees	Kalomegh	Acanthaceae	Tr	Herbs	Leaf	Leaves are used for treatment of fever & liver troubles.	
<i>Aquilaria malaccensis</i> Lam.	Agar	Thymelaeaceae	Tr	Trees	Wood	Wood paste is useful in headache.	CR
<i>Averrhoa carambola</i> L.	Kamranga	Oxalidaceae	Tr	Trees	Fruit	Fruit used in fever, cough, ringworm infection.	
<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Tr	Trees	Leaf	Leaf extract is used to reduce tooth plaque & to treat skin diseases, diabetes & liver problems.	LC
<i>Bacopa monnieri</i> (L.) Pennell	Brahmi	Plantaginaceae	Tr	Creepe rs	Leaf	Leaves are used in memory improvement & insomnia.	LC
<i>Bauhinia purpurea</i> L.	Kanchan	Fabaceae	Tr	Trees	Flower	Flowers are used in treatment of liver disorder.	
<i>Boerhavia diffusa</i> L.	Punarnava	Nyctaginaceae	Tr	Herbs	Leaf	Leaves are anti-diabetic & diuretic.	
<i>Bombax ceiba</i> L.	Shimul	Bombaceae	Tr	Trees	Root bark	Males with sexual weakness are given tender root decoction. In rheumatism, a grinding of root bark is used.	LC
<i>Butea monosperma</i> (Lamk.) Taub.	Polash	Fabaceae	Tr	Trees	Seed	The seeds are used for skin ailments.	LC
<i>Cajanus cajan</i> (L.) Millsp.	Arahar	Fabaceae	Tr	Shrubs	Leaf, Seed	Leaves are used to treat piles, jaundice and pneumonia. Seeds and leaf decoction is used for increasing breast milk secretion.	
<i>Calotropis gigantea</i> (L.) Dryand.	Akondo	Asclepiadaceae	Tr	Shrubs	Leaf	Leaves are used in rheumatism & body pain.	
<i>Cannabis sativa</i> L.	Ganja	Cannabinaceae	Tr	Shrubs	Inflorescence , Leaf	Inflorescence & leaves are used in treatment of pain, asthma, insomnia, depression & loss of appetite.	
<i>Careya arborea</i> Roxb.	Khumbi	Lecythidaceae	Tr	Trees	Flower	Flowers are used in healing wounds.	
<i>Carica papaya</i> L.	Pepe	Caricaceae	Tr	Trees	Fruit	Fruits are used in improve ingestion, wound healing, liver problems.	DD
<i>Carissa carandas</i> L.	Karamcha	Apocynaceae	Tr	Shrubs	Root bark, Fruit	Root bark and ripe fruit is used in diabetes. Root bark decoction used in treatment of wounds.	
<i>Cascabela thevetia</i> (L.) Lippold	Ghonta / Kolke	Apocynaceae	Tr	Trees	Stem bark	Stem bark is used for fever, burn & ringworm.	LC
<i>Cassia fistula</i> L.	Badorlathi	Fabaceae	Tr	Trees	Fruit	Fruits are used in joint pain, chest pain & dysentery.	LC
<i>Cassia tora</i> L.	Gol Eski / Chakunda	Fabaceae	Tr	Herbs	Leaf, Seed	Leaves and seeds are anti rheumatic & laxative.	
<i>Catharanthus roseus</i> (L.) G. Don	Nayantara	Apocynaceae	Tr	Under shrubs	Leaf	Leaves are used in diabetes & hypertension.	
<i>Catunaregam spinosa</i> (Thunb.) Tirveng	Biolom	Rubiaceae	Tr	Shrubs	Fruit	The pulp of the fruit is given in dysentery.	LC
<i>Centella asiatica</i> (L.) Urban	Thankuni	Apiaceae	Tr	Herbs	Leaf	Leaves are used to heal wounds, skin diseases & hypertension.	LC
<i>Cinnamomum verum</i> J. Presl	Daruchini	Lauraceae	Tr	Trees	Stem bark	The stem bark is used for gastrointestinal upset & menstrual cramps.	
<i>Cissus quadrangularis</i> L.	Harjor	Vitaceae	Tr	Climb ers	Stem	Paste of stem used externally in bone fractures.	
<i>Citrus limon</i> (L.) Osbeck	Lebu	Rutaceae	Tr	Shrubs	Fruit	Fruit juice is used in treatment of scurvy, sore throats, fever, and high blood pressure.	LC
<i>Citrus maxima</i> (Burm.) Merr.	Jambura /Batabilebu	Rutaceae	Tr	Trees	Fruit	Fruit juice is used in cough, fever, asthma, and ulcer.	LC
<i>Citrus reticulata</i> Blanco.	Komola	Rutaceae	Tr	Trees	Fruit	Fruit is laxative & relieves vomiting.	
<i>Cleome viscosa</i> L.	Hurhuria	Cleomaceae	Tr	Herbs	Leaf	Leaves are used in treatment of arthritis & wound healing.	
<i>Clitoria ternatea</i> L.	Aparajita	Fabaceae	Tr		Leaf	Paste of leaves is applied externally to treat throat pain & headache.	
<i>Coccinia grandis</i> (L.) Voigt	Telakuchi	Cucurbitaceae	Tr	Climb ers	Leaf	The leaf juice is taken in diabetes.	
<i>Colocasia esculenta</i> (L.) Schott	Kochu / Mukhi	Araceae	Tr	Herbs	Petiole, Leaf	Juice of the petioles used for stop bleeding. Leaf juice is used in treatment of warts.	LC
<i>Coriandrum sativum</i> L.	Dhania	Apiaceae	Tr	Herbs	Fruit	The fruits are used in stomach pain, constipation & gas formation.	
<i>Couroupita guianensis</i> Aubl.	Nagalingam	Lecythidaceae	Tr	Trees	Leaf	Leaves are used in skin diseases.	LC

