

BOTANICAL STUDIES IN THE MEDICINAL PLANT CONSERVATION AREAS IN KERALA

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1. INTRODUCTION

Plants form the main resource base of traditional medicines. Our country has one of the richest ethnobotanical traditions in the world. It has been estimated that about 7,000 species of plants are used for medicines in India in the traditional system of medicines viz. *Ayurveda Sidha, Unani* and *Emchi*. With the awakening among the people all over the world to use more ecofriendly products such as biomedicines, biopesticides and biofertilizers, the demand for traditional system of medicines has increased considerably. Due to the increased demand and thereby exploitation and in the face of various threats to the biodiversity, it has become extremely important to take urgent steps to conserve the plant genetic resources in our country. It has been estimated that about 10% of the plants in tropical countries are facing extinction. Consequently, various conservation measures are being implemented to prevent species loss.

The Foundation For Revitalisation of Local Health Traditions (FRLHT) is co-ordinating a major medicinal plant conservation initiative in South India. The core activity includes establishment of a network of 30 *insitu* and 15 *exsitu* Conservation Centres in the states of Karnataka, Kerala and Tamil Nadu. The network has been named Indian Medicinal Genetic Resources Network (INMEDGERN).

Establishment of Medicinal Plant Conservation areas (MPCAs) is an approach to *insitu* conservation. The MPCAs are selected in areas of high plant diversity and endemism in different vegetation types and ecoclimatic zones, from Kodikaral in Tamil Nadu (10 ASL) to Eravikulam in Kerala (2100 - 2400 ASL) nestled below Anamudi, the highest peak in South India. The area of an MPCA varies from 100 - 250 ha. Among the 30 MPCAs selected in South India, 7 are in Kerala. Of the 7 MPCAs in Kerala, Botanical studies in 5 MPCAs namely Athirapally, Peechi, Silent Valley, Periyar and Eravikulam are entrusted to the Institute.

2. OBJECTIVES OF THE STUDY

- i. To make an inventory of the flora of the MPCAs and prepare Herbarium voucher specimens.
- ii. To identify the medicinal plants and record their uses.
- iii. To record rare, threatened and endemic species.
- iv. Quantitative analysis of species diversity by belt transect studies (analysis to be done by) FRLHT.

3. ENVIRONMENT

3.1. ATHIRAPALLY

3.1.a. Location

The Medicinal Plant Conservation Area at Athirapally is located about 1 km north of the famous Athirapally water falls in Charpa Forest Range of Vazhachal Forest Division, along the side of Chalakudy - Malakkappara Road. The MPCA has an area of 135 ha., lies at latitude of 10°10' and longitude of 76°20'E. The range of altitude is from 165 to 350 m ASL.

3.1.b. Rainfall

The bulk of precipitation is from the South-west monsoon during June to September. The average minimum rainfall is 4.4 mm in January and average maximum is 875.6 mm in June. The average annual rainfall is 3675.8 mm.

3.1.c. Temperature

The temperature varies from 36 - 39°C in the hot months of March, April and May and the mean minimum varies from 16-18°C from December to February.

3.1.d. Soil types

Loamy forest soil is generally found in the hills and with alluvial deposits on the stream banks. It varies from shallow gravelly soil on the upper slopes to deep finely textured soil on the lower slopes in the valley.

3.1.e. Water resources

Chalakudy River flowing near the MPCA is the major natural water source. There is also a network of streams in the area, mainly Kannamkuzhithodu and Ittanithodu, both tributaries of Chalakudy river. Major portion of the rain water falling on the MPCA forest drains to Chalakudy river and the rest to Kannamkuzhythodu and Ittanithodu. The general water table is about 15 m deep.

3.1.f. Vegetation

The vegetation belongs to Southern Moist Deciduous forest type according to the classification of Forests by Champion & Seth (1968). The vegetation is characterised by shedding of leaves by the trees during dry season. The leafless period varies from a few weeks (*Dalbergia sissooides*, *Terminalia paniculata*) to five months (*Bombax insigne*, *Lagerstroemia microcarpa*). A three tier stratification is found for the tree species. Woody climbers are relatively few. During the wet season the undergrowth is dominated by annual herbaceous taxa.

The trees in the upper stratum are *Albizia odoratissima*, *Bombax insigne*, *Dalbergia sissoides*, *Dillenia pentagyna*, *Grewia tiliifolia*, *Haldina cordifolia*, *Lagerstroemia microcarpa*, *Pterocarpus marsupium*, *Tectona grandis*, *Terminalia bellirica*, *Terminalia crenulata*, *Terminalia paniculata*, *Tetrameles nudiflora* and *Xylocarpus xylocarpa*

The middle stratum trees are *Bauhinia racemosa*, *Bridelia airy-shawii*, *Cassia fistula*, *Careya arborea*, *Cleistanthus collinus*, *Dalbergia lanceolaria*, *Macaranga peltata*, *Phyllanthus emblica*, *Sapindus trifoliata*, *Schleichera oleosa*, *Sterculia urens*, *Sterculia villosa*, *Trema orientalis*, etc.

The lower stratum trees are *Cipadessa baccifera*, *Cochlospermum religiosum*, *Grewia glabra*, *Helicteres isora*, *Holarrhena pubescens*, *Naringi crenulata*, *Tabernaemontana heyneana*, *Katunaregam spinosa*, *Wrightia tinctoria*, etc.

The climbers are *Acacia torta*, *Bridelia scandens*, *Calycopteris floribunda*, *Dalbergia volubilis*, *Spatholobus roxburghii*, *Ziziphus rugosa*, etc.

The Shrubby layer is composed of *Baliospermum montanum*, *Barleria prattensis*, *Chromolaena odorata*, *Canthium angustifolium*, *Desmodium pulchellum*, *Desmodium triangulare*, *Thespesia lampas* etc.

3.2. PEECHI

3.2.a. Location

Peechi MPCA constitutes a part of Peechi Reserve forest and is bounded on three sides by the Peechi Reservoir and on the eastern side by the natural forest. The MPCA has an area of 150 ha. lies at latitude of 10°32'N and longitude of 76°23'E. The area has an altitude of 110 m ASL.

3.2.b. Rainfall

Both South-West and North-East monsoons contribute to the precipitation of the MPCA. The average annual rainfall is 2700mm.

3.2.c. Temperature

The temperature varies from 35 - 40°C during March-April. The mean minimum temperature 17°C is recorded in January.

3.2.d. Soil types

The soil in the area is loamy in texture and blackish or reddish in colour. Occasionally on the higher areas of exposed banks the laterite parent material is seen. Owing to active weathering, the ground is bouldery.

3.2.t. Water resources

Peechi reservoir is the only permanent source of water to the MPCA. Small streams flowing through the area are active only during rainy seasons and dry up soon after the rains. Artificial drainage system is absent in the area. Water table in the area is generally high because of the presence of reservoir.

3.2.f. Vegetation

The vegetation is of Southern moist mixed deciduous forest type. The trees found in the upper stratum are *Albizia odoratissima*, *Bombax insigne*, *Dillenia pentagyna*, *Lagerstroemia microcarpa*, *Persea macrantha*, *Pterocarpus marsupium*, *Sterculia guttata*, *Stereospermum colais*, *Terminalia crenulata*, *Terminalia bellirica*, *Tetrameles nudiflora*, *Terminalia paniculata*, *Vitex altissima*, *Xylia xylocarpa*.

The middle stratum trees are *Bridelia airy-shawii*, *Careya arborea*, *Cassia fistula*, *Cinnamomum malabathrum*, *Cleistanthus collinus*, *Ficus arnottiana*, *Miliusa tomentosa*, *Olea dioica*, *Phyllanthus emblica*, *Radermachera xylocarpa*, *Schleichera oleosa*, *Strychnos nux-vomica*, *Trewia polycarpa*, etc.

The lower stratum trees are *Antidesma acidum*, *Callicarpa tomentosa*, *Cochlospermum religiosum*, *Holarrhena pubescens*, *Naringi crenulata*, *Pavetta tomentosa*, *Sterculia urens*, *Syzygium laetum*, *Tabernaemontana heyneana*, *Wrightia tinctoria*, etc.

Climbers are *Acacia torta*, *Anamirta cocculus*, *Caesalpinia hymenocarpa*, *Calycopteris floribunda*, *Desmos lawii*, *Spatholobus roxburghii*, *Ziziphus rugosa*.

The common Bamboos are *Bambusa bambos* and *Ochlandra travancorica*.

3.3. SILENT VALLEY

3.3.a. Location

The Silent Valley MPCA is situated on the south eastern part of the Silent Valley National Park. The Northern boundary of MPCA is formed by Kummattanthodu Natuchannel, western boundary is lined by the trek path, southern and eastern boundary is the boundary of the National park. The MPCA has an area of 200 ha lies at latitude of 11°5' and longitude 76°24'E. The altitude varies from 1000 m ASL at Sairandhri to 1657 m ASL at Kattimudi.

3.3.b. Rainfall

The area receives both South-West and North-East monsoons. The average annual rainfall within the area amounts to 4404

3.3.c. Temperature

The maximum temperature recorded is 30.27°C with an average maximum of 25.30°C. The minimum temperature is 10-15°C.

3.3.d. Soil types

The major soil types in the area are red soil and mixed red and yellow soil. The variation in the colour of the soil is due to the varying states of iron present in the soil.

3.3.e. Water resources

The Kammatton Thodu, a perennial water channel in the MPCA, drains into the Kunthipuzha River, a tributary of Bharathapuzha. Artificial drainage system is lacking in the area. The water table in the area is high.

3.3.f. Vegetation

The vegetation belongs to the Westcoast tropical evergreen forest type. This forest type is characterised by the profusion of species, particularly trees and woody climbers. The lower shrubby layer is composed of mostly seedlings and saplings of tree species. The trees are arranged in three strata.

The trees in the upper stratum are *Artocarpus heterophyllus*, *Canarium strictum*, *Cullenia exarillata*, *Dysoxylum malabaricum*, *Elaeocarpus serratum*, *Holigama ferruginea*, *Hopea glabra*, *Mangifera indica*, *Mesuaferrea*, *Palaquium ellipticum*, *Vatena indica*, etc.

The middle stratum trees are *Aglaia lawii*, *Aphanamixis polystachya*, *Cinnamomum malabratrum*, *Drypetes elata*, *Elaeocarpus glandulosus*, *Dillenia bracteata*, *Diospyros spp.*, *Diospyros pruriens*, *Garcinia gummi-gutta*, *Garcinia morella*, *Hydnocarpus alpina*, *Mastixia arborea ssp. meziana*, *Myristica dactyloides*, *Otonephelium stipulaceum*, *Reinwardtiodendron anamalaiense*, *Syzygium laetum*, *Walsura trifoliata*, etc.

The lower stratum trees are *Atalantiaracemosa*, *Antidesma bunius*, *Baccaurea courtallensis*, *Caseana ovata*, *Casearia wynadensis*, *Euonymus angulatus*, *Glochidion ellipticum*, *Gomphandra coriacea*, *Isonandra lanceolata*, *Meiogyne ramaraonii*, *Saprosma fragrans*, *Microtropis latifolia*, etc.

The lower shrubby layer is composed of *Antistrophe serratifolia*, *Glycosmis mauritiana*, *Laportea crenulata*, *Lasianthus jackianus*, *Lepisanthes erecta*, *Orophea zeylanica*, *Psychotria nigra*, *Saprosma glomeratum*, *Strobilanthus sp.*, *Tarenna monosperma*, *Thottea siliquosa*, etc.

The reed bamboo, *Oxytenanthera ritcheyi* is fairly common. The climbers are *Anodendron rhinosporum*, *Ancistrocladus heyneanus*, *Caesalpinia cucullata*, *Embelia ribes*, *Grewia umbellifera*, *Toddalia asiatica*, *Ventilago bombaiensis*, etc.

3.4.PERIYA

3.4.a. Location

The Periya MPCA forms a part of the Periya Reserve forest in Periya Forest Range in North Wayanad Forest Division. The MPCA has an area of 160 ha. lies at 11°40'N latitude and 75°7'E longitude. The altitude variation is from 900 to 1100 m ASL.

3.4.b. Rainfall

The major part of the precipitation of this area is contributed by South-West monsoon followed by the North-East monsoon. The other months viz. January, February and March also receive rainfall even if it is marginal. The average annual rainfall is 3828 mm.

3.4.c. Temperature

The maximum temperature is 32°C and the minimum is 13°C the average being 22°C.

3.4.d. Soil types

Loamy soils are mostly found in the area with varying proportion of silt and clay. Alluvial soil, Laterite soil, Red soil and Forest and Hill soils are also found. The soil is yellow or red dark.

3.4.e. Water resources

There are a few perennial and seasonal streams in the MPCA. The water table is about 9 to 10m deep.

3.4.f. Vegetation

Vegetation conforms to the West coast tropical evergreen forests. The trees in the upper stratum are *Artocarpus heterophyllus*, *Bischofia javanica*, *Calophyllum polyanthum*, *Canarium strictum*, *Cullenia exarillata*, *Dysoxylum malabaricum*, *Elaeocarpus tuberculatus*, *Mesua ferrea*, *Palaquium ellipticum*, *Vateria indica*.

The middle stratum trees are *Aglaia barberi*, *Aglaia lawii*, *Aphanamixis polystachya*, *Apodytes dimidiata*, *Dillenia bracteata*, *Dimocarpus longan*, *Elaeocarpus glandulosus*, *Fahrenheitia zeylanica*, *Garcinia gummi-gutta*, *Holigarna grahamii*, *Hydnocarpus pentandra*, *Knema attenuata*, *Litsea oleoides*, *Mangifera indica*, *Mastixia arborea* ssp. *meziana*, *Myristica dactyloides*, *Olea dioica*, *Otonephelium stipulaceum*, *Polyalthia coffeoides*, *Prunus ceylanica*, *Syzygium gardneri*, *Vepris bilocularis*, etc.

The lower stratum trees are *Aglaia edulis*, *Antidesma menasu*, *Ardisia pauciflora*, *Casearia wynadensis*, *Euonymus indicus*, *Goniothalamus cardiopetalus*, *Nothopegia racemosa*, *Symphyllia mallotiformis*, *Syzygium laetum*, *Syzygium mungagam*, *Syzygium munronii*, etc.

The climbers are *Ancistrocladus heyneanus*, *Aspidopteris canarenis*, *Beaumontia jerdoniana*, *Derris thyrsiflora*, *Embelia ribes*, *Rourea minor*, *Toddalia asiatica*, *Ventilago bombaïensis*, etc.

There is a grassy patch at the top of the hill at Theethonda. The common species found are *Arundinella purpurea*, *Carex lindleyana*, *Cymbopogon flexuosus*, *Emilia sonchifolia*, *Exacum sessile*, *Eulalia trispicata*, *Hedyotis herbacea*, *Ischaemum indicum*, *Jansenella griffithiana*, *Merremia tridentata*, *Neanotis quadrivalvis*, *Peristylus richardianus*, *Pteridium aquilinum*, *Themeda quadrivalvis*.

3.5. ERAVIKULAM

3.5.a. Location

The MPCA is located on the slope of Unaimala, near to Anamudi, the highest peak in South India. The trek path leading to Eravikulam Hut is passing beside it. The MPCA has an area of 120 ha. lies at 10°10'N latitude and 77°05'E longitude. The altitude varies from 2100 to 2400m ASL.

3.5.b. Rainfall

The major part of the precipitation is caused by both South-West and the North-East monsoons. The rainfall occurs in other months of the year also. The peak rainy months are from June to September. The annual average rainfall is about 4800 mm.

3.5.c. Temperature

The temperature varies from 3°C in winter to 29°C in summer. Severe frost occurs during December last to February last with temperature going below 0°C.

3.5.d. Soil types

The area has thick humus layer with plenty of fine roots. The soil is dark brown in colour and strongly acidic. It is loamy with varying proportions of silt and clay.

3.5.e. Water resources

The MPCA is criss-crossed by swift flowing streams. The isolated sholas act like sponges. The water table is high.

3.5.f. Vegetation

The vegetation is dominated by Southern montane wet grassland. The grassland in general is with dwarf grasses which hardly grow above 1 m. The dominant grasses are *Agrostis peninsularis*, *Andropogon polypticus*, *Chrysopogon zeylanicus*, *Eulalia phaeothrix*, *Helictotrichon asperum*, *Ischaemum indicum*, *Isachne setosa*, *Tripogon ananthaswamianus*,

The other species are *Anaphalis boumei*, *Anaphalis subdecurrens*, *Anaphalis lawii*, *Anemone rivularis*, *Bupleurum distichophyllum*, *Crotalaria fysonii*, *Exacum courtallense*, *Drosera peltata*, *Eriocaulon melaleucum*, *Hedyotis swertioides*, *Impatiens tomentosa*, *Indigofera pedicellata*, *Justicia japonica*, *Leucas suffruticosa*, *Osbeckia aspera* var. *wghtiana*, *Plantago major*, *Pimpinella candolleana*, *Ranunculus reniformis*, *Senecio zeylanicus*, *Swertia corymbosa*, *Wahlenbergia marginata*, etc.

Ageratina adenophora is very common along the margins of shola forests, often in association with *Strobilanthes* sp.

The Shola forests are confined to valleys of the hills. The trees in general are with short boles and are highly branched with a spreading crown. Branches of trees are densely clothed with moss. Epiphytes are common. Woody climbers are very few. There is no stratification for the tree canopy.

The dominant trees are *Actinodaphne salicina*, *Cinnamomum wightii*, *Euonymus crenulatus*, *Elaeocarpus recurvatus*, *Ilex denticulata*, *Litsea ligustrina*, *Litsea wghtiana*, *Mahonia leschenaultii*, *Michelia nilagirica*, *Microtropis ramiflora*, *Rhododendron arboreum*, *Syzygium densiflorum*, *Symplocos cochinchinensis*, etc.

The ground layer is composed of mostly seedlings of tree species along with *Asplenium unilaterale*. *Elatostemma lineolatum* and *Pilea malastomoides* are fairly common.

4. METHODOLOGY

4.1. Floristic study

Collections of specimens in the generative state were carried out from the MPCAs in different seasons for about an year. However sterile specimens of certain trees which did not flower during the study period were also collected as representative specimens. Data on altitude, habit, habitat, and features like colour, smell, exudation, etc. "were recorded in the Form No. 1. The herbarium specimens were prepared as per standard specification (Fosberg & Sachet, 1965; Bridson & Forman, 1991). The specimens were identified with pertinent literature and also by comparing with authentic specimens. The nomenclature of the species were made up-to-date.

