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# DIVERSITY AND UTILIZATION OF ETHNOMEDICINAL PLANTS IN THE SELECTED SACRED GROVES OF SOUTHERN DISTRICTS OF TAMIL NADU

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## *ABSTRACT:*

Periodic studies were conducted in four selected sacred groves of southern districts of Tamil Nadu in the year 2010 – 2011 for enumeration of ethnomedicinal plants. The investigations carried out from the elderly people residing in the vicinity of the sacred groves and also from traditional healers called '*Vaidhyas*'. The study revealed therapeutic applications of 120 plant species contributed the maximum having trees 40% while herbs recorded 30% of the total medicinal plants. These plants are used for a wide range of common ailments like skin diseases, ulcer, rheumatism, respiratory diseases, indigestion, etc. Majority of the preparations are taken orally in the form of juice extracted from the freshly collected plant parts. Leaves, stem bark and roots are the major plant parts used for the preparation of medicines. The study describes details of botanical identity, family, vernacular name, parts of the plant used, mode of application, therapeutic properties, diversity status and use value of each ethnomedicinal species.

**KEY WORD:** *Tamil Nadu, Sacred groves, Ethnomedicinal plants, Diversity, Utilization, Conservation.*

## *INTRODUCTION:*

Sacred groves are the repositories of rare endemic, threatened species and are the remnants of the primary forest left untouched by the local inhabitants. They are protected even to date due to the cultural and religious beliefs and taboos along with the deities that reside in them. As a result of this, sacred groves are still conserved and contain a diverse gene pool of ethno botanically important species. The sacred groves found in different regions of India possess rich diversity of medicinal plants and provide suitable habitat for their sustainable, natural regeneration[1-3]. Protection of a large number of medicinal plants in sacred forests of different parts of India is some of the well documented by earlier studies[4-6]. It is also observed

that more than 35,000 plant species are being used around the world for medicinal purposes[7]. Around 25,000 formulations in modern allopathic system of medicine are derived from those plant species which are being used as folk medicines throughout the world since ages. Only 15% of pharmaceutical drugs are consumed in developing countries and relatively more affluent people take a large proportion of it[8].

In Tamil Nadu, sacred groves are variously known as Koil kadukal, Iyarkkai kovilkal, Kavu, kovilvanam, kovil nanthavanam, thabovanam, *viz*., these are refugia for many medicinally potential, rare, endemic, and threatened plants[9]. About 60% plants present in these groves are medicinal, of which 80% serve as folk medicines. These sacred groves can serve as the conservation pockets of local gene pool biodiversity in future[10]. Each and every village has a sacred grove with its unique features, legends, myths and folklores along with the rural deities[11]. A few studies reported the conservation of medicinal plants through sacred forests by ethnic tribals of Virudhunagar district[12]. Ethno botanically the southern districts of Tamil Nadu remain underexplored and meagre studies have been reported on the ethnomedicinal uses of plant diversity found in the sacred groves. A holistic understanding of the current status, structure and function of sacred groves is highly essential for formulating strategies for their conservation. Therefore the present study is an attempt to document and analyse the diversity and utilization of ethnomedicinal plants occurring in the selected sacred groves of southern districts of Tamil Nadu.

## *STUDY AREA:*

Three well preserved and one moderately disturbed grove in plains of southern Tamil Nadu was selected for the study after several personal visits to more than fifty groves during the year 2010 - 2011. The groves investigated namely; Shenbagathoppu – Pechiamman grove (Virudhunagar district, $9^0$ 35’ and $9^0$ 50’N and $77^0$ 57’ and $78^0$ 50’ E), Veeravanam – Vaiyakkaruppu grove, Kothari - cholaivalartha Ayyanar grove (Sivagangai district, $9^0$ 35’ and $9^0$ 50’N and $77^0$ 57’ and $78^0$ 50’ E), and Thiruvettai Ayyanar gove (Thirunelveli district, $8^0$ 9’ and $9^0$ 43’ N and $77^0$ 12’ and $78^0$ 23’ E) (Fig. 1).

## *METHODOLOGY:*

**Data collection**:

Medico botanical information’s were obtained through several informal interviews with local herbal practitioners (*vaidhyas*) and elderly people inhabiting nearby villages of the sacred groves. Information regarding medicinal properties, herbal preparations, useful parts and knowledge about their utilisation were gathered from persons having familiarity with medicinal herbs. All the medicinal plants and in general botanical specimens were collected and identified botanically with help of local floras[13,14]. The medicinal uses of plant species were cross checked through the literature available on various sources. Voucher specimens were prepared in the form of herbarium and deposited in the Department of Botany, The Madura College, Madurai, Tamil Nadu.