<i>Crateva religiosa</i> G. Forst.	Barun	Capparaceae	Tr	Trees	Fruit	Fruits are diuretic & relieve constipation.	
<i>Curcuma longa</i> L.	Haldi / Halud	Zingiberaceae	Tr	Herbs	Rhizome	Rhizomes are used in treatment of cough, wounds, hepatic disorder.	DD
<i>Cuscuta reflexa</i> Roxb.	Swarnalota	Cuscutaceae	Pr	Herbs	Stem	Stem juice is used in liver disorder and stem paste is used in treatment of warts.	LC
<i>Cynodon dactylon</i> (L.) Pers.	Durba	Poaceae	Tr	Herbs	Whole plant	Plant paste is used for stop bleeding & healing of wounds.	
<i>Dalbergia sissoo</i> Roxb.	Shishu	Fabaceae	Tr	Trees	Leaf	Leaf juice used orally to treated dysentery.	LC
<i>Datura metel</i> L.	Dhutura	Solanaceae	Tr	Herbs	Root, Seed	Roots are used in backache, leaves are used in arthritis, seeds are used in the treatment of stomach & intestinal pain, fruit juice is used in treatment of dandruff.	
<i>Dillenia indica</i> L.	Chalta	Dilleniaceae	Tr	Trees	Fruit	Fruit juice is used for relief of indigestion, dysentery.	LC
<i>Diplocyclos palmatus</i> (L.) C. Jeffrey		Cucurbitaceae	Tr	Climbers	Leaf	Leaves are used in asthma.	
<i>Dipterocarpus turbinatus</i> Gaertn. f. Fruct.	Garjan	Dipterocarpaceae	Tr	Trees	Stem bark	Stem bark is used in treatment of infection of urinary tract & abscess.	VU
<i>Duranta erecta</i> L.	Duranta	Verbenaceae	Tr	Shrubs	Whole Plants.	Used in treatment of pneumonia.	
<i>Eclipta prostrata</i> (L.) L.	Kesuti	Compositae	Tr	Herbs	Leaf	Leaf juice used for making hair black and shine.	LC
<i>Enhydra fluctuans</i> Lour.	Halencha	Compositae	Tr	Herbs	Whole plant	Plant is taken as food for treatment of loss of appetite.	
<i>Euphorbia antiquorum</i> L.	Tekata Sij	Euphorbiaceae	Tr	Trees	Whole plant	Juice of the plant is useful in chest pain and constipation.	LC
<i>Euphorbia hirta</i> L.	Bara Dudhi	Euphorbiaceae	Tr	Herbs	Whole plant	The paste of whole plant is used for treatment of dysentery.	
<i>Euphorbia nivulia</i> F. Ham.	Sij	Euphorbiaceae	Tr	Trees	Leaf	Leaves are used in bronchitis & asthma.	
<i>Euphorbia thymifolia</i> L.		Euphorbiaceae	Tr	Herbs	Leaf	Leaves are used as a blood purifier.	
<i>Ficus benghalensis</i> L.	Bot	Moraceae	Tr	Trees	Leaf, Stem bark	Leaves of the plant used for treatment of wounds & skin diseases. Stem bark is used for diarrhea.	
<i>Ficus benjamina</i> L.	Lokkha Pakur	Moraceae	Tr	Trees	Leaf	Leaves of the plant used for treatment of wounds, skin diseases.	LC
<i>Ficus hispida</i> L.	Dumur	Moraceae	Tr	Trees	Leaf, Fruit	Leaves of the plant used in the treatment of jaundice & diarrhea. Ripened fruit used in increasing breast milk in lactating women.	LC
<i>Ficus pumila</i> L.	Lota bot	Moraceae	Tr	Creepe rs	Leaf	Leaves are used in skin diseases.	
<i>Ficus racemosa</i> L.	Janja Dumur	Moraceae	Tr	Trees	Leaf	Leaves are used in diabetes, liver disorders & diarrhea.	LC
<i>Ficus religiosa</i> L.	Ashwottho	Moraceae	Tr	Trees	Leaf, Stem bark, Fruit	Leaf juice is helpful for asthma, diarrhea, and ear pain. Stem bark used in bone fracture. Ripe fruits are used in treatment of loss of appetite & burning sensation in stomach.	LC
<i>Gardenia resinifera</i> Roth.		Rubiaceae	Tr	Trees	Gum	Scented yellow gum resin used in skin disease.	
<i>Glycomis pentaphylla</i> (Retz.) DC	Ash-sheora / Bon jamir	Rutaceae	Tr	Shrubs	Whole plant	Used in treatment of liver disorder.	
<i>Grona triflora</i> (L.) H. Ohashi & K. Ohashi		Fabaceae	Tr	Herbs	Leaf	The decoction of leaves is used in treatment of dysentery.	LC
<i>Guilandina bonduc</i> L.	Jhogragota	Fabaceae	Tr	Shrubs	Seed	Seeds are used in abdominal pain.	LC
<i>Heliotropium indicum</i> L.	Hatishur	Boraginaceae	Tr	Herbs	Leaf	Leaf juice is used for treatment of insect bite & inflammation.	
<i>Hemidesmus indicus</i> (L.) Schult.	Anantamul	Apocynaceae	Tr	Creepe rs	Root	The root is used in rheumatism, urinary tract disorder & skin diseases.	
<i>Hibiscus rosa-sinensis</i> L.	Joba	Malvaceae	Tr	Shrubs	Flower	Flower paste used in burning injuries. Floral paste is taken orally to treat menstrual disorder.	
<i>Holarrhena pubescens</i> Wall. ex G. Don.	Kurchi	Apocynaceae	Tr	Trees	Stem bark	The stem bark is used in treatment of dysentery.	LC
<i>Hygrophila auriculata</i> (Schumach.) Heine	Kulekhara	Acanthaceae	Tr	Herbs	Leaf	Leaves used in treatment of anemia.	LC
<i>Hymenodictyon orixense</i> (Roxb) Mabb.	Latikarum /Bhui kadam /Kali kadam	Rubiaceae	Tr	Trees	Leaf	Leaves are used in digestive problem.	
<i>Ichnocarpus frutescens</i> (L.) R. Br.	Paralia lata	Apocynaceae	Tr	Climbers	Root, Stem	Root decoction is used in treatment for rheumatism and stem is used in fever.	
<i>Ipomoea aquatic</i> Forst.	Komli Shak	Convolvulaceae	Hp	Herbs	Leaf, Stem	Leaves & stems used in worm infections.	LC