4.2. Quantitative analysis of species diversity

Belt transects were laid and enumeration of species in the transects were carried out as per the design provided by the FRLHT. Each transect is of 4 mwidth and about 250 m long. About 1% of the area in each MPCA was covered by transects. Specially designed forms were used to enter data pertaining to different life forms like, herbs, shurbs, climbers and

trees (Forms 2, 3 & 4). Other physical features like altitude, aspect, slope, disturbances and soil parameters were also recorded in forms 5 and 6

5. RESULTS AND DISCUSSION

5.1. List of Species

Athirapally

DICOTYLEDONS

ACANTHACEAE

Andrographis macrobotrys Rungia pectinata
Hemigraphis crossandra Thunbergia fragrans
Justicia procumbens

AMARANTHACEAE

Cyathula prostrata

ANACARDIACEAE

Spondias indica

ANNONACEAE

Desmos lawii Miliusa tomentosa

APOCYNACEAE

Holarrhena pubescens Tabernaemontana heyneana
Ichnocarpus frutescens Wrightia tinctoria
Rauvolfia serpentina

ARALIACEAE

Schefflera venulosa

ASCLEPJADACEAE

Hemidesmus indicus Hoya ovalifolia

ASTERACEAE

Ageratum conyzoides Elephantopus scaber
Blumea belangeriana Mikania cordata
Chromolaena odorata Notonia grandiflora

BALSAMINACEAE

Impatiens chinensis Impatiens scapiflora
Impatiens minor

BIGNONIACEAE

Radermachera xylocarpa Stereospermum colais

BOMBACACEAE

Bombax insigne

CLEOMACEAE

Cleome viscosa

COCHLOSPERMACEAE

Cochlospermum religiosum

COMBRETACEAE

<i>Calycopteris floribunda</i>	<i>Terminalia crenulata</i>
<i>Terminalia bellirica</i>	<i>Terminalia paniculata</i>

CONVOLVULACEAE

<i>Ipomoea deccana</i>	<i>Merremia tridentata</i>
<i>Ipomoea hederifolia</i>	<i>Merremia vitifolia</i>
<i>Ipomoea pileata</i>	

CUCURBITACEAE

Cucumella silentvalleyi

DATISCACEAE

Tetrameles nudiflora

DILLENACEAE

Dillenia pentagyna

DROSERACEAE

<i>Drosera burmannii</i>	<i>Drosera indica</i>
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EUPHORBIACEAE

<i>Antidesma acidum</i>	<i>Phyllanthus emblica</i>
<i>Aporosa lindleyana</i>	<i>Phyllanthus gardnerianus</i>
<i>Bridelia airy-shawii</i>	<i>Sauropus quadrangularis</i>
<i>Cleistanthus collinus</i>	<i>Tragia involucrata</i>
<i>Phyllanthus amarus</i>	<i>Trewia polycarpa</i>

FABACEAE

Papilionoideae

<i>Crotalaria heyneana</i>	<i>Geissapsis deccana</i>
<i>Crotalana humifusa</i>	<i>Pterocarpus marsupium</i>
<i>Crotalaria mysorensis</i>	<i>Spatholobus roxburghii</i>
<i>Crotalaria retusa</i>	<i>Tephrosia pulcherrima</i>
<i>Desmodium heterocarpon</i>	<i>Teramnus labialis</i>
<i>Desmodium heterophyllum</i>	<i>Uraria rufescens</i>
<i>Desmodium pulchellum</i>	<i>Vigna pilosa</i>
<i>Desmodium triangulare</i>	<i>Vigna trilobata</i>
<i>Desmodium triquetrum</i>	<i>Vigna wightii</i>
<i>Flemingia</i>	

Caesalpinioideae

<i>Caesalpinia hymenocarpa</i>	<i>Cassia leschenaultii</i>
<i>Cassia fistula</i>	<i>Cassia tora</i>

Mimosoideae

Acacia torta	Mimosa diplotricha
Albizia odoratissima	Xylia xylocarpa

GESNERIACEAE

Rhynchoglossum notonianum

GENTIANACEAE

Canscora diffusa	Exacum sessile
Canscora perfoliata	Hoppea fastigiata

ICACINACEAE

Sarcostigmakleinii

LAMIACEAE

Acrocephalus hispidus	Leucas hirta
Anisochilus carnosus	Leucas indica
Gomphostemma heyneanum	

LAURACEAE

Cinnamomum malabattrum	Persea macrantha
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LECYTHIDACEAE

Careya arborea

LEEACEAE

Leea asiatica

LENTIBULARIACEAE

Utricularia graminifolia	Utricularia roseopurpurea
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LOBELIACEAE

Lobelia alsinoides

LOGANIACEAE

Fagraea ceylanica	Strychnos nux-vomica
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LYTHRACEAE

Lagerstroemia microcarpa

MALVACEAE

Abelmoschus manihot	Sida beddomei
ssp. tetraphyllus	Sida rhombifolia

MELIACEAE

Naregamia alata

MENISPERMACEAE

Anamirta cocculus	Tinospora sinensis
Cyclea peltata	

MORACEAE

Ficus amottiana
Ficus drupacea

Ficus nervosa

MYRTACEAE

Syzygium laetum

OLEACEAE

Olea dioica

OROBANCHACEAE

Aeginetia pedunculata

OXLIDACEAE

Biophytum reinwardtii

PIPERACEAE

Piper longum

POLYGALACEAE

Salomonina ciliata

RANUNCULACEAE

Naravelia zeylanica

RHAMNACEAE

Ziziphus rugosa

RUBIACEAE

Argostemma courtallense
Geophila repens
Hedyotis auricularia
Hedyotis herbacea
Hedyotis nitida
Ixora cuneifolia
Ixora malabarica

Knoxia sumattrensis
Mitragyna parvifolia
Mussaenda laxa
Ophiorrhiza mungos
Pavetta tomentosa
Spermacoce latifolia
Xeromphis uliginosa

RUTACEAE

Naringi crenulata

SAPINDACEAE

Schleichera oleosa

SCROPHULARIACEAE

Sopubia delphinifolia
Striga angustifolia

Torenia bicolor

STERCULIACEAE

Helicteres isora
Pterospermum reticulatum
Sterculia guttata

Sterculia urens
Sterculia villosa

TILIACEAE

Grewia tiliifolia

ULMACEAE

Trema orientalis

URTICACEAE

Pouzolzia zeylanica

VERBENACEAE

Callicarpa tomentosa

Vitex altissima

Lantana camara

VISCACEAE

Viscum orientale

VITACEAE

Cissus discolor

MONOCOTYLEDONS

ARACEAE

Theriophonum infaustum

BURMANNIACEAE

Burmannia coelestis

COMMELINACEAE

Cyanotis cristata

Murdannia nudiflora

Murdannia juncooides

Murdannia pauciflora

CYPERACEAE

Cyperus halpan

Kyllinga cylindrica

Cyperus polystachyos

Lipocarpha sphacelata

Fimbristylis cinnamometorum

Mariscus pictus

Fimbristylis falcata

Scirpus squarrosus

Fimbristylis sp.

Scleria parvula

Fimbristylis tenera

Scleria rugosa

Kyllinga triceps

DIOSCOREACEAE

Dioscorea oppositifolia

Dioscorea pentaphylla

ERIOCAULACEAE

Eriocaulon sexangulare

Eriocaulon xeranthemum

HYPOXIDACEAE

Curculigo orchioides

LILIACEAE

Asparagus racemosus
Chlorophytum heynei

Gloriosa superba

MARANTHACEAE

Stachyphrynium indica

MUSACEAE

Ensete superbum

ORCHIDACEAE

Cymbidium aloifolium	Habenaria longicorniculata
Dendrobium herbaceum	Habenaria ovalifolia
Dendrobium lawianum	Nervilia prainiana
Dendrobium ovatum	Oberonia thwaitesii
Eria microchilus	Polystachya concreta
Flickingeria nodosa	Porpax jerdoniana
Geodorum densiflorum	Vanda testacea

POACEAE

Apluda mutica	Gamotia elata
Arundmella nepalensis	Garnotia tenella
Arundmella purpurea	Ischaemum kannanorensis
Bambusa bambos	Ischaemum rangacharianum
Brachiaria semiverticillata	Ochlandra travancorica
Capillipedium assimile	Oplismenus burmanii
Chrysopogon fulvus	Pennisetum polystachyon
Chrysopogon hackelii	Pennisetum typhoides
Cyrtococcum trigonum	Pseudanthistiria umbellata
Digitaria ciliaris	Rotboellia cochinchinensis
Dimeria kanjirapalliana	Sacciolepis indica
Dimeria thwaitesii	Setaria palmifolia
Eragrostis uniolooides	Themeda triandra

XYRIXACEAE

Xyris pauciflora

ZINGIBERACEAE

Boesenbergia pulcherrima	Globba ophioglossa
Costus speciosus	Zingiber neezanum
Curcuma zedoaria	

PTERIDOPHYTES

ADIANTACEAE

Adiantum lunulatum

ASPLENIACEAE

Asplenium

DRYOPTERIDACEAE

Tectaria coadunata

HEMIONITIDACEAE

Hemionitis arifolia

OLEANDRACEAE

Nephrolepis auriculata

PTERIDACEAE

Pteris linearis

SCHIZACEAE

Lygodium flexuosum

SELAGINELLACEAE

Selaginella denticulata Selaginella sp.

SINOPTERIDACEAE

Cheilanthes tenuifolia

Peechi

DICOTYLEDONS

ACANTHACEAE

Barleria prattensis	Justicia procumbens
Eranthemum capense	Justicia trinervia
Hemigraphis crossandra	Rhinacanthus nasutus
Justicia micrantha	Thunberagia fragrans

AMARANTHACEAE

Achyranthes aspera	Allmania nodiflora
Aerva sanguinolenta	Cyathula prostrata

ANACARDIACEAE

Lannea coromandelica

ANNONACEAE

Milium tomentosa

APOCYNACEAE

Holarrhena pubescens	Tylophora indica
Rauwolfia serpentina	Wrightia tinctoria

ASCLEPIADACEAE

Hemidesmus indicus	Holostemma adakodien
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ASTERACEAE

Blumea membranacea	Elephantopus scaber
Chromolaena	

BALSAMINACEAE

Impatiens flaccida

Impatiens minor

BIGNONIACEAE

Stereospermum colais

BOMBACACEAE

Bombax insigne

BORAGINACEAE

Cordia wallichii

Heliotropium marifolium

CARYOPHYLLACEAE

Polycarpaea corymbosa

COCHLOSPERMACEAE

Cochlospermum religiosum

COMBRETACEAE

Calycopteris floribunda

Terminalia crenulata

Terminalia bellirica

Terminalia paniculata

CONVOLVULACEAE

Ipomoea pes-tigridis

Merremia tridentata

CUCURBITACEAE

Mukia madraspatana

DATISCEAE

Tetrameles nudiflora

DILLENACEAE

Dillenia pentagyna

DROSERACEAE

Drosera indica

EUPHORBIACEAE

Acalypha racemosa

Meineckia paravifolia

Aporosa lindleyana

Phyllanthus emblica

Baliospermum montanum

Phyllanthus kozhikodianus

Bridelia scandens

Phyllanthus urinaria

Bridelia airy-shawii

Phyllanthus virgatus

Cleistanthus collinus

Sauropus quadrangularis

Croton bonplandianus

Sebastiana chamaelea

Euphorbia hirta

Tragia involucrata

FABACEAE

Papilionideae

<i>Alysicarpus bupleurifolius</i>	<i>Desmodium triangulare</i>
<i>Alysicarpus vaginalis</i>	<i>Indigofera uniflora</i>
<i>Atylosia scarabaeoides</i>	<i>Mucuna pruriens</i>
<i>Centrosema pubescens</i>	<i>Ormocarpum cochinchinense</i>
<i>Crotalaria heyneana</i>	<i>Pterocarpus marsupium</i>
<i>Crotalaria humifusa</i>	<i>Pycnospora lutescens</i>
<i>Dalbergia lanceolaria</i>	<i>Rhynchosia rufescens</i>
<i>Dalbergia volubilis</i>	<i>Spatholobus roxburghii</i>
<i>Desmodium heterocarpon</i>	<i>Teramnus labialis</i>
<i>Desmodium heterophyllum</i>	<i>Uraria rufescens</i>
<i>Desmodium pulchellum</i>	<i>Vigna pilosa</i>

Caesalpinioideae

<i>Bauhinia racemosa</i>	<i>Cassia leschenaultii</i>
<i>Cassia fistula</i>	<i>Cassia tora</i>

Mimosoideae

<i>Acacia torta</i>	<i>Albizia odoratissima</i>
<i>Albizia lebeck</i>	<i>Xylocarpus xylocarpa</i>

FLACOURTIACEAE

Casuarina cynometroides

GENTIANACEAE

<i>Canscora diffusa</i>	<i>Hoppea fastigata</i>
<i>Canscora perfoliata</i>	

LAMIACEAE

<i>Acrocephalus hispidus</i>	<i>Hyptis suaveolens</i>
<i>Anisochilus carnosus</i>	<i>Leucas biflora</i>
<i>Gomphostemma heyneanum</i>	<i>Leucas indica</i>

LEEACEAE

<i>Leea asiatica</i>	<i>Leea macrophylla</i>
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LENTIBULARIACEAE

<i>Utricularia striatula</i>	<i>Utricularia uliginosa</i>
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LOBELIACEAE

Lobelia alsinoides

LOGANIACEAE

Strychnos nux-vomica

LORANTHACEAE

Macrosolen parasiticus

MALVACEAE

Abelmoschus manihot	Sida beddomei
ssp tetraphyllus	Sida rhombifolia
Hibiscus lobatus	Thespesia lampas
Hibiscus surattensis	Urena lobata

MELASTOMATACEAE

Osbeckia muralis

MELIACEAE

Naregamia alata

MENISPERMACEAE

Anamirta cocculus	Tinospora sinensis
Cissampelos pareira	

MORACEAE

Artocarpus gomezianus	Ficus drupacea
ssp. zeylanicus	Ficus tsjahela
Ficus amplissima	Streblus asper
Ficus arnottiana	

OLEACEAE

Olea dioica

OROBANCHACEAE

Aeginetia indica

OXALIDACEAE

Biophytum reinwardtii

PIPERACEAE

Piper lorgum

POLYGALACEAE

Salomonina ciliata

RANUNCULACEAE

Naravelia zeylanica

RHAMNACEAE

Ziziphus oenoplia

RHIZOPHORACEAE

Carallia brachata

RUBIACEAE

Catunaregm spinosa	Hedyotis pinifolia
Chassalia ophioxylodes	Ixora brachiata
Geophila repens	Ixora malabarica
Hedyotis hygrophila	Knoxia sumatrensis

Hedyotis nitida
Hedyotis ovatifolia

Mitragyna parvifolia
Spermacoce ramanii

RUTACEAE

Naringi crenulata

SAPINDACEAE

Allophylus serratus
Sapindus trifoliata

Schleichera oleosa

SAPOTACEAE

Mimusops elengi

SCROPHULARIACEAE

Centranthera indica
Lindemia ciliata
Lindernia crustacea

Lindernia viscosa
Sopubia delphinifolia
Striga angustifolia

STERCULIACEAE

Helicteres isora
Pterospermum reticulatum

Sterculia wens

TILIACEAE

Corchorus aestuans
Grewia abutilifolia

Grewia glabra
Grewia tiliifolia

URTICACEAE

Pouzolzia zeylanica

VERBENACEAE

Clerodendrum viscosum
Clerodendrum serratum

Vitex altissima

VISCACEAE

Viscum orientale

VITACEAE

Ampelocissus indica

MONOCOTYLEDONS

ARACEAE

Theriophonum infaustum

BURMANNIACEAE

Burmannia coelestis

COMMELINACEAE

Commelina benghalensis
Commelina diffusa
Cyanotis cristata
Murdannia japonica

Murdannia juncooides
Murdannia nudiflora
Murdannia pauciflora

CYPERACEAE

Fimbristylis glabra
Kyllinga triceps

Scleria levis

DIOSCOREACEAE

Dioscorea hamiltonii
Dioscorea oppositifolia

Dioscorea pentaphylla
Dioscorea wallichii

ERIOCAULACEAE

Eriocaulon sexangulare

Eriocaulon xeranthemum

LILIACEAE

Asparagus racemosus

Chlorophytum heyneanum

MARANTHACEAE

Stachyphrynium spicatum

ORCHIDACEAE

Cottonia peduncularis
Nervilia prainiana
Nervilia aragoana

Peristylus densus
Vanda testacea

POACEAE

Allopteroopsis cimicina
Bambusa bambos
Brachiaria ramosa
Capillipedium assimile
Digitaria ciliaris
Dimeria thwaitesii
Eragrostis unioloides
Eragrostis nutans
Gamotia tenella

Heteropogon contortus
Ischaemum indicum
Panicum brevifolium
Panicum notatum
Pasaplum scrobiculatum
Pennisetum polystachyon
Pseudanthistiria heteroclita
Rotboellia cochinchinensis

ZINGIBERACEAE

Costus speciosus
Curcuma ecalcarata

Curcuma vamana
Globba ophioglossa

PTERIDOPHYTES

ADIANTACEAE

Adiantum lunulatum

SCHIZACEAE

Lygodium flexuosum

SELAGINELLACEAE

Selagmella sp.

Selaginella denticulata

Cheilanthes tenuifolia

Silent Valley

DICOTYLEDONS

ACANTHACEAE

Andrographis neesiana	Justicia japonica
Barleria courtallica	Rungia sisparensis
Gymnostachyum canescens	Strobilanthes spp.