**Data analysis**:

Diversity status of the medicinal plants were analysed with IUCN guide lines (version 3.1) and the listed medicinal species compared the distribution pattern with available literature[15]. Data were collected using a combination of semi-scheduled questionnaires, focus informal discussions with key informant interviews. A total of 280 respondents from all the four sacred groves were chosen for survey the medicinal plants. It is the purpose for which put sample size in the analysis, N = 280. The use value index (UVI) were calculated in order to evaluate the cultural significance of commonly consumed plant species by local communities with help of modified method of Cultural Food Significance Indices (CFSI)[16]. It is calculated as UVI=QI x AI x FUI x PUI x MFUI x $10^{-2}$. The formula takes in account five indices which express the; frequency of quotation (QI), availability index (AI), frequency of utilization (FUI), plant parts use (PUI), and multifunctional food use (MFUI). The quotation index (QI) expresses the number of all the positive response given by the informants about a particular plant species while listing the plants that they gather and consume. AI expresses the availability of the species corrected by the factor that consider if the use of plant is ubiquitous or localized within the study area. FUI represents the frequency of utilization of each plant as stated by informants. PUI expresses the multiple uses of diverse plant parts of the same plant. It takes into account whether multiple morphological parts are collected and consumed instead of single part. The higher values attributed in cases of well-defined medicinal properties ascribed to the ingested plants.

## *RESULTS:*

A typical tropical climate with dissymmetric rainfall pattern prevails in the study area provided the occurrence of rich diversity of medicinal plants. The ethnobotanical survey recorded 120 species of medicinal plants (Table 1), represented 102 genera and 55 families. The family Fabaceae recorded the highest (8) species contribution followed by Apocynaceae, Lamiaceae and Moraceae (6 species each), Caesalpiniaceae (5 species), Acanthaceae, Asteraceae, Rubiaceae and Solanaceae (4 species each), Combretaceae, Euphorbiaceae, Rhamnaceae and Verbenaceae (3 species each). Ten families were represented by 2 species and 29 families were represented by single species.

Leaves are the most widely used medicinal part, accounting for 36.6% of the reported medicinal plant uses, followed by stem bark and root (17.5%), seeds (13.3%), fruits (12.5%), whole plant (8.3%) and flowers (1.6%). Some other plant parts such as tuber, rhizome, flower bud, resin and latex are also used occasionally which account for only 3% of the total uses of the plant parts. A majority of remedies are prepared in the form of juice or extract from freshly collected plant parts of single species or mixing with other ingredients according to needs by crushing or squeezing. The widely used herbal preparation is decoction and infusion both hot and cold. Two or three plant parts are mixed in proper dosages and

combinations depending upon their needs and ailments. Most of the leaf pastes are used for external applications to treat viral and fungal infections. Topical therapies in the form of leaf poultices are used to relieve local pains and swellings. For a few remedies, medicines are prepared after drying or powdering the medicinal parts. Most of the remedies taken orally, account for 62% of medicinal uses, followed by 38% as external applications, 5% as poultice, 3% as chewing materials and 2% in other forms like inhalation, steam bathing etc.

In Veeravanam, Shenbagathoppu and Kothari cholai, the canopy is dense with very few narrow openings. The vegetation is a mixture of tall and medium sized semi-evergreen trees with understory shrubs and woody climbers, and dense ground vegetation. The forest patch remains undisturbed, but for the narrow gaps here and there by human visits dwelling for their forest resources. In Veeravanam, more than 50 trees were identified and most of them are medicinal. In Thiruvettai Ayyanar grove, the vegetation was moderately disturbed with the presence of wide gaps due to frequent anthropogenic interactions. Notably encroachment by farmers and woodgatherers has greatly reduced the vegetation cover in this grove. Veeravanam preserves potential medicinal species like *Calamus rotang, Hemidesmus indicus, Dalbergia lanceolaria, Manilkara hexandra, Memycelon umbellatum, Gloriosa superba* and a pteridophyte *Selaginella* sp. which possess great medicinal and economic significance. Kothari cholai grove conserves 5 species of *Ficus*, 4 species of *Terminalia*, *Cleistanthes collinus*, *Ixora arborea* and *Atalantia monophylla*. Thiruvettai Ayyanar grove preserves *Santalum album* and *Tinospora cordifolia.*

According to IUCN red list analysis, the present document shows many ethnomedicinal plants are under various degrees of threatening categories (Table 1). The population trend and survival of these species are depending on the rate of utilization and conservation. Ethnomeidicinal plant species falls under threatening category are *Aegle marmelos, Asparagus racemosus, Calamus rotung, Centella asiatica, Curucligo orchioides, Gymnema sylvestre, Mitragyna parvifolia, Mucuna pruriens, Phyllanthus emblica, Sapindus emarginatus* and *Strychnos potatorum*. Three plants are belonging to endangered category such as *Gardenia gummifera, Gloriosa superba* and *Santalum album*. Most of the medicinal species (98) are very common and are belonging to least concern (LC) category. Even though some plant species are extracted continuously from the natural habitats before the onset of fruits and tuberous or rooted medicinal parts that are leading the fast diversity depletion. For example *Andrographis paniculata* is invariably collected for medicinal purposes in all cultural societies only from the natural habitat. The plant species fall under near threatened (NT) category though its distribution is very wide.