<i>Kalanchoe pinnata</i> (Lam.) Pers.	Patharkuchi	Crassulaceae	Tr	Herbs	Leaf	Leaf paste is used in healing wounds.	
<i>Lawsonia inermis</i> L.	Mehendi	Lythraceae	Tr	Trees	Leaf	Leaves used for hair growth and keeps hair shining.	LC
<i>Leucaena leucocephala</i> (Lam.) de Wit	Subabul	Fabaceae	Tr	Trees	Leaf	The leaves are used in diabetes.	
<i>Leucas aspera</i> (Willd.) Link	Swetodrone / Dondokolosh	Lamiaceae	Tr	Herbs	Leaf	The leaves are antipyretic & used in treatment of arthritis.	
<i>Leucas lavandulaefolia</i> Röss	Dron	Lamiaceae	Tr	Herbs	Leaf	Leaves are used for the treatment of fever, asthma & dermatitis.	
<i>Lycopodiella cernua</i> (L.) Pic.Serm.		Lycopodiaceae	Tr	Herbs	Whole plant	Used in treatment of kidney disorders.	LC
<i>Macrosolen cochinchinensis</i> (Lour.) Van Tiegh.		Loranthaceae	Pr	Shrubs	Leaf	Leaves are used for treatment of jaundice.	
<i>Mallotus philippensis</i> (Lamk.) Muell.	Kishur	Euphorbiaceae	Tr	Trees	Whole plant	Useful in treatment of bronchitis.	LC
<i>Marsilea minuta</i> L.	Shushuni	Marsileaceae	Hp	Herbs	Leaf	Leaves used in sleeping disorder.	LC
<i>Melastoma malabathricum</i> L.	Ban Padma	Melastomataceae	Tr	Shrubs	Leaf	Leaves are used to treat diarrhea & dysentery.	
<i>Mentha suaveolens</i> Ehrh.	Pudina	Lamiaceae	Tr	Herbs	Leaf	Leaves are used for treatment of gastrointestinal disorder, bad breath, insomnia. It is also diuretic.	LC
<i>Mesua ferrea</i> L.	Nageswar	Calophyllaceae	Tr	Trees	Flower Bud, Stem bark	Flower buds are used in blood dysentery. Stem bark is used in anemia.	
<i>Mikania cordata</i> (Burm.f.) B.L.Rob.	Tara lata	Compositae	Tr	Climbers	Leaf	Leaf paste is very effective in stop bleeding.	
<i>Mimosa pudica</i> L.	Lojjaboti	Fabaceae	Tr	Under shrubs	Root	Root is used in treatment of urinary disorders.	LC
<i>Momordica charantia</i> L.	Karala	Cucurbitaceae	Tr	Climbers	Fruit	Juice obtained from fruit is eaten orally to treat diabetes.	
<i>Moringa oleifera</i> (L.) Lamk.	Sojne	Moringaceae	Tr	Trees	Leaf	Leaves are used in liver problem, constipation & gastritis.	LC
<i>Mucuna pruriens</i> (L.) Dc. Prodr.	Alkushi	Fabaceae	Tr	Climbers	Seed	Seeds are used in sexual weakness in male.	LC
<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Kadam	Rubiaceae	Tr	Trees	Stem bark, Leaf	Stem bark & leaves are used in the treatment of eye infection, skin diseases.	
<i>Nyctanthes arbortristis</i> L.	Sheoli / Singhara	Verbenaceae	Tr	Trees	Leaf	Leaf juice is used for treatment of fever.	
<i>Ocimum basilicum</i> L.	Babui Tulsi	Lamiaceae	Tr	Herbs	Leaf	Leaf juice is used for treatment of headache, cough, diarrhea, worms, and warts.	
<i>Ocimum tenuiflorum</i> L.	Tulsi	Lamiaceae	Tr	Herbs	Leaf	Leaves are used in treatment of cough, asthma, fever, diarrhea, dysentery, eye diseases, and indigestion.	
<i>Operculina turpethum</i> (L.) S.Manso	Dud Kalmi	Convolvulaceae	Tr	Climbers	Root	Roots are used in skin diseases.	
<i>Oxalis corniculata</i> L.	Amrul	Oxalidaceae	Tr	Creepe rs	Leaf	Leaf juice is used for stomach pain.	
<i>Paederia foetida</i> L.	Gonodho badhali	Rubiaceae	Tr	Climbers	Leaf	Leaves are used in treatment of inflammation, diarrhea.	
<i>Passiflora foetida</i> L.	Jhumkalata	Passifloraceae	Tr	Climbers	Leaf	The leaves are used to treat asthma.	
<i>Persicaria barbata</i> (L.) H. Hara		Polygonaceae	Tr	Herbs	Root	The root extract is used as carminative agent.	LC
<i>Persicaria hydropiper</i> (L.) Delarbre	Bishkatali	Polygonaceae	Tr	Herbs	Leaf	Leaves are used in treatment of rheumatic pain, skin disease.	LC
<i>Persicaria hydropiper</i> (L.) Delarbre	Pani marich	Polygonaceae	Tr	Herbs	Leaf	Leaves are used in treatment of round worm infection.	LC
<i>Phyllanthus acidus</i> (L.) Skeels	Horburi	Phyllanthaceae	Tr	Trees	Fruit	Fruits are used in bronchitis, hepatic diseases.	
<i>Phyllanthus emblica</i> L.	Amlaki	Phyllanthaceae	Tr	Trees	Fruit	Fruits are anti diabetic used in treatment of gastrointestinal disorder.	LC
<i>Phyllanthus fraternus</i> G.L. Webster	Bhui-amla / Hazarmani	Phyllanthaceae	Tr	Herbs	Leaf	Leaves are used in treatment of jaundice.	
<i>Phyllodium pulchellum</i> (L.) Desv.	Juta-salpani	Fabaceae	Tr	Shrubs	Stem bark	Stem bark is used for treatment of haemorrhage, diarrhoea & eye diseases.	LC
<i>Piper betle</i> L.	Pan	Piperaceae	Tr	Climbers	Leaf	Leaf juice is used in treatment of indigestion & constipation.	
<i>Piper nigrum</i> L.	Golmorich	Piperaceae	Tr	Climbers	Fruit	Fruits are used in treatment for constipation, insomnia, oral abscesses & toothache.	
<i>Platycladus orientalis</i> (L.)	Patajhau	Cupressaceae	Tr	Trees	Leaf	Leaves are used in osteoarthritis.	NT