AMARANTHACEAE

Achyranthes bidentata	Cyathula prostrata
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ANACARDIACEAE

Holigarna arnottiana	Mangifera indica
Holigarna ferruginea	Nothopegia racemosa

ANCISTROCLADACEAE

Ancistrocladus heyneanus

ANNONACEAE

Meiogyne ramaraoi	Orophea zeylanica
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APIACEAE

Hydrocotyle javanica

APOCYNACEAE

Anodendron rhinosporum	Parsonsia alboflavescens
Carissa inermis	

ARISTOLOCHIACEAE

Thottea siliquosa

ASCLEPIADACEAE

Hoya pauciflora	Tylophora sp.
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ASTERACEAE

Adenostemma lavenia	Chromolaena odorata
Ageratina adenophora	Dichrocephala bicolor
Ageratum conyzoides	Emilia sonchifolia
Bidens biternata	Gynura nitida
Blumea heiracifolia	Sigesbeckia orientalis
Blumea membranacea	Synedrella nodiflora
Blumea sp.	Vernonia divergens
Blumea spectabilis	

BALANOPHORACEAE

Balanophora fungosa

Impatiens chinensis	Impatiens scapiflora
Impatiens flaccida	

BEGONIACEAE

Begonia malabarica

BOMBACACEAE

Cullenia exarillata

BURSERACEAE

Canarium strictum

BUXACEAE

Sarcococca coriacea

CAPPARACEAE

Capparis shevaroyensis

CELASTRACEAE

Euonymus angulatus

Microtropis latifolia

Euonymus indicus

Microtropis ramiflora

CHLORANTHACEAE

Sarcandra chloranthoides

CLUSLACEAE

Calophyllum polyanthum

Garcinia morella

Garcinia cowa

Mesua ferrea

Garcinia gummi-gutta

CORNACEAE

Mastixia arborea ssp. *meziana*

CUCURBITACEAE

Melothria zeylanica

Zehneria maysorensis

DIPTEROCARPACEAE

Hopea glabra

Vateria indica

EBENACEAE

Diospyros pruriens

ELAEOCARPACEAE

Elaeocarpus munronii

Elaeocarpus serratus

ERYTHROXYLACEAE

Erythroxylum moonii

EUPHORBIACEAE

Agrostistachys borneensis

Fahrenheitia zeylanica

Agrostistachys indica

Glochidion ellipticum

Antidesma bunius

Macaranga peltata

Antidesma menasu

Mallotus tetracoccus

Bischofia javanica

Mallotus beddomei

Dimorphocalyx lawianus
Drypetes elata
Drypetes oblongifolia
Drypetes wightii
Epiprinus mallotiformis

Phyllanthus gardnerianus
Phyllanthus kozhikodanus
Sauropus saksenianus
Tragiahispida

FABACEAE

Papilionoideae

Crotalaria laevigata	Desomdiumheterophyllum
Crotalaria triquetra	Dolichos trilobus
Desmodium alysicarpoides	Dumasia villosa
Desmodium heterocarpon	Mucuna pruriens

Caesalpinioideae

Acrocarpus fiaxinifolius	Cassia leschenaultiana
Caesalpinia cucullata	

Mimosoideae

Archidendron monadelphum

FLACOURTIACEAE

Casearia ovata	Homalium zeylanicum
Casearia wynadensis	Hydnocarpus alpina
Flacourtia montana	Scolopia crenata

GESNERIACEAE

Aeschynanthes perrottetii	Rhynchochotum permolle
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HIPPOCRATEACEAE

Salacia macrosperma

ICACINACEAE

Apodytes dimidiata	Miquelia dentata
Gomphandra tetrandra	Nothopodytes nimmoniana

LAMIACEAE

Colebrookea oppositifolia	Leucas hirta
Coleus malabaricus	Plectranthus nilghenicus

LAURACEAE

Actinodaphne bourdillonii	Litsea laevigata
Actinodaphne malabarica	Litsea oleoides
Cinnamomum malabatum	Neolitsea scrobiculata
Cinnamomum sulphuratum	Persea macrantha
Litsea floribunda	Phoebe wightii
Litsea insignis	

LEEACEAE

Leea indica

LENTIBULARIACEAE

Utricularia caerulea

LOBELIACEAE

Lobelia nicotianifolia

LORANTHACEAE

Scurrula parasitica

Helixanthera wallichiana

MALVACEAE

Sida rhombifolia ssp. *rhombifolia*

MELASTOMATACEAE

Memecylon depressum

Sonerila rotundifolia

Memecylon lawsonii

Sonerila versicolor

Osbeckia aspera

MELIACEAE

Aglaia simplicifolia

Munroniapinnata

Aglaia lawii

Reinwardtiodendron anamalayanum

Aphanamixis polystachya

Trichilia connaroides

MENISPERMACEAE

Cyclea peltata

MORACEAE

Artocarpus heterophyllus

Ficus hispida

Ficus amplocarpa

Ficus nervosa

Ficus beddomei

MYRISTICACEAE

Knema attenuata

Myristica malabarica

Myristica dactyloides

MYRSINACEAE

Antistrophe serratifolia

Embelia ribes

Ardisia pauciflora

Maesa indica

MYRTACEAE

Eugenia thwaitesii

Syzygium laetum

Syzygium cumini

Syzygium munronii

OLACACEAE

Erythralum scandens

OLEACEAE

Chionanthes mala-elengi

Jasminum malabaricum

Jasminum flexile

Olea dioica

Jasminum ritchiei

OROBANCHACEAE

Christisonia bicolor

OXALIDACEAE

Biophytum sensitivum

PIPERACEAE

Lepianthes umbellata

Piper mullesua

Peperomia wightiana

Piper trioicum

Piper hymenophyllum

Piper wightii

PODOSTEMONACEAE

Dicrea stylosa

POLYGALACEAE

Xanthophyllum arnottianum

POLYGONACEAE

Polygonum chinense

RHAMNACEAE

Ventilago bombaiensis

Ziziphus rugosa

ROSACEAE

Prunus ceylanica

Rubus ellipticus

RUBIACEAE

canthium dicoccum

var. *umbellatum*

Ophiorrhiza prostrata

Psychotria nigra var. *nigra*

Chassalia ophioxyloides

Psychotria nigra

Ixora nigricans

var. *peninsularis*

Ixora thwaitesii

Rubia cordifolia

Lasianthus jackianus

Saprosma fragrans

Mycetia acuminata

Saprosma glomeratum

Neanotis quadrilocularis

Spermaceoce mauritiana

Ophiorrhiza mungos

Tarenna monospenna

RUTACEAE

Acronychia pedunculata

Glycosmis mauritiana

Atalantia wightii

Toddalia asiatica

Glycosmis macrocarpa

SABIACEAE

Meliosma pinnata ssp. *barbatula*

SAPINDACEAE

Allophylus distachys

Lepisanthes erecta

Dimocarpus longan

Lepisanthes tetraphylla

SAPOTACEAE

Isonandra

Palaquium ellipticum

SCROPHULARIACEAE

Torenia bicolor

SOLANACEAE

Lycianthes laevis *Solanum torvum*

STAPHYLEACEAE

Turpinia malabarica

STERCULIACEAE

Heritiera papilio

SYMPLOCACEAE

Symplocos racemosa

THEACEAE

Eurya nitida *Gordonia obtusa*

TILIACEAE

Grewia umbellifera *Triumfetta pilosa*

ULMACEAE

Celtis philippensis *Trema orientalis*

URTICACEAE

Boehmeria glomerulifera *Oreocnide integrifolia*
Elatostemma acuminatum *Pellionia heyneana*
Elatostemma lineolatum *Pilea melastomoides*
Elatostemma surculosum *Pouzolzia wightii*
Laportea crenulata *Procris crenata*

VERBENACEAE

Clerodendrum serratum *Clerodendrum viscosum*

VITACEAE

Cayratia pedata *Cissus glyptocarpa*

MONOCOTYLEDONS

AGAVACEAE

Dracaena terniflora

ARACEAE

Amorphophalus nicolsonianus *Pothos scandens*
Ariopsis peltata *Remusatia vivipara*
Arisaema attenuatum

ARECACEAE

Calamus hookerianus *Caryota urens*
Calamus pseudotenuis *Pinanga dicksonii*
Calamus thwaitesii

COMMELINACEAE

Aneilema ovalifolia *Commelina paludosa*
Belosynopsis vivipara *Murdannia*

CYPERACEAE

Cyperus pangorei

Scleria terrestris

HAEMODORACEAE

Ophiopogon intermedius

Peliosanthes teta

HYPOXIDACEAE

Curculigo orchoides

LILIACEAE

Asparagus racemosus

MARANTACEAE

Schumannianthus virgatus

ORCHIDACEAE

Bulbophyllum fischeri

Malaxis rheedei

Bulbophyllum neilgherrense

Oberonia brachyphylla

Bulbophyllum tremulum

Oberonia chandrasekharanii

Calanthe masuca

Oberonia denticulata

Coelogyne nervosa

Oberonia santapau

Dendrobium herbaceum

Porpax reticulata

Dendrobium heterocarpon

Sarcanthus pauciflorus

Dendrobium heyneanum

Shookera latifolia

Eria dalzellii

Tainia bicornis

Eria nana

Trias stocksii

Eria tiagii

Xenikophyton smeeanum

Liparis viriliflora

Zeuxine longilabris

Habenaria vlriflora

PANDADACEAE

Pandanus thwaitesii

POACEAE

Arthraxon lancifolius

Jansenella gtifithiana

Arthraxon nudus

Oxytenanthera ritcheyi

Arundinella ciliata

Panicum notatum

Capillipedium assimile

Paspalum conjugatum

Chrysopogon hackelii

Paspalum scrobiculatum

Garnotia tenella

Pennisetum polystachyon

Imperata cylindrica

Setaria palmifolia

Ischaemum thomsonianum

Spodiopogon

Ischaemum zeylanicum

SMILACACEAE

Smilax zeylanica

ZINGIBERACEAE

Amomum cannicarpum

Elettaria cardamomum

Amomum microstephanum

Hedychium venustum

Costus speciosus

Zingiber roseum

PTERIDOPHYTES

ANGIOPTERIDACEAE

Angopteris erecta

ASPLENIACEAE

Asplenium formosum

Asplenium serricula

Asplenium indicum

Asplenium unilaterale

Asplenium racemosus

ATHYRIACEAE

Diplasium dilatatum

DAVALLIACEAE

Araiostegia pulchra

Leucostegia immersa

Davallia bullata

DENNSTAEDTIACEAE

Microlepia speluncae

Pteridium aquilinum

DRYOPTERIDACEAE

Arachnoides tripinnata

Tectaria coadunata

Dryopteris cochleata

Tectaria wightii

GRAMMITIDACEAE

Grammitis medialis

HYMENOPHYLLACEAE

Hymenophyllum gardneri

Trichomanes plicatum

LINDSAEACEAE

Lindsaea ensifolia

Odontosoria chinensis

LOMARIOPSIDACEAE

Bolbitis semicordata

LYCOPODIACEAE

Huperzia hamiltonii

OLEANDRACEAE

Nephrolepis auriculata

Oleandra musifolia

POLYPODIACEAE

Lepisorus nudus

Microsorium punctatum

Microsorium membranaceum

Pyrrosia porosa

PTERIDACEAE

Pteris linearis

Pteris longipes

SELAGINELLACEAE

Selaginella repanda

Selaginellatenera

SINOPTERIDACEAE

Cheilanthes farinosa

THELYPTERIDACEAE

Christella hispidula

Christella meeboldii

VITTARIACEAE

Vittana elongata

Periya

DICOTYLEDONS

ACANTHACEAE

Justicia japonica

Strobilanthes sp.

Nilgirianthus punctatus

Thunbergia mysorensis

ANACARDJACEAE

Holigarna arnottiana

Mangifera indica

Holigarna grahamii

Nothopegia racemosa

ANCISTROCLADACEAE

Ancistrocladus heyneanus

ANNONACEAE

Artabotrys zeylanica

Orophea thomsonii

Goniothalamus cardiopetalus

Polyalthia coffeoides

Meiogyne pannosa

APIACEAE

Hydrocotyle javanica

APOCYNACEAE

Alstonia venenata

Tabemaemontana heyneana

Beaumontia jerdoniana

ARALIACEAE

Schefflera venulosa

ScheMera wallichana

ARISTOLOCHIACEAE

Thottea siliquosa

ASCLEPIADACEAE

Hoya pauciflora

ASTERACEAE

Ageratum conyzoides

Gynura nitida

Chromolaena odorata

Vernonia cinerea

Emilia sonchifolia

BALANOPHORACEAE

Balanophora fungosa

BEGONIACEAE

Begonia malabarica

BIGNONLACEAE

Spathodea campanulata

BOMABCACEAE

Cullenia exarillata

BORAGINACEAE

Tournefortia heyneana

BURSERACEAE

Canarium strictum

CELASTRACEAE

Euonymus indicus

Salacia macrosperma

Microtropis wallichiana

CHLORANTHACEAE

Sarcandra chloranthoides

CLUSIACEAE

Calophyllum polyanthum

Garcinia morella

Garcinia gummi-gutta

Mesua ferrea

CONNARACEAE

Connarus monocarpus

Rourea minor

CONVOLVULACEAE

Merremia umbellata

CORNACEAE

Mastixia arborea ssp. *meziana*

CUCURBITACEAE

Cerasiocarpum bennettii

DILLENACEAE

Dillenia bracteata

DIPTEROCARPACEAE

Vateria indica

EBENACEAE

Diospyros assimilis

Diospyros pruriens

Diospyros paniculata

ELAEOCARPACEAE

Elaeocarpus glandulosus

Elaeocarpus tuberculatus

ERYTHROXYLACEAE

Erythroxylum moonii

EUPHORBIACEAE

<i>Antidesma acidum</i>	<i>Fahrenheitia zeylanica</i>
<i>Antidesma menasu</i>	<i>Glochidion ellipticum</i>
<i>Baccaurea courtallensis</i>	<i>Macaranga peltata</i>
<i>Drypetes elata</i>	<i>Mallotus beddomei</i>
<i>Drypetes oblongifolia</i>	<i>Mallotus tetracoccus</i>
<i>Epiprinus mallotiformis</i>	<i>Micrococca beddomei</i>

FABACEAE

Papilionoideae

<i>Atylosia lineata</i>	<i>Kunstleria keralensis</i>
<i>Derris thyrsoiflora</i>	<i>Ormosia travancorica</i>
var. <i>eualata</i>	<i>Tephrosia pulcherrima</i>
<i>Desmodium triquetrum</i>	<i>Vigna umbellata</i>

Caesalpinioideae

Caesalpinia cucullata

FLACOURTIACEAE

<i>Casearia rubescens</i>	<i>Hydnocarpus pentandra</i>
<i>Casearia wynadensis</i>	<i>Scolopia crenata</i>

GENTIANACEAE

Exacum sessile

GESNEFUACEAE

<i>Aeschynanthes perrottetii</i>	<i>Rhynchochloa permolle</i>
<i>Epithema carnosum</i>	

ICACINACEAE

<i>Apodytes dimidiata</i>	<i>Gomphandra tetrandra</i>
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LAMIACEAE

<i>Colebrookea oppositifolia</i>	<i>Leucas hirta</i>
<i>Leucas eriostema</i>	<i>Pogostemon paniculatus</i>

LAURACEAE

<i>Actinodaphne bourdillonii</i>	<i>Litsea floribunda</i>
<i>Apollonias arnottii</i>	<i>Litsea laevigata</i>
<i>Cinnamomum malabatum</i>	<i>Litsea oleoides</i>
<i>Cinnamomum sulphuratum</i>	

LEEACEAE

Leea indica

MALPIGHIACEAE

Aspidopterys canarensis

MELASTOMATACEAE

Medinilla beddomei Memecylon lawsonii
Memecylon deccanense

MELIACEAE

Aglaia barberi Apanamixis polystachya
Aglaia simplicifolia Dysoxylum malabaricum
Aglaia lawii

MENISPERMACEAE

Stephania japonica

MORACEAE

Artocarpus heterophyllus Ficus nervosa
Ficus amplocarpa Ficus tsjahela
Ficus exasperata Ficus virens
Ficus hispida

MYRISTICACEAE

Knema attenuata Myristica dactyloides

MYRSINACEAE

Ardisia depressa Embelia ribes
Ardisia pauciflora

MYRTACEAE

Meteromyrtus wynaadensis Syzygium munronii
Syzygium gardneri Syzygium rubicundum
Syzygium laetum Syzygium tamilnadensis
Syzygium mundagam

OLACACEAE

Erythralum scandens

OLEACEAE

Chionanthes ramiflora Ligustrum robustum
Jasminum flexile Olea dioica

OXALIDACEAE

Biophytum sensitivum

PIPERACEAE

Lepianthes umbellata Piper hymenophyllum
Peperomia wightiana

RHAMNACEAE

Ventilago bombaiensis Ziziphus rugosa

ROSACEAE

Prunus ceylanica Rubus niveus

RUBIACEAE

Canthium dicoccum var. umbellata	Neanotis tubulosa
Canthium rheedei	Neurocalyx calycinus
Catunaregam spinosa	Ochreinauclea missionis
Hedyotis herbacea	Ophiorrhiza mungos
Ixora elongata	Psychotria nigra
Lasianthes jackianus	Spermacoce latifolia
Mycetia acuminata	Spermacoce pusilla

RUTACEAE

Atalantia ceylanica	Paramignya monophylla
Clausena heptaphylla	Toddalia asiatica
Glycosmis pentaphylla	Vepris bilocularis

SABIACEAE

Meliosma pinnata ssp. barbatula	Meliosma simplicifolia
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SAFINDACEAE

Allophylus distachys	Lepisanthes tetraphylla
Dimocarpus longan	Otonophelium stipulaceum
Filicium decipiens	

SAPOTACEAE

Chrysophyllum roxburghii	Palaquium ellipticum
Isonandra lanceolata	

SOLANACEAE

Solanum giganteum

STAPHYLEACEAE

Turpinia malabarica

SYMPLOCACEAE

Symplocos cochinchinensis	Symplocos macrophylla
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THEACEAE

Eurya nitida

ULMACEAE

Celtis philippensis

URTICACEAE

Elatostemma acuminata	Laportea crenulata
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VERBENACEAE

Callicarpa tomentosa	Premna villosa
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VISCACEAE

Viscum angulosum

VITACEAE

Cayratia pedata

Tetrastigma sulcatum

Cissus discolor

MONOCOTYLEDONS

ARACEAE

Amorphophallus nicolsonianus

Lagenandra toxicaria

Arisaema murrayi

ARECACEAE

Pinnanga dicksonii

COMMELINACEAE

Aneilema ovalifolium

Commelina paludosa

CYPERACEAE

Carex lindleyana

LILIACEAE

Gloriosa superba

Peliosanthes teta

ORCHIDACEAE

Acanthephippium bicolor

Oberonia wynadensis

Dendrobium heyneanum

Peristylus richardianus

Dendrobium mabelae

Pholidota pallida

Liparis viridiflora

Trias stocksii

Luisia zeylanica

Podochilus falcatus

Malaxis rheedei

PANDANACEAE

Pandanus thwaitesii

POACEAE

Arundinella purpurea

Ichnanthes vicinus

Centotheca lappacea

Ischaemum indicum

Cymbopogon flexuosus

Ischaemum nilagicum

Cymbopogon sp

Jansenella griffithiana

Cyrtococcum longipes

Setaria pumila

Cyrtococcum oxyphyllum

Themeda quadrivalvis

Eulalia trispicata

SMILACACEAE

Smilax zeylanica

ZINGIBERACEAE

Alpinia malaccensis

Costus speciosus

Amomum microstephanum

neilgherrensis

PTERIDOPHYTES

DENNSTAEDTIACEAE

Microlepia spaluncae *Pteridium aquilinum*

DRYOPTERIDACEAE

Arachniodes aristata *Tectaria coadunata*

LOMARIOPSIDACEAE

Bolbitis appendiculata *Egenolfia asplinifolia*
Bolbitis subcrenata

POLYPODIACEAE

Leptochilus decurrens *Microsorium membranaceum*

PTERIDACEAE

Pteris argyrea

SELAGINELLACEAE

Selaginella tenera

Eravikulam

DICOTYLEDONS

ACANTHACEAE

Andrographis stellulata *Mackenzia homotropa*
Justicia japonica *Strobilanthes* sp.
Plebophyllum kunthianum

APIACEAE

Bupleurum distichophyllum *Pimpinella candolleana*
Heracleum spengelianum *Vanasushava pedata*
Hydrocotyle sibthorpioides

ARALIACEAE

Pentapanax leschenaultii

AQUIFOLIACEAE

Ilex denticulata *Ilex wightiana*

ASTERACEAE

Ageratina adenophora *Phyllocephalum courtallense*
Anaphalis bournei *Senecio corymbosus*
Anaphalis subdecurrens *Senecio lavandulaefolius*
Anaphalis lawii *Senecio* sp.
Cirsium wallichii *Senecio zeylanicus*
Engeron karinskianus *Vernonia bourneana*
Gynura lycopersicifolia

BALANOPHORACEAE

Balanophora fungosa ssp. indica

BALSAMINACEAE

Impatiens denisonii

Impatiens tangachee

Impatiens elegans

Impatiens tomentosa

Impatiens parasitica

Impatiens sp.