Franco							
<i>Rauvolfia serpentina</i> Benth.	Chandra / Sorpogondha	Apocynaceae	Tr	Under shrubs	Root	Root is used for treatment for hypertension, mental disorders.	
<i>Ricinus communis</i> L.	Rerhi	Euphorbiaceae	Tr	Shrubs	Seed, Leaf	Seed oil is used in inflammation. Leaves are used in cough.	
<i>Saccharum officinarum</i> L.	Akh, Kuishar	Poaceae	Tr	Herbs	Stem	Juice of stem used in jaundice.	
<i>Santalum album</i> L.	Chondon	Santalaceae	Tr	Trees	Wood	The paste of wood used in inflammation & skin diseases.	VU
<i>Saraca asoka</i> (Roxb.) de Wilde	Ashok	Fabaceae	Tr	Trees	Stem bark, Leaf	Stem bark & leaves are used for treatment of menstrual problems.	
<i>Senegalia pennata</i> (L.) Maslin		Fabaceae	Tr	Trees	Leaf, Stem bark	Stem bark paste is used in scorpion sting. Leaf juice is used in indigestion.	LC
<i>Senna alata</i> (L.) Roxb	Daudlata	Fabaceae	Tr	Shrubs	Leaf	Leaves are used for treatment of skin disease.	LC
<i>Senna occidentalis</i> (L.) Link	Eski / Kalasunda	Fabaceae	Tr	Herbs	Seed	Seeds are used in skin diseases.	LC
<i>Senna sophora</i> (L.) Roxb.	Kasunde	Fabaceae	Tr	Shrubs	Root	Root is used for treatment of respiratory disorders.	
<i>Sida acuta</i> Burm.	Berela	Malvaceae	Tr	Under shrubs	Leaf	Leaves are used in treatment of malaria.	
<i>Sida cordifolia</i> L.		Malvaceae	Tr	Under shrubs	Leaf	Leaves are used in treatment of bronchitis.	
<i>Sida rhombidifolia</i> L.	Lal berela	Malvaceae	Tr	Under shrubs	Root	The root is used to treat rheumatism.	
<i>Solanum surattense</i> Burm.	Kantikari	Solanaceae	Tr	Shrubs	Leaf	The leaves are used in respiratory disorders.	
<i>Solena heterophylla</i> Lour.	Rakhalsasha /Kudari.	Cucurbitaceae	Tr	Climbers	Leaf	Leaves are used as laxative.	
<i>Spondias pinnata</i> (L.f.) Kurz.	Amra	Anacardiaceae	Tr	Trees	Stem bark	Stem bark is used to prevent vomiting.	
<i>Stephania japonica</i> (Thunb.) Miers var <i>discolor</i> (Miq.) Forman.	Akanadi	Menispermaceae	Tr	Climbers	Root, Leaf	The root and leaves are used in sleep disturbance.	
<i>Swertia chirayita</i> (Roxb.) H. Karst.	Chirota	Gentianaceae	Tr	Herbs	Whole plant	Whole plant is used in treatment of liver disorder, diabetes.	
<i>Swietenia mahagoni</i> (L.) Jacq.	Mahogoni	Meliaceae	Tr	Trees	Stem bark	Paste of stem bark used in wounds.	NT
<i>Synedrella nodiflora</i> (L.) Gaertn.	Surjya kanya / Bon genda	Compositae	Tr	Herbs	Leaf	Leaves are used in treatment of inflammatory diseases.	
<i>Syzygium cumini</i> (L.) Skeels	Jaam	Myrtaceae	Tr	Trees	Seed	Seeds are used in diabetes.	LC
<i>Tagetes erecta</i> L.	Gendaphul	Compositae	Tr	Herbs	Leaf	Paste of leaves is used in stop bleeding.	
<i>Tamarindus indica</i> L.	Tetul	Fabaceae	Tr	Trees	Fruit	The fruit pulp is used in fever.	LC
<i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arn.	Arjun	Combretaceae	Tr	Trees	Stem bark	Stem bark is used in treatment of hypertension & heart disease.	
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bohera	Combretaceae	Tr	Trees	Fruit	Fruits are used in treatment of hepatitis, bronchitis, asthma, and cough.	LC
<i>Terminalia chebula</i> Retz.	Horitoki	Combretaceae	Tr	Trees	Fruit	Fruits are good to increase appetite, used in indigestion and liver problems.	LC
<i>Terminalia citrina</i> Roxb.	Horitoki	Combretaceae	Tr	Trees	Fruit	Fruits are useful in gastritis and colitis.	LC
<i>Tinospora cordifolia</i> (Thunb.) Miers	Guloncha	Menispermaceae	Tr	Climbers	Stem	Stem juice is used in treatment of chronic fever, arthritis & diabetes.	
<i>Trachyspermum ammi</i> (L.) Sprague	Jain / Ajowan	Apiaceae	Tr	Herbs	Fruit	Fruits are used in digestive problems.	
<i>Tridax procumbens</i> (L.) L.	Tridhara	Compositae	Tr	Herbs	Leaf	Leaf paste is used in wound healing.	
<i>Trigonella foenum-graecum</i> L.	Methi	Fabaceae	Tr	Herbs	Seed	Seeds are used in diabetes.	
<i>Vitex negundo</i> L.	Nishinda	Verbenaceae	Tr	Shrubs	Leaf, Root	Leaves help to manage arthritis & provide relief from pain. Roots are used in treatment of piles.	LC
<i>Zanthoxylum rhetsa</i> (Roxb.) DC	Bajna	Rutaceae	Tr	Trees	Seed	Seed oil is used in swollen joint & muscle stiffness.	LC
<i>Zingiber officinale</i> Rosc.	Aada	Zingiberaceae	Tr	Herbs	Rhizome	Rhizomes are used in treatment of headache, indigestion, vomiting.	DD

(Abbreviation: LC – Least Concern, EN – Endangered, CR – Critically Endangered, VU – Vulnerable, DD – Data Deficient, Tr - Terrestrial, Hp - Hydrophytes, Ep - Epiphytes, Pr - Parasites)

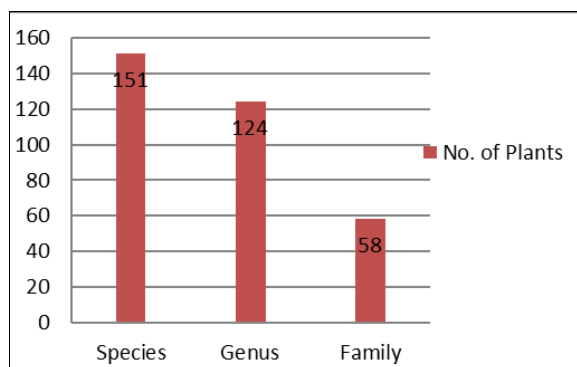


Fig 1: Showing total number of Medicinal Plant Species, Genus & Family in West Tripura district.

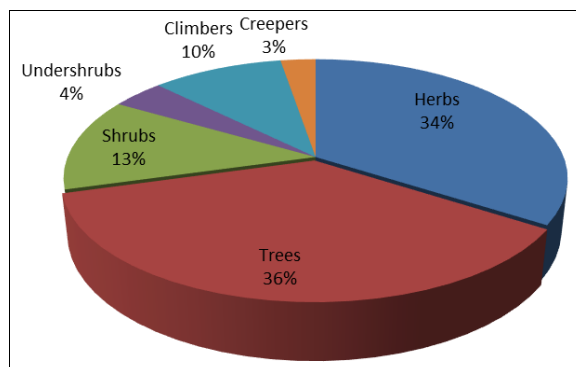


Fig 2: Habit diversity of the Medicinal Plant species recorded in West Tripura district.

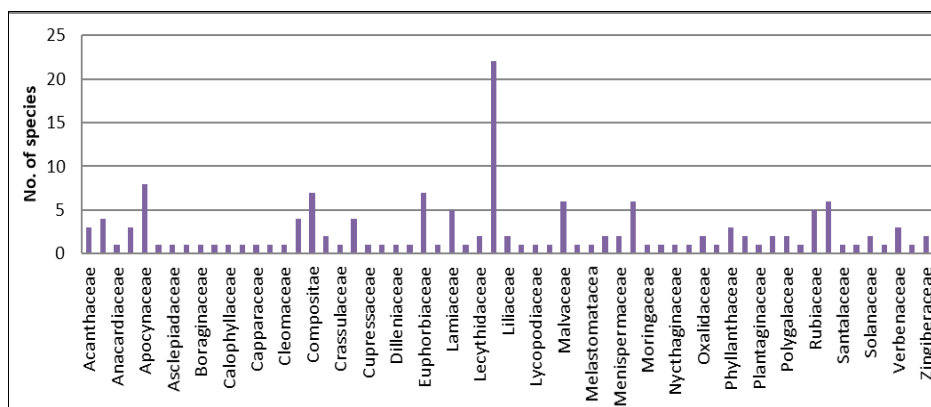


Fig 3: Representation of different medicinal plant families recorded from West Tripura district.

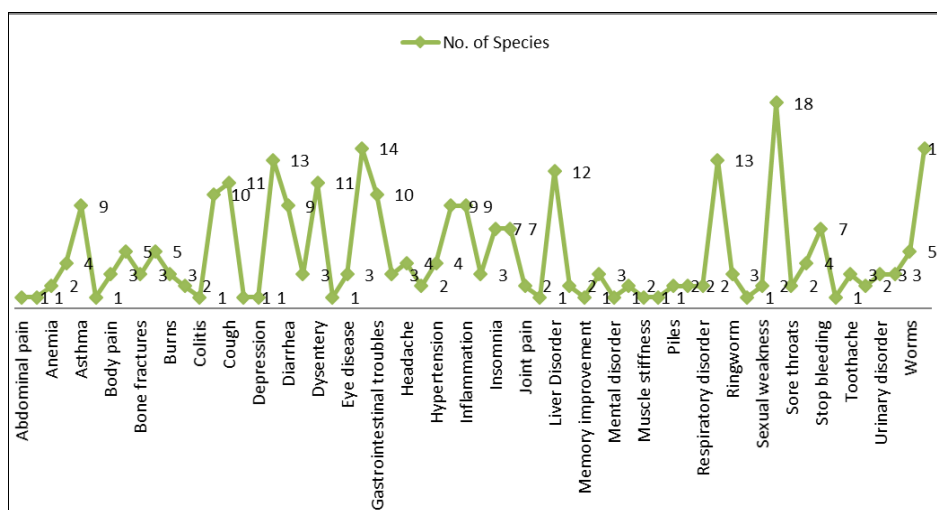


Fig 4: Showing number of plant species used in treatment of different ailments.