BERBERIDACEAE

Mahonia leschenaultii

CARYOPHYLLACEAE

Drymaria cordata

CAMPANULACEAE

Wahlenbergia marginata

CELASTRACEAE

Euonymus angulatus

Microtropis ramiflora

Euonymus crenulatus

CUCURBITACEAE

Zehneria maysorensis

DROSERACEAE

Drosera peltata

ELAEOCARPACEAE

Elaeocarpus recurvatus

ERICACEAE

Gaultheria fragrantissima

Rhododendron arboreum

EUPHORBIACEAE

Daphniphyllum neilgherrense

Phyllanthus kozhikodeanus

Euphorbia rothiana

Phyllanthus macraei

Glochidion ellipticum

FABACEAE

Papilionoideae

Crotalaria fysonii

Parochetus communis

Crotalaria obtecta

Smihia blanda

Dumasia villosa

Smithia gracilis

Indigofera pedicellata

GENTIANACEAE

Exacum courtallense

Swertia corymbosa

Geranium nepalense

Swertia minor

Gentiana quadrifaria var. zeylanica

GERANIACEAE

Geranium nepalense

HALORAGACEAE

Laurembergia coccinea

HYPERICACEAE

Hypericum japonicum

Hypericum mysorense

LAMIACEAE

Calamintha umbrosa

Leucas suffruticosa

Coleus malabaricus

Plectranthus nigrescens

Leucas lanceaefolia

Scutellaria wightiana

LAURACEAE

Actinodaphne salicina

Litsea ligustrina

Cinnamomum wightii

Litsea wightiana

LENTIBULARIACEAE

Utricularia nayarii

LOBELIACEAE

Lobelia dichotoma

Lobelia nicotianifolia

LOGANIACEAE

Gardneria ovata

LORANTHACEAE

Helixanthera obtusata

MAGNOLIACEAE

Michelia nilagirica

MALVACEAE

Hibiscus angulosus

MELASTOMATACEAE

Osbeckia aspera var. *wightiana*

MYRSINACEAE

Ardisia rhomboidea

Rapanea capitellata

Maesa indica

MYRTACEAE

Eugenia calcadensis

Syzygium densiflorum

OLEACEAE

Jasminum bignonaceum

Ligustrum perrottetii

ONAGRACEAE

Circaea alpina ssp.

OROBANCHACEAE

Christisonia neilgherrica

PIPERACEAE

Peperomia portulacoides

Piper betle

Peperomia teraphylla

Piper wightii

PITTOSPORACEAE

Pittosporum neilgherrense

PLANTAGINACEAE

Plantago major

POLYGALACEAE

Polygala arillata

Polygala sibirica

POLYGONACEAE

Polygonum chinense

Polygonum nepalense

PRIMULACEAE

Lysimachia procumbens

RANUNCULACEAE

Anemone rivularis

Ranunculus reniformis

Clematis munroiana

Thalictrum javanicum

ROSACEAE

Rubus ellipticus

Rubus rugosus

RUBIACEAE

Galium asperifolium

Pavetta breviflora

Hedyotis anamalayana

Psychotria nilgiriensis

Hedyotis swertioides

Rubia cordifolia

Lasianthus acuminatus

Saprosma foetens

SABIACEAE

Meliosma simplicifolia ssp. *pungens*

SAXIFRAGACEAE

Parnasia mysorcensis

Parnasia wightiana

SCROPHULARIACEAE

Pedicularis perrottetii

Sopubia trifida

Pedicularis zeylanica

Torenia travancorica

STAPHYLEACEAE

Turpinia malabarica

SYMPLOCACEAE

Symplocos cochinchinensis

THEACEAE

Eurya nitida

THYMELIACEAE

Gnidia glauca

URTICACEAE

Boehmeria macrophylla

Elatostemma lineolatum

Pilea melastomoides

Pouzolzia zeylanica

VACCINIACEAE

Vaccinium leschenaultii

Vaccinium ncalgherense

VALERIANACEAE

Valeriana beddmei

Valeriana hookeriana

VIOLACEAE

Viola betonicifolia

VISCACEAE

Korthalsella japonica

MONOCOTYLEDONS

ARACEAE

Arisaema barnesii

Arisaema sp.

COMMELINACEAE

Commelina attenuata

Cyanotis fasciculata

Cyanotis pilosa

Cyanotis wightii

CYPERACEAE

Bulbostylis densa

Carex lindleyana

Carex phacota

Carex speciosa

Fimbristylis kingii

Kyllinga melanosperma

ERIOCAULACEAE

Eriocaulon melaleucum

Eriocaulon nilagirensis

Eriocaulon thwaitesii

HAEMODORACEAE

Ophiopogon intermedius

HYPOXIDACEAE

Curculigo orchioides

IRIDACEAE

Aristea ecklonii

JUNCACEAE

Juncus inflexus

Juncus prismatocarpus

LILIACEAE

Disporum leschenaultianum

ORCHIDACEAE

<i>Aerides ringens</i>	<i>Malaxis rheedei</i>
<i>Brachycorythis wightii</i>	<i>Oberonia amottiana</i>
<i>Coelogyne mossiae</i>	<i>Oberonia sebastiana</i>
<i>Dendrobium anamalayanum</i>	<i>Oberonia wightiana</i>
<i>Eria</i> sp.	<i>Satyrium nepalense</i>
<i>Habenaria elliptica</i>	<i>Schoenorehis filiformis</i>
<i>Habenaria perrottetiana</i>	<i>Seidenfadeniella chrysantha</i>
<i>Habenaria viridiflora</i>	<i>Spiranthes sinensis</i>
<i>Malaxis densiflora</i>	<i>Trichoglottis tenera</i>

POACEAE

<i>Agrostis peninsularis</i>	<i>Helictotrichon asperum</i>
<i>Andropogon polyptychus</i>	<i>Isachne bourneorum</i>
<i>Apluda mutica</i>	<i>Isachne setosa</i>
<i>Arundinella purpurea</i>	<i>Ischaemum indicum</i>
<i>Chimonobambusa densifolia</i>	<i>Jansenella griffithiana</i>
<i>Chrysopogon zeylanicus</i>	<i>Sporobolus virginicus</i>
<i>Eragrostis nigra</i>	<i>Tripogon ananthaswamianus</i>
<i>Eulalia phaeothrix</i>	<i>Tripogon bromoides</i>

PTERIDOPHYTES

ASPLENIACEAE

<i>Asplenium aethiopicum</i>	<i>Asplenium unilaterale</i>
<i>Asplenium indicum</i>	

DRYOPTERIDACEAE

Polystichum subinerme

LYCOPODIACEAE

<i>Huperzia hilliana</i>	<i>Lycopodium wightianum</i>
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LICHENS

PHYSICACEAE

Heterodemia leucomela

USNEACEAE

Usnea orientalis

5.2. Floristic analysis

The five MPCAs are located in the Kerala State along the Southern Western Ghats, which forms one of the floristically rich regions in India. Among the five MPCAs, two are located in the Moist deciduous forests, two in the Evergreen forests and one in the Shola-Grass lands. Following are the details regarding the number of taxa, relative dominance of families, genera and species in each MPCA

5.2.8. Athirapally

There are 238 species under 186 genera. Of these, 153 species belong to Dicotyledons, 75 to Monocotyledons and 10 are Pteridophytes. The Dicotyledons belong to 55 families, Monocotyledons to 13 and Pteridophytes to 9. Among the 186 genera, 121 belong to Dicotyledons, 56 to Monocotyledons and 9 to Pteridophytes. Fabaceae and Poaceae with 26 species in each are the largest families. Rubiaceae and Orchidaceae have 14 species each; Cyperaceae has 13 species and Euphorbiaceae has 10 species. Forty five families are represented by single species in each.

5.2.b. Peechi

There are 215 species under 167 genera and 67 families. Among the 67 families, 52 are Dicotyledonous, 11 Monocotyledonous and 4 Pteridophytic. Of the 167 genera, 128 belong to Dicotyledons, 35 to Monocotyledons and 4 to Pteridophytes. Fabaceae with 30 species is the largest family. Poaceae is second with 17 species, followed by Euphorbiaceae with 16 species; Rubiaceae has 12 and Acanthaceae 8. Thirty four families are represented by only one species in each.

5.2.c. Silent Valley

There are 343 species under 270 genera and 104 families. Among the 104 families, 72 are Dicotyledonous, 14 Monocotyledonous and 18 Pteridophytic. Among the 270 genera, 184 belong to Dicotyledons, 58 to Monocotyledons and 18 to Pteridophytes. Orchidaceae is the largest family with 25 species, followed by Euphorbiaceae 19, Poaceae 17, Rubiaceae 16 and Asteraceae 15 species. Forty two families are represented by single species each.

5.2.d. Periya

There are 234 species under 195 genera and 81 families. Among the 81 families, 65 are Dicotyledonous, 10 Monocotyledonous and 6 Pteridophytic. Of the 195 genera, 150 are Dicotyledonous, 35 Monocotyledonous and 6 belong to Pteridophytes. Rubiaceae with 16 species is the largest family, followed by Poaceae 13, Euphorbiaceae 12, Orchidaceae 11, and Fabaceae with 8 species. Thirty four families are represented by one species each.

5.2.e. Eravikulam

There are 201 species under 154 genera and 72 families. Among the 72 families, 56 are Dicotyledonous, 11 Monocotyledonous, 3 Pteridophytes and 2 are Lichens. Of the 154 genera, 108 are Dicotyledonous, 40 Monocotyledonous, 4 Pteridophytes and 2 Lichens. Orchidaceae with 18 species the largest, followed by Poaceae 16, Asteraceae 13, Rubiaceae 8 and Fabaceae 7.

5.3. Medicinal plants

The medicinal plants recorded in the five MPCAs are listed below.

Botanical Name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Abelmoschus manihot</i> ssp. <i>tetraphyllus</i>	Malvaceae	x	x	-	-	-
<i>Acacia torta</i>	Leguminosae	x	x	-	-	-
<i>Acalypha racemosa</i>	Euphorbiaceae	-	x	-	-	-
<i>Acronychia pedunculata</i>	Rutaceae	-	-	x	-	-
<i>Achyranthes aspera</i>	Amaranthaceae	-	x	-	-	-
<i>Achyranthes bidentata</i>	Amaranthaceae	-	-	x	-	-
<i>Acrocephalus hispidus</i>	Lamiaceae	x	x	-	-	-
<i>Adenostemma lavenia</i>	Asteraceae	-	-	x	-	-
<i>Aerva sanguinolenta</i>	Amaranthaceae	-	x	-	-	-
<i>Ageratum conyzoides</i>	Asteraceae	x	-	x	x	-
<i>Allophylus serratus</i>	Sapindaceae	-	x	-	-	-
<i>Alysicarpus vaginalis</i>	Leguminosae	-	x	-	-	-
<i>Anamirta cocculus</i>	Menispermaceae	x	x	-	-	-
<i>Anisochilus carnosus</i>	Lamiaceae	x	x	-	-	-
<i>Antidesma bunius</i>	Euphorbiaceae	-	-	x	-	-
<i>Aphanamixis polystachya</i>	Meliaceae	-	-	x	x	-
<i>Aporusa lindleyana</i>	Euphorbiaceae	x	x	-	-	-
<i>Artocarpus gomezianus</i> ssp. <i>zeylanicus</i>	Moraceae	-	x	-	-	-
<i>Artocarpus heterophyllus</i>	Moraceae	-	-	x	-	-
<i>Arundinella nepalensis</i>	Poaceae	-	x	-	-	-
<i>Aspargus racemosus</i>	Liliaceae	x	x	x	-	-
<i>Atylosia scarabaeoides</i>	Leguminosae	-	x	-	-	-
Baliospermum montanum	Euphorbiaceae	-	x	-	-	-
Bambusa bambos	Poaceae	x	x	-	-	-
Barleria courtallica	Acanthaceae	-	-	x	-	-
Bauhinia racemosa	Leguminosae	-	x	-	-	-
Bidens biternata	Asteraceae	-	-	x	-	-

ath - Athirapally, pch - Peechi, svy - Silent Valley, pya - Periya, evk - Eravikulam

Botanical name	Family	ath	pch	svy	pya	evk
Biophytum sensitivum	Oxalidaceae	-	-	x	x	-
Bischofia javanica	Euphorbiaceae	-		x	-	-
Bndelia airy-shawii	Euphorbiaceae	x	x	-	-	-
Bndelia scandens	Euphorbiaceae	x	-	-	-	-
Callicarpa tomentosa	Verbenaceae	x	-	-	x	-
Calycopteris floribunda	Combretaceae	x	x	-	-	-
Canarium strictum	Burseraceae	-	-	x	-	-
Canscora diffusa	Gentianaceae	-	x	-	-	-
Canthium dicocum	Rubiaceae	-	-	x	-	-
Carallia brachiata	Rhizophoraceae	-	x	-	-	-
Careya arborea	Lecythidaceae	x	-	-	-	-
Cassia fistula	Leguminosae	x	x	-	-	-
Cassia tora	Leguminosae	x	x	-	-	-
Catunaregam spinosa	Rubiaceae	-	x	-	-	-
Cayratia pedata	Vitaceae	-		x	-	-
Centranthera indica	Scrophulariaceae	-	x	-	-	-
Chassalia ophioxylodes	Rubiaceae	-	x	-	-	-
Cheilanthes tenuifolia	Sinopteridaceae	-	x	-	-	-
Cinnamomum malabatum	Lauraceae	x	-	-	-	-
Cissampelos pareira	Menispermaceae	-	x	-	-	-
Clausena heptaphylla	Rutaceae	-	-	-	x	-
Cleistanthus collinus	Euphorbiaceae	x	x	-	-	-
Cleome viscosa	Cleomaceae	x	-	-	-	-
Clerodendrum viscosum	Verbenaceae	-	-	x	-	-
Cochlospermum religiosum	Cochlospermaceae	x	-	-	-	-
Colebrookea oppositifolia	Lamiaceae	-	-	x		-
Commelina benghalensis	Commelinaceae	-	x	-	-	-
Commelina diffusa	Commelinaceae	-	x	-	-	-
Corchorus aestuans	Tiliaceae					

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Cordia wallichii</i>	Boraginaceae	-	x	-	-	-
<i>Costus speciosus</i>	Zingiberaceae	x	x	-	-	-
<i>Crotalaria retusa</i>	Leguminosae	x	-	-	-	-
<i>Curculigo orchioides</i>	Hypoxidaceae	x	-	-	-	x
<i>Cyathula prostrata</i>	Amaranthaceae	x	x	-	-	-
<i>Cymbidium aloifolium</i>	Orchidaceae	x	-	-	-	-
<i>Dalbergia lanceolaria</i>	Leguminosae	-	x	-	-	-
<i>Dalbergia volubilis</i>	Leguminosae	-	x	-	-	-
<i>Dendrobium ovatum</i>	Orchidaceae	x	-	-	-	-
<i>Desmodium heterocarpon</i>	Leguminosae	x	x	-	-	-

<i>Desmodium pulchellum</i>	Leguminosae	-	x	-	-	-
<i>Desmodium triquetrum</i>	Leguminosae	x	-	-	x	-
<i>Desmos lawii</i>	Annonaceae	x	-	-	-	-
<i>Dillenia pentagyna</i>	Dilleniaceae	x	-	-	-	-
<i>Dimocarpus longan</i>	Sapindaceae	-	-	x	x	-
<i>Dioscorea oppositifolia</i>	Dioscoreaceae	x	x	-	-	-
<i>Dioscorea pentaphylla</i>	Dioscoreaceae	x	x	-	-	-
<i>Diospyros paniculata</i>	Ebenaceae	-	-	-	x	-
<i>Drosera burmannii</i>	Droseraceae	x	-	-	-	-
<i>Drosera indica</i>	Droseraceae	x	x	-	-	-
<i>Drosera peltata</i>	Droseraceae	-	-	-	-	x
<i>Drymaria cordata</i>	Caryophyllaceae	-	-	-	-	x
<i>Elacocarpus serratus</i>	Elacocarpaceae	-	-	x	-	-
<i>Elaeocarpus tuberculatus</i>	Elaeocarpaceae	-	-	-	x	-
<i>Elatostemma lineolatum</i>	Urticaceae	-	-	x	-	-
<i>Elephantopus scaber</i>	Asteraceae	x	-	-	-	-
<i>Elettaria cardamomum</i>	Zingiberaceae	-	-	x	-	-

Botanical name	Family	ath	pch	svy	pya	evk
<i>Embelia ribes</i>	Myrsinaceae	-	-	x	-	-
<i>Emilia sonchifolia</i>	Asteraceae		-	x	x	-
<i>Erythroxylum moonii</i>	Erythroxylaceae	-	-	x		-
<i>Euphorbia hirta</i>	Euphorbiaceae	-	x	-	-	-
<i>Ficus amplissima</i>	Moraceae	-	x	-	-	-
<i>Ficus arnottiana</i>	Moraceae	x	x	-	-	-
<i>Ficus exasperata</i>	Moraceae	-	-	-	x	-
<i>Garcinia gummi-gutta</i>	Clusiaceae		-	-	x	-
<i>Garcinia morella</i>	Clusiaceae	-	-	x	-	-
<i>Gaultheria fragrantissima</i>	Ericaceae		-	-	-	x
<i>Geophila repens</i>	Rubiaceae	x	x	-	-	-
<i>Globba ophioglossa</i>	Zingiberaceae	-	x	-	-	-
<i>Gloriosa superba</i>	Liliaceae	x	-	-	-	-
<i>Glycosmis pentaphylla</i>	Rutaceae	-	-	-	x	-
<i>Gordonia obtusa</i>	Theaceae	-	-	x	-	-
<i>Haldina cordifolia</i>	Rubiaceae	-	x	-	-	-
<i>Hedyotis auricularia</i>	Rubiaceae	x	-	-	x	-
<i>Hedyotis herbaceae</i>	Rubiaceae	x	-	-	-	-
<i>Helicteres isora</i>	Sterculiaceae	x	x	-	-	-
<i>Hemidesmus indicus</i>	Asclepiadaceae	x	x	-	-	-
<i>Hibiscus surattensis</i>	Malvaceae	-	x	-	-	-
<i>Holarrhena pubescens</i>	Apocynaceae	x	x	-	-	-
<i>Holostemma ada-kodien</i>	Asclepiadaceae	-	x	-	-	-
<i>Hydnocarpus alpina</i>	Flacourtiaceae	-	-	x	-	-
<i>Hydrocotyle javanica</i>	Apiaceae	-	-	x	x	-
<i>Hypericum japonicum</i>	Hypericaceae	-	-	-	-	x
<i>Hyptis suaveolens</i>	Lamiaceae	x	x	-	-	-
<i>Impatiens chinensis</i>	Balsaminaceae	x	-	x	-	-
<i>Ipomoea hederifolia</i>	Convolvulaceae	x	-	-	-	