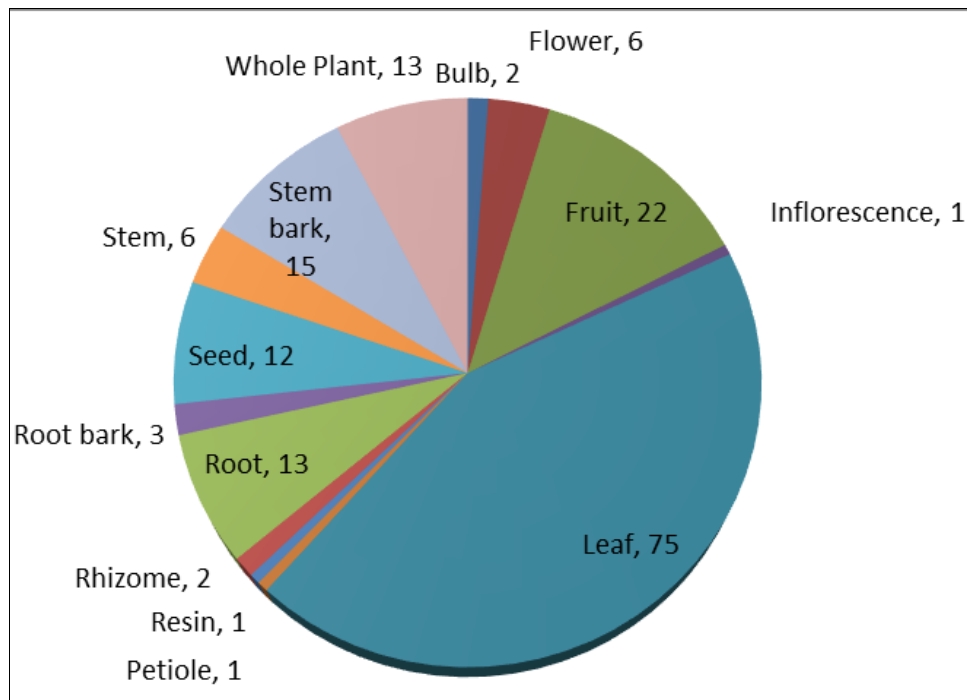
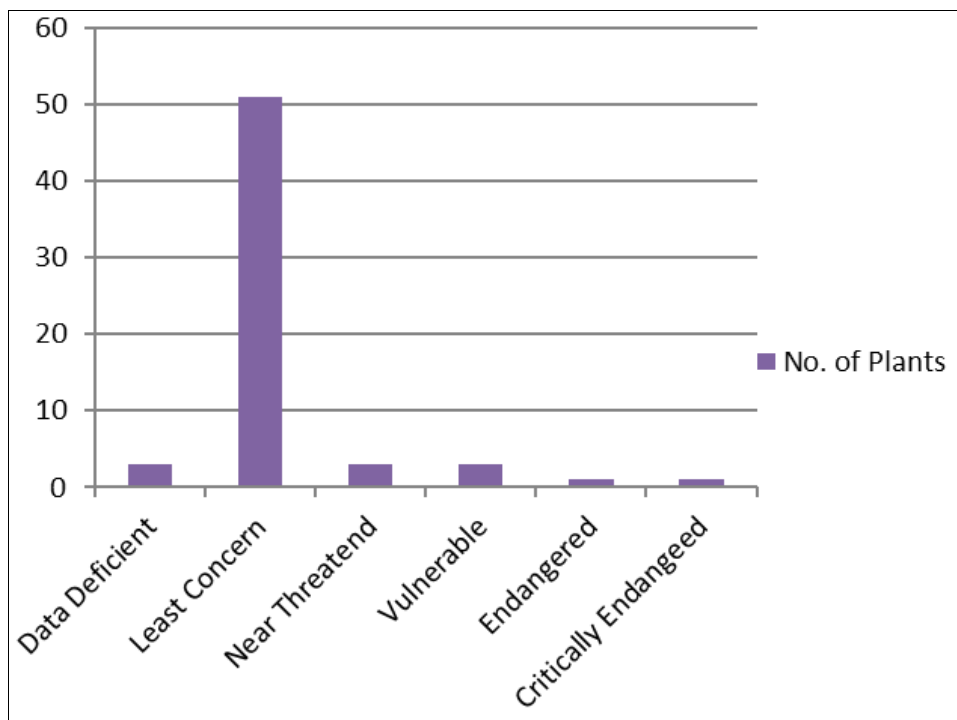
This report has recorded 151 number of plant species were used to cure 62 types of health problems. Among those 18 number of species has been used in skin disease, 14 number of species were used for each of wounds healing & fever, 13 number of species for diabetes, 12 number of species were used for each of liver disorder & rheumatism, 11 number of species were used in each of dysentery & cough, 10 number of species were used for constipation, 09 species were used for each of gastrointestinal troubles, inflammation, diarrhoea, asthma & indigestion, 07 number of species were used for each of jaundice, insomnia & bleeding, 5 number of species were used for each of boils & bronchitis, 4 number of species were used for each of worms, stomach pain, hypertension, headache & loss of appetite, 3 number of species were used for each of bone fractures, body pain, burns, eye disease, hair treatment, insect bite, menstrual problems, ringworm,

toothache, urinary disorder, vomiting & as a diuretic, 2 number of species were used for each of anemia, chest pain, heart disease, joint pain, malaria, milk secretion increasing, piles, pneumonia, respiratory disorder, sexual weakness, sore throats, 1 species was used for each of kidney disorder, ulcer, abdominal pain, acidity, bad breath, colitis, dandruff, depression, ear pain, memory improvement, oral abscesses, scurvy, mental disorder, muscle stiffness & tooth plaque.(Figure 4)

Different parts of different plant species like leaf (75 spp.), fruit (22 spp.), root (13 spp.) stem bark (15 spp.) seed (12 spp.), whole plant (13 spp.), stem (06 spp.), flower (06 spp.), rhizome (02 spp.), bulb (02 spp.), root bark (03 spp.) and resin, inflorescence, petiole (1 spp.) were used for the treatment of various ailments.(Figure 5)

Table 2: Name of the threatened species and their categories

Species	Category
<i>Aerides odorata</i> Lour.	Endangered
<i>Albizia julibrissin</i> L.	Vulnerable
<i>Dipterocarpus turbinatus</i> C.F. Gaertn.	Vulnerable
<i>Santalum album</i> L.	Vulnerable
<i>Aquilaria malaccensis</i> Lam.	Critically Endangered

**Fig 5:** Different plant parts used for the treatment of various ailments.**Fig 6:** Conservation status of Medicinal plant under IUCN categories.

Out of total 151 plant species recorded in this study, 03 species under Data Deficient (DD) category, 51 species under Least Concern (51), 03 species under Near threatened, 03 species under Vulnerable, 01 species under Endangered & 01 species under Critically Endangered category (Table 1, Figure 6)

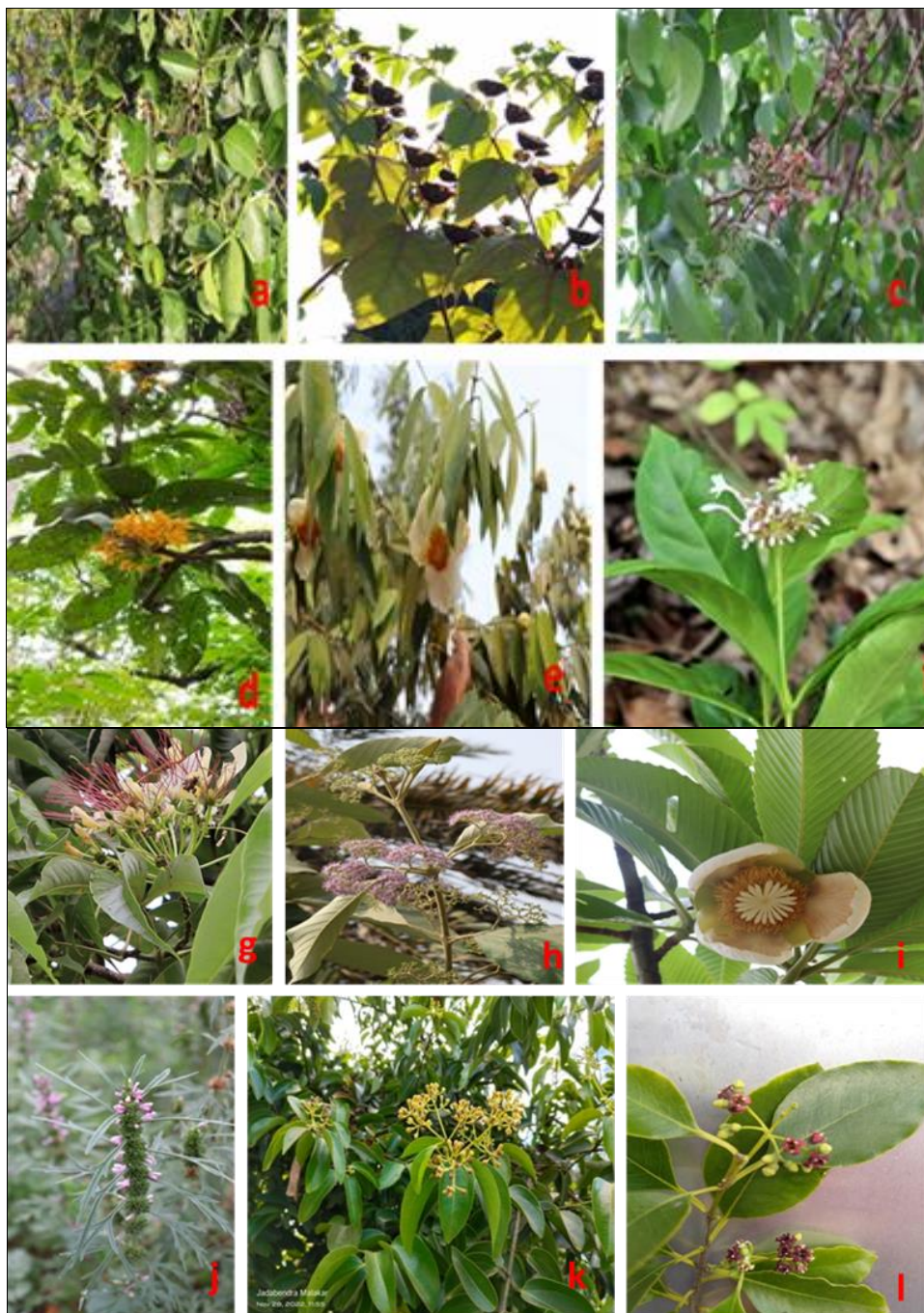


Fig 7: Photographs of some medicinal plants

a) *Carissa carandas* L b) *Abroma augustum* (L.) L.f. c) *Averrhoa carambola* L. d) *Saraca asoka* (Roxb.) de Wilde. e) *Mesua ferrea* L. f) *Rauvolfia serpentina* Benth. g) *Crataeva nurvala* F. Ham. h) *Callicarpa arborea* Roxb. i) *Dillenia indica* L. j) *Leonurus japonicus* Houtt. k) *Cinnamomum zeylanicum* Blume. l) *Santalum album* L.