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Ipomoea mauritiana</i>	Convolvulaceae	x	-	-	-	-
<i>Ipomoea pes-tigridis</i>	Convolvulaceae	-	x	-	-	-
<i>Ixora cuneifolia</i>	Rubiaceae	x	-	-	-	-
<i>Jasminum azoricum</i>	Oleaceae	-	-	-	x	-
<i>Jasminum bignoniaceum</i>	Oleaceae	-	-	-	-	x
<i>Justicia japonica</i>	Acanthaceae	-	-	-	x	-
<i>Justicia procumbens</i>	Acanthaceae	x	x	-	-	-
<i>Kyllinga triceps</i>	Cyperaceae	x	x	-	-	-
<i>Lanea coromandelica</i>	Anacardiaceae	-	x	-	-	-
<i>Lantana camara</i>	Verbenaceae	x	-	-	-	-
<i>Laportea crenulata</i>	Urticaceae	-	-	x	-	-
<i>Leea asiatica</i>	Leeaceae	x	x	-	-	-
<i>Leea indica</i>	Leeaceae	-	-	x	x	-
<i>Leea macrophylla</i>	Leeaceae	-	x	-	-	-
<i>Lepianthes umbellata</i>	Piperaceae	-	-	x	-	-
<i>Leucas biflora</i>	Lamiaceae	-	x	-	-	-
<i>Leucas indica</i>	Lamiaceae	x	x	-	-	-
<i>Lobelia leschenaultiana</i>	Lobeliaceae	-	-	-	-	x
<i>Lobelia nicotianifolia</i>	Lobeliaceae	-	-	x	-	-
<i>Lygodium flexuosum</i>	Schizaceae	x	x	-	-	-
<i>Macaranga peltata</i>	Euphorbiaceae	-	-	-	x	-
<i>Mahonialeschenaultii</i>	Berberidaceae	-	-	-	-	x
<i>Malaxis densiflora</i>	Orchidaceae	-	-	-	-	x
<i>Malaxis rheedei</i>	Orchidaceae	-	-	x	x	x
<i>Maesa indica</i>	Myrsinaceae	-	-	x	-	x
<i>Merremia tridentata</i>	Convolvulaceae	x	x	-	-	-
<i>Merremia vitifolia</i>	Convolvulaceae	x	-	-	-	-
<i>Mesua fenea</i>	Clusiaceae	-	-	x	x	-
<i>Michelia nilagirica</i>		-	-	-	-	x

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
Mimusops elengi	Sapotaceae	-	x	-		-
Mitragyna parvifolia	Rubiaceae	x	x	-	-	-
Mucuna pruriens	Leguminosae	-	x	x	-	-
Mukia madraspatana	Cucurbitaceae	-	x	-	-	-
Murdannia nudiflora	Commelinaceae	-	x	-	-	-
Myristica malabarica	Myristicaceae	-	-	x	-	-
Naregamia alata	Meliaceae	x	x	-	-	-
Naringi crenulata	Rutaceae	x	x	-	-	-
Olea dioica	Oleaceae	x	x	x	x	-
Ophiorrhiza mungos	Rubiaceae	x	-	x	x	-
Ormocarpum cochinchinense	Leguminosae	-	x	-	-	-
Paspalum scrobiculatum	Poaceae	x	x	x	-	-
Pennisetum typhoides	Poaceae	x	-	-	-	-
Persea macrantha	Lauraceae	x	-	-	-	-
Phyllanthus emblica	Euphorbiaceae	x	x	-	-	
Phyllanthus urinaria	Euphorbiaceae	x	x	-	-	-
Phyllanthus virgatus	Euphorbiaceae	-	x	-	-	-
Pinanga dicksonii	Arecaceae	-	-	x	x	-
Piper betle	Piperaceae	-	-	-	-	x
Piper longum	Piperaceae	x	x	-	-	-
Pittosporum neilgherrense	Pittosporaceae	-	-	-	-	x
Plantago major	Plantaginaceae	-	-	-	-	x
Polycarpaea corymbosa	Caryophyllaceae	-	x	-	-	-
Polygonum chinense	Polygonaceae	-	-	x	-	x
Pouzolzia zeylanica	Utricaceae	-	x	-	-	x
Pteridium aquilinum	Dennstaedtiaceae	-	-	x	x	-
Pterocarpus marsupium	Leguminosae	x	x	-	-	-
Radermachera xylocarpa	Bignoniaceae	x	-	-	-	
Randia brandsii	Rubiaceae	-	-	-	x	-

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
Rauvolfia serpentina	Apocynaceae	x	x	.	-	.
Remusatia vivipara	Araceae	.	x	x	-	.
Rhinacanthus nasutus	Acanthaceae	-	x	-	-	-
Rhododendron arboreum	Ericaceae	-	-	-	-	x
Rubia cordifolia	Rubiaceae	-	-	x	-	x
Rungia pectinata	Acanthaceae	x	-	-	-	-
Sapindus trifoliata	Sapindaceae	-	x	-	-	-
Sarcandra chloranthoides	Chloranthaceae	-	-	x	x	-
Sarcostigma kleinii	Icacinaceae	x	-	-	-	-
Sauropus quadrangularis	Euphorbiaceae	x	x	-	-	-
Schleichera oleosa	Sapindaceae	x	x	-	-	-
Sebastiania chamaelea	Euphorbiaceae	-	x	.	.	-
Sida rhombifolia	Malvaceae	x	x	x	-	-
Smilax zeylanica	Smilacaceae	.	-	x	x	-
Solanum torvum	Solanaceae	-	-	x	-	-
Sopubia delphinifolia	Scrophulariaceae	x	x	.	-	.
Spilanthes calva	Asteraceae	-	-	x	-	-
Sterculia urens	Sterculiaceae	x	.	-	-	-
Stephania japonica	Menispermaceae	.	.	x	.	-
Stereospermum colais	Bignoniaceae	x	x	-	-	-
Streblus asper	Moraceae	-	x	-	-	-
Striga angustifolia	Scrophulariaceae)	x	x	-	-	-
Strychnos	Loganiaceae	x	x	-	-	-
Swertia corymbosa	Gentianaceae	-	-	-	-	x
Symplocos racemosa	Symplocaceae	-	-	x	-	-
Symplocos cochinchinensis	Symplocaceae	-	-	.	.	x
Synedrella nodiflora	Asteraceae	-	-	x	-	-
Tabernaemontana heyneana	Apocynaceae	-	-	-	x	-
Teramnus labialis	Leguminosae	-	x	-	-	-

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Terminalia bellirica</i>	Combretaceae	x	x	-	-	-
<i>Terminalia crenulata</i>	Combretaceae	x	-	-	-	-
<i>Terminalia paniculata</i>	Combretaceae	x	x	-	-	-
<i>Tetrameles nudiflora</i>	Datisceae	x	x	-	-	-
<i>Themeda triandra</i>	Poaceae	x	-	-	-	-
<i>Thespesia lampas</i>	Malvaceae	-	x	-	-	-
<i>Thottea siliquosa</i>	Aristolochaceae	-	-	x	-	-
<i>Tinospora sinensis</i>	Menispermaceae	x	-	-	-	-
<i>Toddalia asiatica</i>	Rutaceae	-	-	x	-	-
<i>Tragia involucrata</i>	Euphorbiaceae	x	x	-	-	-
<i>Trema orientalis</i>	Ulmaceae	x	-	-	-	-
<i>Trichilia connaroides</i>	Meliaceae	-	-	x	-	-
<i>Tylophora indica</i>	Apocynaceae	-	x	-	-	-
<i>Uraria hamosa</i>	Leguminosae	x	-	-	-	-
<i>Urena lobata</i>	Malvaceae	-	x	-	-	-
<i>Valeriana beddomei</i>	Valerianaceae	-	-	-	-	x
<i>Valeriana hookeriana</i>	Valerianaceae	-	-	-	-	x
<i>Vateria indica</i>	Dipterocarpaceae	-	-	-	x	-
<i>Vepris bilocularis</i>	Rutaceae	-	-	-	x	-
<i>Vernonia cinerea</i>	Asteraceae	-	-	-	x	-
<i>Vigna trilobata</i>	Leguminosae	x	-	-	-	-
<i>Wrightia tinctoria</i>	Apocynaceae	x	x	-	-	-
<i>Xeromphis uliginosa</i>	Rubiaceae	x	x	-	-	-
<i>Xylia xylocarpa</i>	Leguminosae	x	x	-	-	-
<i>Ziziphus oenoplia</i>	Rhamnaceae	-	x	-	-	-
<i>Ziziphus rugosa</i>	Rhamnaceae	x	-	x	x	-

Among the five MPCAs, Peechi dominates with 107 species, followed by Athirapally with 95 species. In Silent Valley the number of species of medicinal plants is 59, while at Periya it is 33. The lowest number (23) is at Eravikulam. One of the reasons for the lower number of medicinal species at Eravikulam is that many of the species have not been evaluated for their medicinal properties. On the otherhand Athirapally and Peechi are in the Moist deciduous forests, which has a large number of known medicinal plants. It has been estimated that 45% of forest medicinal plants are collected from the Moist deciduous forests (Basha, 1990).

From the Moist deciduous forests, medicinal plants like *Asparagus racemosus*, *Cassia fistula*, *Costus speciosus*, *Curculigo orchioides*, *Cyathula prostrata*, *Desmodium triquetrum*, *Elephantopus scaber*, *Gloriosa superba*, *Hemidesmus indicus*, *Holarrhena pubescens*, *Holostemma ada-kodien*, *Ipomoeq mauritiana*, *Merremia tridentata*, *Naregamia alata*, *Phyllanthus emblica*, *Piper longum*, *Rauwolfia serpentina*, *Sida rhombifolia* *Terminalia bellirica*, *Tragia involucrata* and *Wrightia tinctoria* are heavily exploited and are used in the manufacture of medicines on a commercial scale. Due to over-exploitation, species like *Holostemma ada-kodien*, *Gloriosa superba* and *Ravolfia serpentina* have become very rare now-a-days.

From Evergreen forests, the important medicinal plants exploited are *Aphanamixis polystachya*, *Cayratia pedata*, *Elettana cardamomum* *Embelia ribes*. *Malaxis rheedei*, *Mesua ferrea*, *Mucuna pruriens*, *Myristica dactyloides*, *Rubia cordifolia* and *Symplocos cochinchinensis* .

In the Shola forests and Grasslands at Eravikulam, the commercial important medicinal species are *Curculigo orchioides*, *Drosera peltata*, *Gaultheria fragrantissima*, *Plantago major*, *Swertia corymbosa*, *Rubia cordifolia*, *Mahonia leschenaultii*, *Valerianabeddomei*, *V. hookeriana* etc.

5.4. Endemic Plants

The species endemic to Western Ghats, recorded in the five MPCAs are listed below.

Botanical Name	Family	Name of MPCAS				
		ath	pch	svy	pya	evk
<i>Actinodaphne bourdillonii</i>	Lauraceae	-	-	x	x	-
<i>Actinodaphne malabarica</i>	Lauraceae	-	-	x	-	-
<i>Actinodaphne salicina</i>	Lauraceae	-	-	-	-	x
<i>Aeschynanthes perrottetii</i>	Gesneriaceae	-	-	x	x	-
<i>Aglaiia barberi</i>	Meliaceae	-	-	-	x	-
<i>Aglaiia lawii</i>	Meliaceae	-	-	x	x	-
<i>Agrostis peninsularis</i>	Poaceae	-	-	-	-	x
<i>Amomum cannicarpum</i>	Zingiberaceae	-	-	x	-	-
<i>Amomum microstephanum</i>	Zingiberaceae	-	-	x	x	-
<i>Anaphalis lawii</i>	Asteraceae	-	-	-	-	x
<i>Andrographis neesiana</i>	Acanthaceae	-	-	x	-	-
<i>Antistrophe serratifolia</i>	Myrsinaceae	-	-	x	-	-
<i>Apodytes dimidata</i>	Icacinaceae	-	-	x	x	-
<i>Apollonias arnottii</i>	Lauraceae	-	-	-	x	-
<i>Ardisia rhomboidea</i>	Myrsinaceae	-	-	-	-	x
<i>Argostemma courtallense</i>	Rubiaceae	x	-	-	-	-
<i>Arisaema attenuatum</i>	Araceae	-	-	x	-	-
<i>Arisaema barnesii</i>	Araceae	-	-	-	-	x
<i>Arisaema murrayi</i>	Araceae	-	-	-	x	-
<i>Arundinella purpurea</i>	Poaceae	x	-	-	x	x
<i>Aspidopterys canarensis</i>	Malpighiaceae	-	-	-	x	-
<i>Atylosia lineata</i>	Fabaceae	-	-	-	x	-
<i>Baccaurea courtallensis</i>	Euphorbiaceae	-	-	-	x	-
<i>Barleria courtallica</i>	Acanthaceae	-	-	x	-	-
<i>Barleria prattensis</i>	Acanthaceae	-	x	-	-	-
<i>Beaumontia jerdoniana</i>	Apocynaceae	-	-	-	x	-
<i>Belosynapsis vivipara</i>	Commelinaceae	-	-	x	-	-

ath - Athirapally, pch - Peechi, svy - Silent Valley, pya - Periya, evk - Eravikulam

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Blumea belangeriana</i>	Asteraceae	x	-	-	-	-
<i>Boesenbergia pulcherrima</i>	Zingiberaceae	x	-	-	-	-
<i>Brachycorythis wightii</i>	Orchidaceae	-	-	-	-	x
<i>Bulbophyllum tremulum</i>	orchidaceae	-	-	x	-	-
<i>Bupleurum distichophyllum</i>	Apiaceae	-	-	-	-	x
<i>Calamus hookerianus</i>	Arecaceae	-	-	x	-	-
<i>Canscora perfoliata</i>	Gentianaceae	x	x	-	-	-
<i>Capillipedium assimile</i>	Poaceae	x	-	-	-	-
<i>Capparis shevaroyensis</i>	Capparaceae	-	-	x	-	-
<i>Carissa inermis</i>	Apocynaceae	-	-	x	-	-
<i>Chimnobambusa densifolia</i>	Poaceae	-	-	-	-	x
<i>Chrysopogon hackelii</i>	Poaceae	x	-	x	-	-
<i>Cinnamomum malabatum</i>	Lauraceae	x	-	x	x	-
<i>Cinnamomum sulphuratum</i>	Lauraceae	-	-	x	x	-
<i>Cinnamomum wightii</i>	Lauraceae	-	-	-	-	x
<i>Coelogyne mossiae</i>	Orchidaceae	-	-	-	-	x
<i>Coelogyne nervosa</i>	Orchidaceae	-	-	x	-	-
<i>Crotalaria fysonii</i>	Fabaceae	-	-	-	-	x
<i>Crotalaria heyneana</i>	Fabaceae	x	x	-	-	-
<i>Crotalaria obtecta</i>	Fabaceae	-	-	-	-	x
<i>Cucumella silentvalleyii</i>	Cucurbitaceae	x	-	-	-	-
<i>Curcuma neilgherrensis</i>	Zingiberaceae	-	-	-	x	-
<i>Cyrtococcum longipes</i>	Poaceae	-	-	-	x	-
<i>Dendrobium anamalayanum</i>	Orchidaceae	-	-	-	-	x
<i>Dendrobium herbaceum</i>	Orchidaceae	x	-	x	-	-
<i>Dendrobium heyneanum</i>	Orchidaceae	-	-	x	x	-
<i>Dendrobium lawianum</i>	Orchidaceae	x	-	-	-	-
<i>Dendrobium mabelae</i>	Orchidaceae	-	-	-	x	-

Botanical name	Family	ath	pch	svy	pya	evk
<i>Dendrobium ovatum</i>	Orchidaceae	x	-	-	-	-
<i>Desmos lawii</i>	Annonaceae	x	-	-	-	-
<i>Dillenia bracteata</i>	Dilleniaceae	-	-	-	x	-
<i>Dimorphocalyx lawianus</i>	Euphorbiaceae	-	-	x	-	-
<i>Diospyros assimilis</i>	Ebenaceae	-	-	-	x	-
<i>Diospyros paniculata</i>	Ebenaceae	-	-	-	x	-
<i>Drypetes elata</i>	Euphorbiaceae	-	-	x	x	-
<i>Drypetes oblongifolia</i>	Euphorbiaceae	-	-	-	x	-
<i>Dysoxylum malabaricum</i>	Meliaceae	-	-	-	x	-
<i>Elaeocarpus munronii</i>	Elaeocarpaceae	-	-	x	-	-
<i>Elaeocarpus recurvatus</i>	Elaeocarpaceae	-	-	-	-	x
<i>Elatostemma lineolatum</i>	Urticaceae	-	-	-	-	x
<i>Ensete superbum</i>	Musaceae	x	-	-	-	-
<i>Epithema carnosum</i>	Gesneriaceae	-	-	-	x	-
<i>Eranthemum capense</i>	Acanthaceae	-	x	-	-	-
<i>Eria dalzellii</i>	Orchidaceae	-	-	x	-	-
<i>Ena microchilus</i>	Orchidaceae	x	-	-	-	-
<i>Eria nana</i>	Orchidaceae	-	-	x	-	-
<i>Eugenia calcadensis</i>	Myrtaceae	-	-	-	-	x
<i>Euonymus angulatus</i>	Celastraceae	-	-	x	-	x
<i>Euonymus crenulatus</i>	Celastraceae	-	-	-	-	x
<i>Euonymus indicus</i>	Celastraceae	-	-	x	x	-
<i>Exacum courtallense</i>	Gentianaceae	-	-	-	-	x
<i>Ficus beddomei</i>	Moraceae	-	-	x	-	-
<i>Fimbristylis kingii</i>	Cyperaceae	-	-	-	-	x
<i>Flickingeria nodosa</i>	Orchidaceae	x	-	-	-	-
<i>Gamottia elata</i>	Poaceae	x	-	-	-	-
<i>Glochidion ellipticum</i>	Euphorbiaceae	-	-	x	x	x
<i>Gomphostemma heyneanum</i>	Lamiaceae	x	x	-	-	-

Boanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Goniothalamus cardiopetalus</i>	Annonaceae	-	-	-	x	-
<i>Gordonia obtusa</i>	Theaceae	-	-	x	-	-
<i>Grewia umbellifera</i>	Tiliaceae	-	-	x	-	-
<i>Gymnostachyum canescens</i>	Acanthaceae	-	-	x	-	-
<i>Gynura nitida</i>	Asteraceae	-	-	x	x	-
<i>Habenaria longicomulata</i>	Orchidaceae	x	-	-	-	-
<i>Habenaria ovalifolia</i>	Orchidaceae	x	-	-	-	-
<i>Habenaria perrottetiana</i>	Orchidaceae	-	-	-	-	x
<i>Hedychium venustum</i>	Zingiberaceae	-	-	x	-	-
<i>Hedyotis anamalayana</i>	Rubiaceae	-	-	-	-	x
<i>Helixanthera obtusata</i>	Loranthaceae	-	-	-	-	x
<i>Hemigraphis crossandra</i>	Acanthaceae	x	-	-	-	-
<i>Heracleum sprengelianum</i>	Apiaceae	-	-	-	-	x
<i>Heritiera papilio</i>	Sterculiaceae	-	-	x	-	-
<i>Holigarna arnottiana</i>	Anacardiaceae	-	-	-	-	-
<i>Holigama ferruginea</i>	Anacardiaceae	-	-	x	-	-
<i>Holigarna grahamii</i>	Anacardiaceae	-	-	-	x	-
<i>Impatiens denisonii</i>	Balsaminaceae	-	-	-	-	x
<i>Impatiens elegans</i>	Balsaminaceae	-	-	-	-	x
<i>Impatiens minor</i>	Balsaminaceae	x	-	-	-	-
<i>Impatiens parasitica</i>	Balsaminaceae	-	-	-	-	x
<i>Impatiens scapiflora</i>	Balsaminaceae	x	-	-	-	-
<i>Impatiens tangachee</i>	Balsaminaceae	-	-	-	-	x
<i>Impatiens tomentosa</i>	Balsaminaceae	-	-	-	-	x
<i>Indigofera pedicellata</i>	Fabaceae	-	-	-	-	x
<i>Indigofera uniflora</i>	Fabaceae	-	x	-	-	-
<i>Isachne bourneorum</i>	Poaceae	-	-	-	-	x
<i>Isachne setosa</i>	Poaceae	-	-	-	-	x

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
<i>Ischaemum kannanorensis</i>	Poaceae	x	-	-	-	-
<i>Ischaemum nilagiricum</i>	Poaceae	-	-	-	x	-
<i>Ischaemum rangacharianum</i>	Poaceae	x	-	-	-	-
<i>Ischaemum thomsonianum</i>	Poaceae		-	x	-	-
<i>Ixora brachiata</i>	Rubiaceae	-	x	-	-	-
<i>Ixora elongata</i>	Rubiaceae		-	-	x	-
<i>Ixora malabarica</i>	Rubiaceae	x	x	-	-	-
<i>Jasminum flexile</i>	Oleaceae	-	-	x	x	-
<i>Jasminum malabaricum</i>	Oleaceae		-	x	-	-
<i>Justicia trinervia</i>	Acanthaceae	-	x	-	-	-
<i>Knema attenuata</i>	Myristicaceae	-	-	x	x	-
<i>Kunstleria keralensis</i>	Fabaceae	-	-	-	x	-
<i>Lagerstroemia microcarpa</i>	Lythraceae	x	-	-	-	
<i>Lasianthus acuminatus</i>	Rubiaceae		-	-	-	x
<i>Lasianthus jackianus</i>	Rubiaceae		-	x	x	-
<i>Leucas hirta</i>	Lamiaceae	x	-	-	x	-
<i>Leucas lanceaefolia</i>	Lamiaceae	-	-	-	-	x
<i>Litsea leavigata</i>	Lauraceae	-	-	x	x	-
<i>Litsea ligustrina</i>	Lauraceae	-	-	-	-	x
<i>Litsea oleoides</i>	Lauraceae	-	-	x	x	-
<i>Litsea wightiana</i>	Lauraceae		-	-	-	x
<i>Mackensiea homotropa</i>	Acanthaceae	-	-	-	-	x
<i>Mallotus beddomei</i>	Euphorbiaceae	-	-	-	x	-
<i>Mahonia leschenaultii</i>	Berberidaceae	-	-	-	-	x
<i>Mariscus pictus</i>	Cyperaceae	x	-	-	-	-
<i>Medinella beddomei</i>	Melastomataceae	-	-	-	x	-
<i>Meiogyne pannosa</i>	Annonaceae	-	-	-	x	-
<i>Memecylon depressum</i>	Melastomataceae	-	-	x	-	-
<i>Memecylon lawsonii</i>	Melastomataceae	-	-	x	x	-

Botanical name	Family	Name of MPCAs				
		ath	pch	svy	pya	evk
Mesua ferrea	Clusiaceae	-	-	x	x	-
Meteromyrtus wynadensis	Myrtaceae	-	-	-	x	-
Micrococca beddomei	Euphorbiaceae	-	-	-	x	-
Microtropis latifolia	Celastraceae	-	-	x		
Miquelia dentata	Icacinaceae	-	-	x	-	-
Mussaenda laxa	Rubiaceae	x	-	-	-	-
Mycetia acuminata	Rubiaceae	-	-	x	x	-
Myristica malabarica	Myristicaceae	-	-	x	-	-
Neolitsea scorbiculata	Lauraceae	-	-	x	-	-
Nilgirianthus punctatus	Acanthaceae	-	-	-	x	-
Oberonia brachyphylla	Orchidaceae	-	-	x	-	-
Oberonia chandrasekharanii	Orchidaceae	-	-	x	-	-
Oberonia santapau	Orchidaceae	-	-	x	-	-
Oberonia sebastiana	Orchidaceae		-	-	-	x
Ochreinauclea missionis	Rubiaceae		-	-	x	-
Ochlandra travancorica	Poaceae	x	-	-	-	-
Ormosia travancorica	Fabaceae		-	-	x	-
Orophea thomsonii	Annonaceae		-	-	x	-
Otonephelium stiipulaceum	Sapindaceae	-	-		x	-
Palaquium ellipticum	Sapotaceae	-	-	x	x	-
Pavetta breviflora	Rubiaceae	-	-		-	x
Pedicularis perrottetii	Scrophulariaceae	-	-	-	-	x
Phyllanthus kozhikodanus	Euphorbiaceae	-	x	x	-	x
Phyllanthus macraei	Euphorbiaceae	-	-	-	-	x
Punpinella candolleana	Apiaceae	-	-	-	-	x
Pinanga dicksonii	Arecaceae	-	-	x	-	-
Piper wightii	Piperaceae	-	-	x	-	x
Plectranthus nilgherricus	Acanthaceae	-	-	x	-	-

Botanical name	Family	ath	pch	svy	pya	evk
<i>Porpax jerdoniana</i>	Orchidaceae	x	-		-	-
<i>Porpax reticulata</i>	Orchidaceae	-	-	x	-	-
<i>Pouzolzia wightii</i>	Urticaceae	-	-	x	-	-
<i>Premna villosa</i>	Verbenaceae	-	-	-	x	-
<i>Psychotria keralensis</i>	Rubiaceae	-	-	-	x	-
<i>Pterospermum reticulatum</i>	Sterculiaceae	x	x	-	-	-
<i>Reinwardtiodendron anamallayanum</i>	Meliaceae	-	-	x	-	-
<i>Rungia sisparensis</i>	Acanthaceae	-	-	x	-	-
<i>Saprosma fragrans</i>	Rubiaceae	-	-	x	-	-
<i>Saprosma glomeratum</i>	Rubiaceae	-	-	x	-	-
<i>Senecio lavandulaefolius</i>	Asteraceae	-	-	-	-	x
<i>Sida beddomei</i>	Malvaceae	x	-	-	-	-
<i>Sirhookem latifolia</i>	Orchidaceae	-	-	x	-	-
<i>Sonerila rotundifolia</i>	Melastomataceae	-	-	x	-	-
<i>Sonerila versicolor</i>	Melastomataceae	-	-	x	-	-
<i>Spondias indica</i>	Anacardiaceae	x	-	-	-	-
<i>Swertia corymbosa</i>	Gentianaceae	-	-	-	-	x
<i>Swertia minor</i>	Gentianaceae	-	-	-	-	x
<i>Symphyllia mallotiformis</i>	Euphorbiaceae	-	-	-	x	-
<i>Syzygium densiflorum</i>	Myrtaceae	-	-	-	-	x
<i>Syzygium laetum</i>	Myrtaceae	x	-	x	x	-
<i>Syzygium tamilnadensis</i>	Myrtaceae	-	-	-	x	-
<i>Tabernaemontana heyneana</i>	Apocynaceae	x	-	-	x	-
<i>Tetrastigma sulcatum</i>	Vitaceae	-	-		x	-
<i>Terminalia crenulata</i>	Combretaceae	x	-	-		-
<i>Therophonum infaustum</i>	Araceae	x	x	-	-	-
<i>Trias stocksii</i>	Orchidaceae	-	-	x	x	-
<i>Tripogon ananthaswamianus</i>	Poaceae	-	-	-	-	x

Botanical name	Family	ath	pch	svy	pya	evk
<i>Turpinia malabarica</i>	Staphyleaceae	-		x	x	x
<i>Valeriana beddomei</i>	Valerianaceae	-	-	-	-	x
<i>Valeriana hookeriana</i>	Valerianaceae	-	-	-	-	x
<i>Vanasushava pedata</i>	Apiaceae	-	-	-	-	x
<i>Vateria indica</i>	Dipterocarpaceae	-	-	x	x	-
<i>Vernonia bourneana</i>	Asteraceae	-	-	-	-	x
<i>Ventilago bombaiensis</i>	Rhamnaceae	-	-	x	x	-
<i>Vepris bilocularis</i>	Rutaceae	-	-	-	x	-
<i>Vigna wightii</i>	Fabaceae	x	-	-	-	-
<i>Zehneria mysorensis</i>	Cucurbitaceae	-	-	x	-	-
<i>Zingiber neezanum</i>	Zingiberaceae	x	-	-	-	-
<i>Zingiber roseum</i>	Zingiberaceae	-	-	x	-	

Western Ghat is considered as one of the floristically rich regions with a relatively high percentage of endemism. Ahmedulla and Nayar (1987) enumerated 1932 taxa endemic to Peninsular India. Among the MPCAs, the highest number of the endemics (78) is recorded from Silent Valley, followed by 67 at Periya, 57 at Eravikulam, 42 at Athirapally and 12 from Peechi. With respect to the percentage of endemism, Eravikulam and Periya have 28%, Silent Valley 22.7%, Athirapally 17.7% and Peechi 5.5%.

Among the endemic genera of Western Ghats, *Meteromyrtus*, *Nilgiranthus*, *Ochreinauclea*, *Otonephelium* and *Vanasushava* are found in the MPCAS. In Periya, except *Vanasushava*, all the other 4 genera mentioned above are present. *Vanasushava* is confined to the Eravikulam MPCA. The relative position of the endemic taxa in the 5 MPCAs is shown in Table 2.

5.5 Rare and Threatened plants

The rare and threatened plants recorded from the five MPCAs are listed below

Botanical name	Family	ath	pch	svy	pya	evk
<i>Actinodaphne salicina</i>	Lauraceae	-	-	-	-	x
<i>Aglaia barberi</i>	Meliaceae	-	-	-	x	-
<i>Amomum microstephanum</i>	Zingiberaceae	-	-	x	x	-
<i>Antistsophe serratifolia</i>	Myrsinaceae	-	-	x	-	-
<i>Ansaema attenuatum</i>	Araceae	-	-	x	-	-
<i>Ansaema bamesii</i>	Araceae	-	-	-	-	x
<i>Arisaema murrayi</i>	Araceae	-	-	-	x	-
<i>Aspidopterys canarensis</i>	Malpighiaceae	-	-	-	x	-
<i>Beaumontia jerdoniana</i>	Apocynaceae	-	-	-	x	-
<i>Boesenbergia pulcherrima</i>	Zingiberaceae	x	-	-	-	-
<i>Cinnamomum malabatum</i>	Lauraceae	x	-	-	-	-
<i>Circaea alpina</i> ssp. <i>imaicola</i>	Onagraceae	-	-	-	-	x
<i>Euonymus angulatus</i>	Celastraceae	-	-	x	-	-
<i>Hedyotis anamalayana</i>	Rubiaceae	-	-	-	-	x
<i>Impatiens elegans</i>	Balsaminaceae	-	-	-	-	x
<i>Memecylon lawsonii</i>	Melastomataceae	-	-	x	x	-
<i>Meteromyrtus wynaadensis</i>	Myrtaceae	-	-	-	x	-
<i>Miquelia dentata</i>	Icacinaceae	-	-	x	-	-
<i>Myristica malabarica</i>	Myristicaceae	-	-	x	-	-
<i>Ochreinauclea missionis</i>	Rubiaceae	-	-	—	x	-
<i>Orophea thomsonii</i>	Annonaceae	-	-	-	x	-
<i>Pterospermum reticulatum</i>	Sterculiaceae	x	x	-	-	-
<i>Saprosma fragrans</i>	Rubiaceae	-	-	x	-	-
<i>Syzygium rubicundum</i>	Myrtaceae	-	-	-	x	-
<i>Syzygium tamilnadensis</i>	Myrtaceae	-	-	-	x	-
<i>Valeriana beddomei</i>	Valerianaceae	-	-	-	-	x
		-	-			

ath - Athirapally, pch - Peechi, svy - Silent Valley, pya - Periya, evk - Eravikulam

5.6. Regeneration status

The MPCAs at Peechi and Athirapally are disturbed areas as is evident from the profuse growth of exotic weeds like *Chromolaena odorata*. The canopy is widely opened at several places. Cattle grazing is frequent. The incidence of annual fire has been observed. The fire hampers the regeneration process and promotes the growth of exotic weeds, which in turn replaces the natural undergrowth including several medicinal herbs.

In the MPCAs at Silent Valley and Periya, due to less disturbances, exotic weeds are relatively few. The notable ones are *Chromolaena odorata* and *Pteridium aquilinum*, the former is getting established along roadsides at Periya, while the latter is found in Silent Valley as well as in Periya, competing with grasses. Part of Silent Valley MPCA along the eastern side, support several secondary colonisers like *Clerodendrum viscosum*, *Trema orientalis*, *Macaranga peltata* and *Mallotus tetraococcus*, probably due to the incidence of fire in the past. Other area are relatively intact with ample regeneration of tree species. Part of the area at Periya MPCA has been subjected to selection felling in the past. However, the forest is fairly intact and the regeneration is progressing.

Though the Eravikulam MPCA is well protected since the declaration of the forest as a National Park exotic weed *Ageratina adenophora* is fairly common along the fringes of Sholas. The regeneration of most of the tree species growing in the Sholas is very poor but a few species like *Ardisia rhomboidea*, *Microtropis ramiflora* and *Ilex denticulata*. show satisfactory regeneration. There is dense growth of *Strobilanthes spp.* in the Sholas.

Table 1: Relative position of number of species, genera and families in the MPCAs