Conclusion

The study was conducted in West Tripura district, Tripura over a period spanning 2020 to 2023, and it involved the collection and documentation of 151 medicinal plant species belonging to 124 genera and 58 families. Among the identified families Fabaceae, Apocynaceae, Compositae and Euphorbiaceae emerged as dominant contributors to the local flora. The documented plant species were employed in the treatment of 62 number of ailments, including diabetes, bronchitis, high blood pressure, asthma, skin diseases, jaundice, diarrhoea, cough, dysentery, menstrual disorders, fever, rheumatism, bleeding, anaemia, ringworm, heart disease, gastrointestinal troubles, piles, malaria, ringworm, liver troubles, tooth plaque, sleep disturbances, respiratory disorders, bone fractures, wound healing, kidney disorders,

and among others. Out of total 151 plant species recorded in this study, 03 species under Data Deficient (DD) category, 51 species under Least Concern (51), 03 species under Near threatened, 03 species under Vulnerable, 01 species under Endangered & 01 species under Critically Endangered category. This research serves as a foundation for the development of conservation strategies, ensuring that the district's medicinal plant diversity and the traditional healthcare practices linked to it endure for years to come. This study also will pave the way to future pharmaceutical research for the discovery of new sources of drugs.

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References

1. Pal B, Tudu S, Sahu SC. Floral diversity of Panchalingeshwar: A sacred hill of Odisha, India. *Nelumbo*. 2022;64(2):119-135.
2. Schippmann U, Leaman DJ, Cunningham AB. Impact of cultivation and gathering of medicinal plants on biodiversity: global trends and issues. In: *Biodiversity and the Ecosystem Approach in Agriculture, Forestry and Fisheries*. Rome: Food and Agriculture Organization (FAO); c2002.
3. Chatterjee K, Bandyopadhyay A, Ghosh A, Kar S. Assessment of environmental factors causing wetland degradation, using Fuzzy Analytic Network Process: A case study on Keoladeo National Park, India. *Ecological Modelling*. 2015;316:1-13.
4. Misra MK, Dash SS. Medicinal plants used by the tribals of Koraput district, Orissa. In: Mohapatra PM, Mahapatro PC. *Forest Management in Tribal Areas: Forest Policy and Peoples Participation*. New Delhi: Concept Publishing Company; c1997. p. 160-182.
5. Wangpan T, *et al.* Important plants used by the Nocte Tribe. *Journal of Bioresources*. 2019;6(1):36-45.
6. Adhikari BS, Babu MM, Saklani PL, Rawat GS. Medicinal plants diversity and conservation status in Wildlife Institute of India (WII) Campus, Dehradun. *Ethnobotanical Leaflets*. 2010;14:46-83.
7. Ahmad DR, Shahnawaz M, Hassan PQ. General overview of medicinal plants: A review. *The Journal of Phytopharmacology*. 2018;6(6):349-351.
8. Sharma PP, Mujundar AM. Traditional knowledge on plants from Toranmal Plateau of Maharashtra. *Indian Journal of Traditional Knowledge*. 2003;2:292-296.
9. Lahiri S, Dash SS. An ethnobotanical survey of useful wild plants in Dzongri-Goecha La, Sikkim, India. *Nelumbo*. 2022;64(2):327-340.
10. Wake DB, Vredenburg VT. Are we in the midst of the sixth mass extinction? A view from the world of amphibians. *Proceedings of the National Academy of Sciences*. 2008;105:11466-11473.
11. Cardinale BJ, Duffy JE, Gonzalez A, Hooper DU, Perrings C, Venail P. Biodiversity loss and its impact on humanity. *Nature*. 2012;486:59-67.
12. Mehta P, Bisht K, Chandra Sekar K. Diversity of threatened medicinal plants of Indian Himalayan Region. *Plant Biosystems*; c2020. p. 1-12.
13. Brehm JM, Maxted N, Martins-Loucao MA, Ford-Lloyd BV. New approaches for establishing conservation priorities for socio-economically important plant species. *Biodiversity and Conservation*. 2010;19:2715-2740.
14. Shiddamallayya N, Dora BB, Janardhan A. Medicinal plants in local health traditions (LHTs): Dharmanagar Sub-division, Tripura, India. *Journal of Drug Research in Ayurvedic Sciences*. 2019;4(4):185-191.
15. Shiddamallayya N, Dora BB, Anku G, *et al.* Exploration of medicinal plants of North District, Tripura. *Journal of Drug Research in Ayurvedic Sciences*. 2020;5(3):150-176.
16. Deb DB. *The Flora of Tripura State*. Vols. 1 & 2. New Delhi: Today & Tomorrow's Printers and Publishers; c1981-1983.
17. Kanjilal UN, Kanjilal PC, Das A, Dey RN, Bor NL. *Flora of Assam*. Vol. I-V. Shilong: Government Press; 1934-1949.
18. Prain D. *Bengal Plants*. Vols. 1-2. Calcutta: Botanical Survey of India; c1963.
19. Hooker JD. *The Flora of British India*. Vol. 1-7. London: L. Reeve and Co, Ashford; c1872-1897.
20. Nathani BD. *Flora of Chamoli*. Vol. I-II. Calcutta: Director, Botanical Survey of India; c1984.
21. IUCN. *The IUCN Red List of Threatened Species*. Version 2023-1; c2024. Available from: <https://www.iucnredlist.org>. Accessed on 08.03.2024.