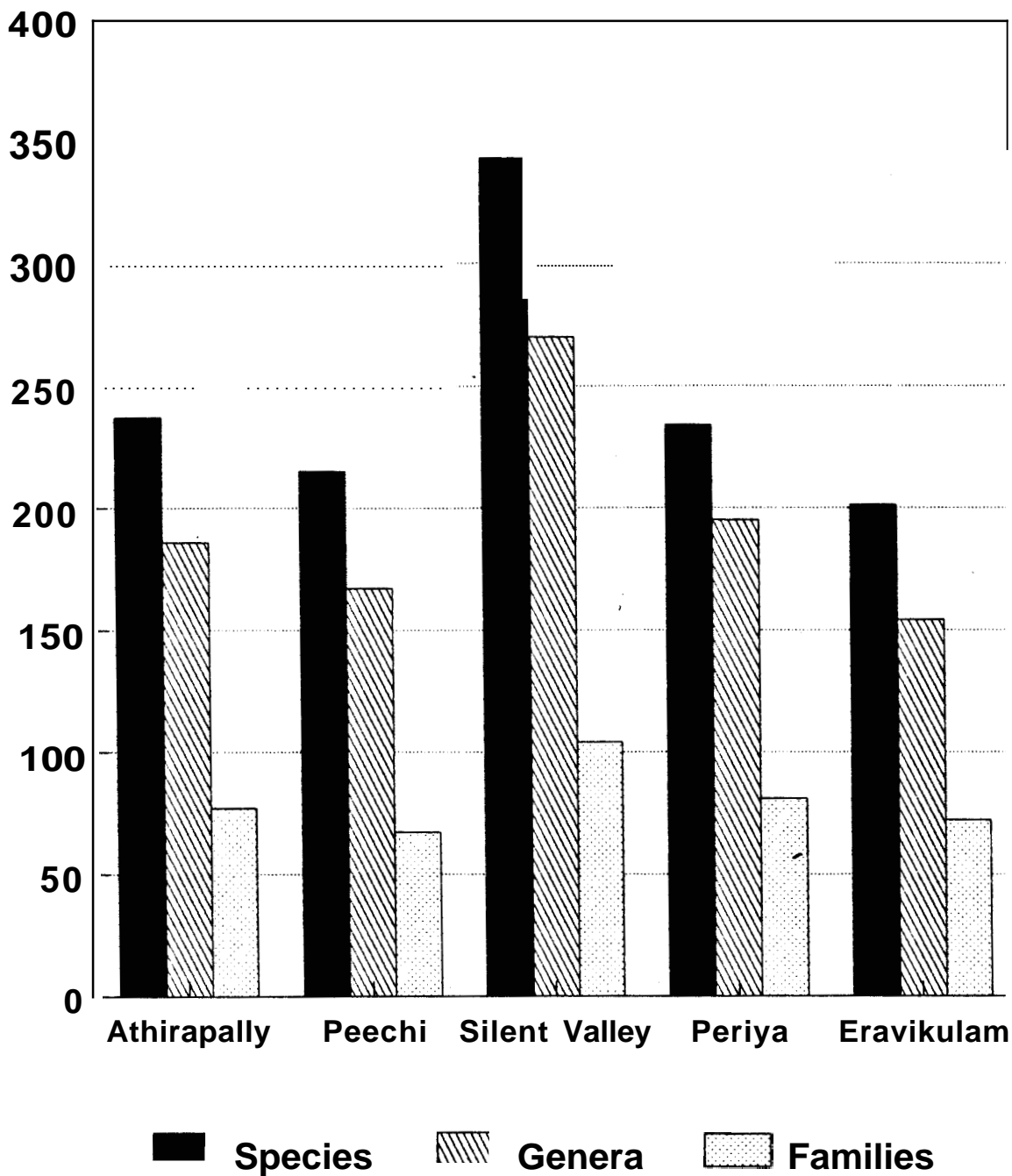
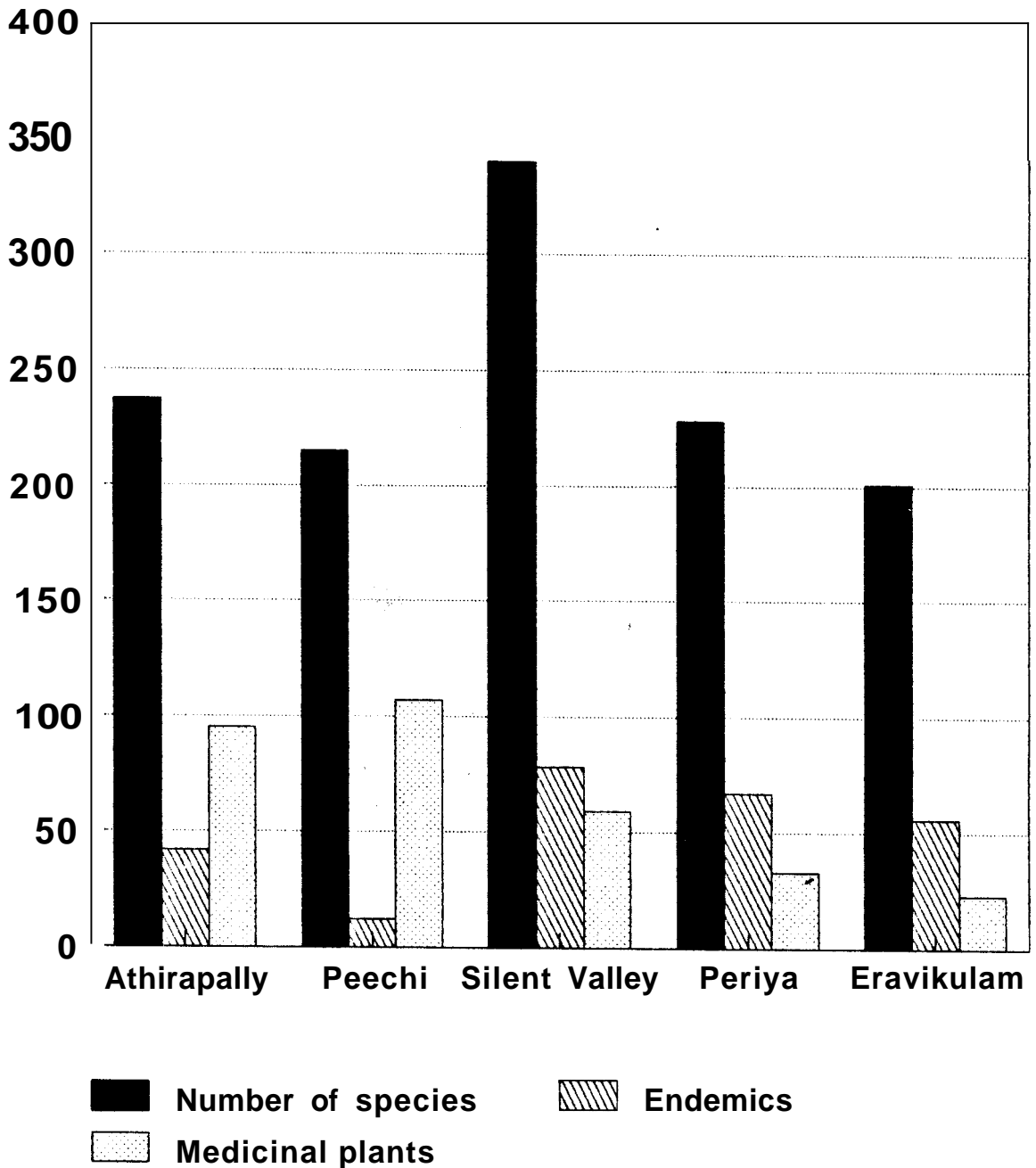


Table 2: Relative position of endemics and medicinal plants in the MPCAs



7. CONCLUSION

Silent Valley and Periya located in the West coast tropical evergreen forests are rich in species. Peechi and Athirapally support Southern moist deciduous forests, which are also fairly rich in species. In Eravikulam MPCA, the vegetation is of Southern wet temperate forest and southern montane wet grassland, containing more number of temperate elements. Among the five MPCAs, Silent Valley, Periya and Eravikulam are relatively undisturbed with less number of exotic weeds. Peechi and Athirapally are disturbed areas with many exotic weeds and the areas are under severe biotic pressure.

With respect to species diversity, Silent Valley rank first with 343 species, followed by Athirapally with 237 species, Periya 234 species, Peechi 215 and Eravikulam 201 species. In Silent Valley the number of families is 104, in Periya there are 81, Athirapally 77, Eravikulam 72 and Peechi 67. Orchidaceae is the largest family in Silent Valley and Eravikulam, while Fabaceae is dominant in Peechi and also at Athirapally along with Poaceae. Rubiaceae is the dominant family in Periya. Though Eravikulam MPCA has a fairly large area under grassland, only 16 species of grasses could be recorded, while from Athirapally 26 species were enumerated. This is due to the presence of several grasses, that are characteristics of the plains, at Athirapally, which got established through grazing and fire. Pteridophytes are fairly well represented in Silent Valley with 18 species, while in other MPCAs there are only a few species.

Medicinal plants are fairly common in the Athirapally and Peechi MPCAs with 95 and 107 species respectively. In Silent Valley the number of species of medicinal plants is 59, while it is 33 at Periya. In Eravikulam there are 23 species. Thus in Athirapally and Peechi 44% of the species are medicinal, while only 11% of the plant species in Eravikulam have known medicinal properties.

With regards to endemism, Periya and Eravikulam have 28% of endemic species. While Silent Valley, from where largest number of species were enumerated, has 22.7% endemic species. Athirapally and Peechi have a relatively lower endemism of 17.7% and 5.5% respectively.

The number of Rare and Threatened species are more in Periya, Silent Valley and Eravikulam with 12, 8 and 7 species respectively, while in Athirapally there are 3 species and in Peechi there is 1 only.

Since the five MPCAs vary with respect to vegetation, altitude and species composition, the number of species of Medicinal plants, endemics and Rare and Threatened species also vary. In general the MPCAs in the Evergreen forests at Silent Valley and Periya exhibit a greater species diversity.

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Properties and Uses of Medicinal Plants

<i>Abelmoschus manihot</i> ssp <i>tetraphylla</i> :	Bark considered emmenagogue
<i>Acacia torta</i>	Leaf juice for indigestion in infants. Leaves for bleeding gums. Juice of barb: antidote for snakepoison Fruit and stem used as fish poison.
<i>Acalypha racemosa</i>	Plant useful in bronchitis, pneumonia and asthma. Root cathartic. Leaves used in scabies, in snake bite. A substitute for senega. Plant anthelmintic , emetic and expectorant.
<i>Acronychia pedunculata</i>	Bark used as application to sores and ulcers. Plant fish poison.
<i>Achyranthes aspera</i>	Plant pungent, purgative, diuretic, in dropsy, piles, boils skins eruptions, colic. Seeds in hydrophobia. Root astnngent. Leaf juice is applied to wounds. Leaves used in the preparation of the ointment 'Zambuk'. Plant is used in the treatment of enlargement of the cervical glands.
<i>Achyranthes bidentata</i>	Plant diuretic and Astringent.
<i>Acrocephalus hispidus</i>	Plant expectorant
<i>Adenostemma lavenia</i>	Leaves are used as antiseptic and fresh juice, as stimulant and stemutatory.
<i>Ageratum conyzoides</i>	Leaves styptic, applied to cuts and sores. Juice of root antilithic.
<i>Arundinella nepalensis</i>	Plant juice for washing wounds.
<i>Albizia odoratissima</i>	Bark powder applied externally in leprosy and inveterate ulcers. Leaves boiled in ghee are used as a remedy for cough.
<i>Allophylus serratus</i>	Root astringent, employed to check diarrhoea. Leaf paste is applied externally to get relief from sprains.
<i>Alysicarpus vaginalis</i>	Roots used as expectorant
<i>Anamirta cocculus</i>	Fish poison, used as insecticide. Seeds in night sweats of phthisis Fruit is used in the treatment of rheumatism. Dried fruit is a powerful narcotic and an antidote for morphine and chloral poison.
<i>Anisochilus camosus</i>	Plant stimulant, expectorant, useful in cough of children. Juice of leaves cooling mixed with sugar candy for coughs and colds.
<i>Antidesma bunius</i>	Leaves antidote to snake poison and when young boiled and used in syphilitic cachexia. Bark poisonous.
<i>Aphanamixis polystachya</i>	Bark astringent used in spleen and liver diseases, tumours abdominal complaints. Sezd oil used in liniment in rheumatism.
<i>Aporusa lindleyana</i>	Decoction of the root given in Jaundice, fever, headache, seminal loss and insanity.
<i>Artocarpus heterophyllus</i>	Leaves used in skin diseases, antidote to snake bite. Root used internally in diarrhoea. Juice of plant applied to glandular swelling and abscesses to promote suppuration. Ripe Fruit laxative.
<i>Artocarpus gomeziaus</i>	Seeds purgative. Bark in powder form applied to sores to draw out purulent matter, in infusion applied to small pimples and cracked

<i>Asparagus racemosus</i>	Root is used in the treatment of biliousness, throat complaints, tuberculosis, leprosy, epilepsy diseases of blood, kidney and liver, gleet and gonorrhoea. A decoction of tubers in milk is very beneficial in strangury.
<i>Atylosia scarabaeoides</i>	Plant used for diarrhoea in cattle.
<i>Baliospermum montanum</i>	Seeds purgative used as stimulant. Roots in dropsy and jaundice. Decoction of leaves in asthma. Seeds in snake bite. Oil from seeds external application in rheumatism. Root used to treat skin diseases, abdominal complaints, piles, enlarged spleen, itching, inflammations, anemia, leucoderma, Jaundice, dropsy and anasarca.
<i>Bambusa bambos</i>	Leaves used in haemetenesis. Given to horses as remedy for coughs and colds.
<i>Barlena courtallica</i>	Decoction of root given in rheumatism and pneumonia. Leaves boiled in oil used in ear and eye diseases.
<i>Bauhinia racemosa</i>	Decoction of leaves in malaria. Bark in diarrhoea and dysentery, urinary discharges. Gum used medicinally.
<i>Bidens biternata</i>	Plant in chronic dysentery and eczema.
<i>Biophytum sensitivum</i>	Leaves diuretic, powdered seeds applied to wounds. Decoction of roots in gonorrhoea and lithiasis, chest complaints and ash for stomachache.
<i>Bischofia javanica</i>	Juice of leaves cure for sores.
<i>Bridelia airy-shawii</i>	Bark in rheumatism.
<i>Bndelia scandens</i>	Bark is used to prepare a mouth wash. Leaves and stem cure eczema. Root and stem are recommended in the treatment of asthma, cough and internal sores.
<i>Callicarpa tomentosa</i>	Decoction of bark and root useful in fever, hepatic obstruction and skin diseases. Root in cutaneous affections. Leaves boiled in milk used as a wash for aphthae of the mouth.
<i>Calycopteris flonbunda</i>	Leaves bitter, astringent, anthelmintic, laxative in colic ground and administered with butter as a cure for dysentery and malaria, external application for ulcers. Root antidote to snake bite.
<i>canarium strictum</i>	Gum used with gingili oil in rheumatism, pains, in chronic skin diseases.
<i>Canthium dicocum</i>	Bark used in fever and for external application in fractures.
<i>Canscora diffusa</i>	Plant nervine tonic, substitute for <i>Canscora decussata</i> which is laxative and alterative, nerve tonic.
<i>Carallia brachiata</i>	Fruits used in the treatment of contagious ulcers. Bark for itch
<i>Cayratia pedata</i>	Leaves astringent, refrigerant used for ulcers. Decoction of leaves used to check uterine reflexes
<i>Careya arborea</i>	Bark and fruit astringent, demulcent. Flowers and juice of fresh bark given with honey as demulcent in coughs and colds. Bark used as antipyretic, anti pruritic in eruptive fevers, particularly in small pox and snake-bite.
<i>Cassia fistula</i>	Root, bark seeds and leaves laxative. Fruit cathartic, applied in rheumatism Seeds emetic. Root astringent, tonic, febrifuge, purgative. Juice of leaves in skin diseases. Bark is

	used against asthma. Root is used to treat skin diseases, leprosy, tuberculosis and syphilis.
Cassia tora	Root, leaves and seeds are used for skin diseases, tumours and leprosy. Decoction of leaves laxative crushed leaves are applied for the sting of bees.
Catunaregam spinosa	Fruit irritating, emetic; fish poison. Pulp of fruit used in dysentery, anthelmintic, abortifacient. Ground to coarse powder and applied to tongue for fevers and incidental ailments of children during teething. Bark astringent, externally applied in rheumatism. Root bark insecticidal. Leaves are used against pulmonary infections.
Centranthera indica	Plant used in fevers and as external application for sore eyes in Sri Lanka.
Ceratopteristhalictroides	Fronds used as poultice in skin complaints. Plant used in China as tonic and styptic.
Chassalia ophioxyloides	Decoction of Root used in rheumatism, pneumonia, head-disorders, ear and eye diseases and sore throat. Root and Leaves used in external applications for wounds and ulcers.
Cheilanthes tenuifolia	The santals prescribe a preparation from the roots for sickness attributed to witchcraft or evil eye.
Cissampelos pareira	Root diuretic, in venereal diseases, cough, heart complaints, antiperiodic, purgative, in coughs and cystitis, in snake bite
Cleistanthus collinus	Plant astringent, extremely poisonous. Extract of leaves, roots and specially fruits, violent gastro-intestinal irritant. Root, leaf and bark fish poison. Bark is applied externally in cases of cutaneous diseases.
Clerodendrum viscosum	Leaves, barks and roots anthelmintic, febrifuge, in diarrhoea, dysentery, poisons and gonorrhoea.
Cochlospermum religiosum	Gum sweetish, cooling sedative, used in coughs and gonorrhoea. Dried leaves and flowers stimulative
Colebrookea oppositifolia	A preparation of the root is used in epilepsy. Leaves applied to wounds and bruises.
Commelina benghalensis	Plant bitter, emollient, demulcent, refrigerant, laxative, beneficial in leprosy.
Commelina diffusa	Bruised plant applied to bums, itches and boils. Leaves used for poulticing sores
Cordia wallichii	Fruit demulcent, expectorant astringent, useful in bronchial affections and in irritation of urinary passages. Leaves are used in the treatment of gonorrhoea. The ashes of the leaves are used as a wash in burning of the eyes.
Costus speciosus	Root bitter, astringent, purgative, depurative, stimulant, tonic anthelmintic. Root rich in starch.
Crotalaria retusa	Plant used in scabies and impetigo.
Curculigo orchioides	Rhizome piles, jaundice, asthma, diuretic, tonic aphrodisiac used as a poultice for itch and skin diseases.
Cyathula prostrata	Decoction of the root is given for dysentery in Malaya. Plant used in external applications for various <i>skin</i> diseases.
Cyclea peltata	Root nervine tonic, for a variety of ailments like dysentery, piles, flatulence, jaundice, stomach ache, fever, leprosy, liver complaints. Crushed leaves are applied to wounds to stop bleedmg.

<i>Cymbidium aloifolium</i>	Plant emetic, purgative, furnishes salep which is used as a nutrient and demulcent.
<i>Dalbergia lanceolaria</i>	Bark used in intermittent fever, it.. infusion gives internally in dyspepsia. Seed oil in rheumatism.
<i>Dendrobium ovatum</i>	Juice of pant stomachic, excites the bile and acts as a laxative.
<i>Desmodium heterocarpon</i>	Decoction of the plant is given for cough, fainting and convulsions.
<i>Desmodium motorium</i>	Plant Nervine tonic.
<i>Desmodium pulchellum</i>	Decoction of bark used in haemorrhage, diarrhoea, poisoning and eye diseases. Flowers used in biliousness.
<i>Desmodium triquetrum</i>	Leaves extract or pills used in piles, substitute for tea.
<i>Dimocarpus longan</i>	Fruit is stomachic and anthelmintic. Aril is refrigerant and has tonic properties.
<i>Dioscorea oppositifolia</i>	Tubers used as an external application to reduce swelling.
<i>Dioscorea pentaphylla</i>	Tubers in bile, cough, asthma and rheumatism.
<i>Diospyros paniculata</i>	Leaves fish poison. Dried and powdered fruits applied to heal bums. Decoction of the fruit given in gonorrhoea, to purify blood and biliousness. Powdered bark is rheumatism and ulcers.
<i>Drosera burmanii</i>	Plant powerful rubifacient
<i>Drosera indica</i>	Plant powerful rubifacient. Used in the preparation of gold bhasma which is used as antisyphilitic, alterative, and tonic.
<i>Drosera peltata</i>	Crushed leaves with or without salt used as a blistering agent. Plant used in the preparation of gold bhasma which is used as antisyphilitic, alterative and tonic.
<i>Drymaria cordata</i>	Juice of plant laxative and febrifuge. Herb eaten in French Guiana as a salad for its cooling properties.
<i>Elaeocarpus serratus</i>	Fruit used in dysentery and diarrhoea. Leaves used in rheumatism, antidote to poison.
<i>Elaeocarpus tuberculatus</i>	Decoction of the bark used in haemetemesis, indigestion and biliousness. Nuts used as remedy for rheumatism. typhoid fever and epilepsy.
<i>Elephantopus scaber</i>	Plant astringent, cardiac tonic alterative, febrifuge in snake bite. Decoction of roots and leaves emollient, given in dysuria, diarrhoea, dysentery and swellings or pains in stomach. Root given to arrest vomiting. powdered with pepper applied to tooth ache. Bruised leaves boiled in coconut oil applied to ulcers and eczema. Alcoholic extract of whole shoot shows antibiotic activity.
<i>Elettaria cardamomum</i>	Seeds aromatic, stimulant stomachic, corminative and diuretic.
<i>Embelia ribes</i>	Seeds are used as tonic, affections of the kidney and skin diseases, anthelmintic, tonic, scorpion sting, snake bite, fever, coughs. Dried fruits and infusion of leaves.
<i>Emilia sonchifolia</i>	Decoction of plant used as a febrifuge in infantile tymphanites and in bowel complaints. Juice of leaves in eye inflammation, night blindness and sore ears.
<i>Eriocaulon sexangulare</i>	Used as a drug in China.

<i>Erythroxylum moonii</i>	Expressed juice of fresh leaves used as anthelmintic in Sri Lanka.
<i>Euphorbia hirta</i>	Plant used in diseases of children in worms, cough. Juice of plant in dysentery and colic. Decoction of plant in bronchial affections and asthma. Latex of plant used as application for warts.
<i>Ficus amplissima</i>	Bark is used in the treatment of colic. Root bark is used to treat chronic cough and other pulmonary infections. Latex of the root and fruit is an effective remedy in case of eye diseases.
<i>Ficus arnottiana</i>	Leaves and bark used in skin diseases.
<i>Ficus exasperata</i>	Bark and juice of the plant are recommended in cases of enlargement of liver and spleen. The root is used against the burning sensation of bowels.
<i>Garcinia gummi-gutta</i>	Fruits used for dysentery, milky juice contain arabin, essential oil, resin. Rind of fruit acids tartaric, citric, phosphoric. Used in the treatment of rheumatism and bowel complaints.
<i>Garcinia morella</i>	Gum resin purgative, anthelmintic used in dropsical affections amenorrhoea, obstinate constipation and as vermifuge.
<i>Gaultheria fragrantissima</i>	Oil from leaves, aromatic, stimulant, carminative, used in rheumatism, neuralgia as flavouring agent and antiseptic.
<i>Geophila repens</i>	Root is used in the treatment of amoebic dysentery.
<i>Gloriosa superba</i>	Root eye diseases, remedy for piles, rheumatism, leprosy, itches, asthma. Root purgative, anthelmintic used is scorpion sting.
<i>Glycosmis pentaphylla</i>	Roots and fruits used in fever, diarrhoea, rheumatism and impure blood.
<i>Gordonia obtusa</i>	Infusion of leaves, stimulant, stomachic appetizer.
<i>Grewia tiliifolia</i>	Bark used in dysentery. Wood in powder form emetic, antidote to opium poisoning.
<i>Haldina cordifolia</i>	Bark febrifuge, antiseptic. Juice used to kill worm in sores.
<i>Hedyotis auricularia</i>	Plant emollient, used in dysentery and cholera.
<i>Hedyotis herbacea</i>	Entire plant used in fevers.
<i>Helicteres isora</i>	Root bark and fruit used in diabetes, cough, asthma and fever. A cure for scabies when applied topically. Fruit - demulcent, astringent useful in the griping of bowels and flatulence of children.
<i>Hemidesmus indicus</i>	Roots substitute for <i>sarasaparilla</i> sp., demulcent, alterative, diaphoretic, diuretic for skin diseases, blood purifier, in leucorrhoea, syphilis and rheumatism. Tonic in loss of appetite, in scorpion sting and snake bite.
<i>Hibiscus surattensis</i>	Stem and leaf in a lotion used for the treatment of penile irritation of any sort including venereal sores and urethritis. Mucilaginous flowers used as emollient.
<i>Holarrhena pubescens</i>	Bark in dysentery, dried and ground rubbed over body in dropsy. Seeds astringent, febrifuge, in fever, dysentery, diarrhoea and intestinal worms.
<i>Holostemma adakodien</i>	The roots boiled in milk is a good tonic and also effective as an aphrodisiac. The paste made from the roots is applied to

the eyes in case of ophthalmia and is used as remedy for scalding in gonorrhoea. Root is also useful against diabetes and spermatorrhoea.

Seeds contain fatty oil like charlmoogra oil.

Substitute for *Centella asiatica*. Leaves tonic, blood purifier, for indigestion, nervousness and dysentery.

The plant is used as alterative, astringent and externally vulnerary.

Plant used externally in bums and internally for gonorrhoea.

Root stemutatory

Root tonic, alterative, aphrodisiac, demulcent, lactagogue, purgative, cholagogue, in scorpion sting. Resin similar to jalap resin.

Root purgative, antidote to dogbite, used in boils and carbuncle.

Infusion of leaves given in fevers in Indo-China.

Bitter glucoside.

Flowers tonic to the heart and bowels, astringent. Root used in *ring* worm.

Dried plant laxative, diaphoretic diuretic, anthelmintic, a perient in low fever, to purify blood in skin diseases. Juice of leaves in ophthalmia.

Decoction of roots used to relieve thirst in fevers and diabetes. Oil boiled with the roots used to relieve pruritus of the skin. Roots yield an oil which is used to promote action of liver and relieve pruritus.

Bark astringent, used in impetigenous eruptions, leprous ulcers and obstinate ulcers. Leaves applied for swelling and body pains

Plant diaphoretic, carminative. Decoction in rheumatism and malaria.

Seeds used in the same way as coriander. Root juice used in long standing fevers. Plant poisonous.

Tubers used as a remedy for guinea worm. Leaves bruised and applied to wounds.

Root used in diarrhoea, dysentery and as sudorific. Decoction of root given in colic cooling and relieves thirst. Leaves roasted and applied to the head in vertigo.

Root astringent. used as a remedy for ringworms and in cure of guinea worm.

Leaves roasted and eaten as febrifuge, for loss of appetite. Juice in headache.

Leaves smoked in the same way as tobacco. Plant juice extremely acrid.

Infusion of leaves antispasmodic Leaves and seeds acrid, poisonous. Root in scorpion sting.

Plant used as expectorant. Fresh root boiled with mustard oil useful to local application to carbuncles, externally in rheumatism, sprains, scabies and ulcers.

Gum a good application for venereal diseases.

Bemes anthelmintic. Root in syphilis.

Hydnocarpus alpina

Hydrocotyle javanica

Hypericum japonicum

Impatiens chiensis

Ipomoea hederifolia

Ipomoea mauritiana

Ipomoea pestigridis

Ixora cuneifolia

Jasminum azoricum

Jasminum bignoniaceum

Justicia procumbens

Kyllinga triceps

Lannea coromandelica

Lantana camara

Laponea crenulata

Leea asiatica

Leea indica

Leea macrophylla

Leucas indica

Lobelia leschenaultiana

Lobelia nicotianifolia

Lygodium flexuosum

Macaranga peltata

Maesa indica

<i>Merremia tridentata</i>	Plant used in rheumatism, piles and urinary disorders, tonic and laxative.
<i>Merremia umbellata</i>	Seeds used in medicine
<i>Merremia viti folia</i>	Plant given is strangury and urethral discharges. Juice cooling, diuretic and a preparation from it is applied to inflamed eyes.
<i>Mesua ferrea</i>	Flowers astringent, stomachic used in cough, in bleeding piles. Buds in dysentery. Bark astringent, sudorific.
<i>Michelia nilagirica</i>	Bark febrifuge
<i>Mimusops elengi</i>	Bark astringent, tonic, useful in fevers. Leaves in snake bite. Pulp of ripe fruit, astringent, used in curing chronic dysentery. Seeds bruised and locally applied within the anus of children in cases of constipation.
<i>Mitragyna parvifolia</i>	Bark and root in fever. Bark as a paste applied for muscular pains.
<i>Mucuna pruriens</i>	Seeds nervine tonic, in scorpion sting. Root purgative. Pod anthelmintic, seeds aphrodisiac.
<i>Mukia madraspatana</i>	Root in decoction useful in flatulence, and masticated for relief of toothache. Seeds in decoction, sudorific, crushed and applied on aching bodies.
<i>Murdannia nudiflora</i>	Bruised plant applied to bums, itches and boils. Leaves used for poulticing sores. Herbage in leprosy.
<i>Naregamia alata</i>	Root emetic, cholagogue expectorant, useful in acute dysentery. Leaves and stems in decoction given with bitters and aromatics for biliousness. Also used in rheumatism and itch.
<i>Naringi crenulata</i>	Root purgative, sudorific, used for the cure of colic and cordialgia. Dried fruit antidote to various poisons, tonic: diminishes intestinal fermentation, resist the contagion of small-pox, malignant and persistent fevers. Leaves remedy for epilepsy.
<i>Olea dioica</i>	Bark febrifuge.
<i>Ophiorrhiza mungos</i>	Root bitter, tonic, considered to be a remedy, against the bites of venomous snakes and mad dogs.
<i>Ormocarpum cochinchinensis</i>	Root tonic, stimulant, used in paralysis and lumbago.
<i>Paspalum scrobiculatum</i>	Plant used in scorpion sting. Occasionally develops narcotic properties.
<i>Pennisetum typhoides</i>	Plant tonic, useful in diseases of heart; appetizer
<i>Persea macrantha</i>	Bark used in consumption, asthma and rheumatism. Leaves applied to ulcers.
<i>Phyllanthus emblica</i>	Fruit acrid, cooling refrigerative, diuretic and laxative, dried fruit useful in haemorrhage, diarrhoea and dysentery. In combination with iron used for anaemia, jaundice and dyspepsia. Fermented liquor from the fruit used in jaundice, dyspepsia and coughs. Rich in vitamin C. Used in the treatment of scurvy.
<i>Phyllanthus urinaria</i>	Plant used as diuretic in dropsical affections, also in gonorrhoea and other genito-urinary troubles, fish poison. Root given to sleepless children.
<i>Phyllanthus virgatus</i>	Fresh leaves bruised and mixed with butter milk used as a wash for itch in children. Root used as external application

	for mammary abscess. Fresh leaves, flowers and fruits with cumin seeds and sugar made into an electuary used for the cure of gonorrhoea.
Pinanga dicksonii	Fruit used as a substitute for betel nut.
Piper betle	Leaf aromatic, carminative, stimulant, in snake bite. Essential oil from leaves used in respiratory catarrhs and as antiseptic. Juice of leaves dropped into the eyes in painful affections and in night blindness; also used to relieve cerebral congestion and satyriasis and to allay thirst. Fruit employed with honey as a remedy for cough.
Piper longum	Decoction of immature fruit and root used in chronic bronchitis cough and cold. Root and Fruit antidote to snake bite and scorpion sting.
Plantago major	Leaf juice is used as an eye wash in ophthalmia and is applied to bruises. Leaves and roots are recommended against fever, seeds are useful remedy for dysentery.
Polycarpha corymbosa	Herb administered both internally and externally as remedy for venomous bites from reptiles. Pounded leaves used cold or warm as poultice over boils and inflammatory swellings; used for bites from animals and given with molasses in form of a pill in jaundice.
Polygonum chinense	Plant tonic, vulnerary and antiscorbutic.
Pouzolzia zeylanica	Plant used in syphilis, gonorrhoea and snake poison.
Pteridium aquilinum	Rhizome astringent, anthelmintic. Decoction of rhizomes and fronds given in chronic disorders arising from obstructions of the viscera and spleen.
Pterocarpus marsupium	Gum a good astringent, in diarrhoea, used for toothache. Bruised leaves useful in external applications to boils, sores and skin diseases.
Radermachera xylocarpa	Oil from wood used in cutaneous affections.
Rauvolfia serpentina	Root hypnotic, sedative specific for insanity, reduces blood pressure, remedy in painful affections of the bowel in decoctions employed in labours to increase uterine contractions. Juice of leaves used for removal of opacities of the cornea of eyes.
Remusatia vivipara	Root made into an ointment with turmeric used as remedy for itch. Juice with cows urine considered alexiphomic.
Rhinacanthus nasutus	Root leaf and seed useful remedy for ringworm and other skin diseases. Roots boiled in milk used as aphrodisiac, antidote to snake-bite.
Rhododendron arboreum	Young leaves poisonous applied on fore head for headache.
Rubia cordifolia	Root and fruit in paralysis and ulcers, skin diseases. Root tonic, alterative. Stem in Cobra bite and scorpion sting. Leaves cure biliousness. Fruit cures diseases the spleen.
Rungia pectinata	Juice of leaves cooling given to children suffering from small-pox. Roots febrifuge. Leaves bruised and applied to contusions to relieve pain and diminish swellings.
Sapindus trifoliatus	Fruit tonic alexipharmic, given internally as expectorant emetic, purgative and nauseant; as an emetic used in epilepsy, asthma, hysteria and hemicrania, externally it is detergent, used as fish poison.

<i>Sarcandra chloranthoides</i>	Plant stimulant.
<i>Sarcostigma kleinii</i>	Oil used in the treatment of rheumatism.
<i>Sauropus quadrangularis</i>	Dried leaves smoked in tonsillitis.
<i>Schleichera oleosa</i>	Bark astringent, rubbed up with oil used as a cure for itch. Powdered seeds applied to ulcers of animals. Oils of the seeds used for the cure of itch and ache; an efficient and stimulating agent for the scalp, growth of hair.
<i>Sebastiania chamaelea</i>	Juice of the plant in wine used as astringent. Plant in form of a ghrita considered tonic and is applied to the head in vertigo.
<i>Sida rhombifolia</i>	Leaves pounded and applied on swellings. Stem mucilagenous, used as demulcent and emollient, both internally and externally. Root considered valuable in rheumatism.
<i>Smilax zeylanica</i>	Roots used as a substitute for sarsaparilla (<i>Hemidesmus indicus</i>) in the treatment of venereal diseases. Applied for rheumatism and pains in the lower extremities, used in bloodless dysentery.
<i>Solanum torvum</i>	Fruit is good for the enlargement of spleen.
<i>Sopubia delphinifolia</i>	Juice of the plant astringent, applied to the feet to heal sores caused by exposure to moisture.
<i>Spilanthes calva</i>	Flowers are used to relieve tooth ache, powerful mosquito larvicide. Seeds are chewed to produce salivation when the mouth is dry.
<i>Stephania japonica</i>	Root bitter, astringent, used in fever, diarrhoea, dyspepsia and urinary diseases.
<i>Sterculia urens</i>	Gum a substitute for tragacanth used in throat infections. Leaves and tender branches used in pleuro-pneumonia in cattle.
<i>Stereospermum colais</i>	Root, leaves and flowers used in decoction as a febrifuge. Juice of leaves mixed with lime juice used in maniacal cases.
<i>Streblus asper</i>	Decoction of bark and powdered roots given for fever. Root in syphilis, antidote to snake-bite.
<i>Striga angustifolia</i>	Plant improves appetite.
<i>Strychnos nux-vomica</i>	Root bark ground up into a fine paste with lime juice and made into pills which are said to be effective in cholera. Wood used in stomach diseases. Seed is poisonous. Leaves applied as poultice to sloughing wounds and ulcers.
<i>Swertia corymbosa</i>	Used as a substitute for <i>S. Chirata</i> . Plant bitter, tonic, stomachic, febrifuge, laxative.
<i>Symplocos cochinchinensis</i>	Bark is used against menorrhagia, bowel complaints, eye diseases and ulcers. A decoction of the bark is used as a gargle for giving firmness to spongy and bleeding gums.
<i>Symplocos racemosa</i>	Bark cooling astringent, tonic. Bark used in eye diseases, bowel complaints, as a gargle for giving firmness to spongy and bleeding gums.
<i>Synedrella nudiflora</i>	Boiled leaves used as laxative.
<i>Tabernaemontana heyneana</i>	Wood refrigerant. Milky juice used for disease of eye. Root Acrid, bitter, used as local anodyne and chewed for relief of toothache.

<i>Terminalia crenulata</i>	Decoction of bark is taken against diarrhoea and applied locally to ulcers.
<i>Tcrampus labialis</i>	The plant is used in the treatment of paralysis, rheumatism, catarrhs, haemoptysis, tuberculosis. bronchitis and burning sensation.
<i>Terminalia bellirica</i>	Drupe and kemal in cough, eye diseases, dropsy, piles, diarrhoea, leprosy and fever. Fruit tonic, laxative, antipyretic, in piles, dropsy. Bark cardio tonic.
<i>Terminalia paniculata</i>	Jucie of fresh flowers rubbed with the root of 'Cocculus villosus' used as remedy in cholera and opium poisoning. Bark diuretic and cardiotonic.
<i>Tetrameles nudiflora</i>	Decoction of bark is used against rheumatism, odema and ascites.
<i>Themedatriandra</i>	Plant, said to be used medicinally in China; yields hydrocyanic acid.
<i>Thespesia lampas</i>	Fruits and roots are used in the treatment of gonorrhoea and syphilis.
<i>Thottea siliquosa</i>	A preparation of the plant is said to be beneficial for carbuncles and in verterate ulcers. Roots are used in the treatment of cholera, diarrhoea and dysentery.
<i>Toddalia asiatica</i>	Root bark bitter, aromatic. tonic stimulant, antiperidic, given in infusion in constitutional debility and in convalescence after febrile diseases.
<i>Trichilia connaroides</i>	A decoction of leaves is taken against cholera.
<i>Tinospora sinensis</i>	Plant tonic. Fresh leaves and stems used in chronic rheumatism.
<i>Tragia involucrata</i>	Root diaphoretic, alterative for pains in legs and arms. Infusion given in ardent fever and in itching of the skin.
<i>Trema orientalis</i>	Plant used in epilepsy.
<i>Tylophora indica</i>	Root and dried leaves in rheumatism, cures bowel complaints.
<i>Uraria hamosa</i>	Plant is a febrifuge
<i>Urena lobata</i>	Root diuretic.
<i>Valeriana beddomei</i>	The drug 'Indian Valerin' is extracted from the roots.
<i>Valeriana hookeriana</i>	The drug 'Indian Valerin' is extracted from the roots. External remedy for rheumatism.
<i>Vateria indica</i>	Fattyoil from fruit used as a localapplication in chronic rheumatism.
<i>Vepris bilocularis</i>	Wood boiled in oil used in eye and ear diseases, rheumatism and asthma. Decoction of root given in biliousness.
<i>Vemonia cinerea</i>	Plant used as remedy for spasm of bladder and strangury. Juice of plant given in piles. Root for dropsy. Flowers for conjunctivitis. Seeds as anthelmintic, alexipharmac.
<i>Vigna trilobata</i>	Leaf is used to treat eye diseases and a decoction is administered in irregular fever.
<i>Wrightia tinctoria</i>	Bark and seeds in dysentery, dried and rubbed over the body in dropsy, astringent, febrifuge. Bark tonic; Seeds aphrodisiac.
<i>Xeromphis uliginosa</i>	Fruits and roots are used as a remedy in dysentery and diarrhoea.

<i>Xylia xylocarpa</i>	Decoction of the bark used in worms, leprosy, vomiting diarrhoea, gonorrhoea and ulcers Oil from seeds given in rheumatism, piles and leprosy.
<i>Ziziphus oenoplia</i>	Decoction of root bark used to heal fresh wounds Fruit as an ingredient of stomach ache pills.
<i>Ziziphus rugosa</i>	Flowers with equal quantity of the petioles of the betel leaf and half as much lime given in 4 grain pills twice a day for