Use value index (UVI) reflects the potential medicinal use of commonly consumed plants by local user group (Table 1). The values varied between 682.3 and 10.5 based on the cultural food significance index (CFSI) values. The present document were classified into six groups: species with very high significance (UVI ≥400), with high significance (UVI ranging from 250 to 400), moderate significance (ranging from

100 to 250), low significance (from 50 to 100), very low significance (from 20 to 50) and negligible significance (UVI <20). The group of ethnomedicinal plants with very high significance of UVI consisted of *Andrographis paniculata, Azadirachta indica, Centella asiatica, Hemidesmus indicus, Ocimum teuiflorum, Phyllanthus amarus, P. Emblica*, and *Solanum nigrum*. They posses high UVI values based on the repeated ethnobotanical claims by local users. The next group of the plants shows the high significance of UVI values included *Aegle marmelos, Asparagus racemosus, Curculigo orchioides, Evolvulus alsinoides, Plumbago zeylanica, Ricinus communis, Solanum trilobatum, Strychnos potatorum, Terminalia bellerica* and *Vitex negundo*. The group of medicinal plants used with moderate significance reported in the study that are *Acalypha indica, Achyranthes aspera, Aristolochia indica, Carissa spinarum, Cleistanthus collinus, Coccinea grandis, Eclipta prostrata, Ficus religiosa, Glycosmis pentaphylla, Justicia adhatoda, Manilkara hexandra, Mitragyna parvifolia, Ocimum basilicum, Pergularia daemia, Pongamia pinnata, Santalum album* and *Solanum surettense*. The ethnomedicinal plant group fall under negligible significance based on the UVI in the study that are *Adenanthera pavoniana, Barleria strigosa, Cadaba fruticosa, Combretum albidum, cordial oblique, Dalbergia lanceolaria, Ipomoea obscura, Launea sarmentosa* and *Ziziphus xylopyros*

## *DISCUSSION:*

The application of ethnobotany in associating people's customs with plant conservation and utilisation is important in the study of culture, environment and sustainable development today. It is an alternative approach for studying the sustainable use of natural resources and biodiversity conservation in the biocultural and diverse environmental regions[17,18]. Traditional medicine and use of edible plants for food differ from region to region and culture to culture[26.] Natural resource management practices are deeply rooted in cultural traditions. Shared responsibility and a sense of ownership have resulted in promoting collective conservation. The philosophy and principle behind paying respect and gratitude to the sacred forests enrich and sustain their protection. These multiple perspectives clearly indicate that these sacred forest patches deserve the status of a nation's heritage sites. Many ethnomedicinal plants still have the privilege of natural regeneration due to their existence in the undisturbed sacred groves and hence their total conservation and protection are ensured. Mishandling and over exploitation of several species will lead to the extinction of rare medicinal plants. Recognising and acknowledging the value of culturally protected natural forest patches is an important factor in developing strategies for protection and management in future.

In the present study, examinations ethnomedicinal uses of plants from selected sacred groves reveal that 90% of the species in the groves are used as medicine for the treatment of various ailments. This is in accordance with the previous studies, 70 and 79%[19]. However Sukumaran *et al.* have reported about 60%

medicinal plants in the sacred groves of Kanyakumari district, Tamil Nadu[10]. As encountered in previous studies, the most widely used plant parts are leaves and the most common method of preparing medicine is decoction.

The study was also revealed that the sacred groves of southern districts of Tamil Nadu have preserved a large number of potentially medicinal and economically important plant species. It is highly essential to maintain a sustainable utilisation of these plants. Except Thiruvettai Ayyanar grove, which is slightly disturbed, in all other three well preserved groves, human interferences are strictly prohibited due to sociocultural belief, religious practices and associated taboos which significantly favour the growth, survival and regeneration of several medicinal plants.

Diversity status and use value index are perfectly coincide that indicates the potential medicinal species are consumed highly by the local users. A*egle marmelos, Curculigo orchioides, Phyllanthus emblica, Sapindus emarginatus* and *Strychnos potatorum* have highly significant UVI and also all these are under threatening category. It reflects the overexploitation and continuous utilization of the threatening species. The present situation continues in the future, many of these plant species may deplete from the natural vegetation. In present investigation encountered that *Gardenia gummifera* is only in Vaiyakkaruppu grove in Sivaganga district. This species is having high use value index and also in endangered category. It was observed that the medicinal plants used by the herbal healers (*Vaidhyas*) for the preparation of medicine were collected from the wild, though a few species were cultivated in their home garden for immediate requirements. Mass or continuous harvesting of plant parts from the wild threat to the existence of plants and become vulnerable to extinction. It has been observed that *Aegle marmelos, Andrographis paniculata, Aristolochia indica, Gloriosa superba, Terminalia bellerica,* and *Strychnos potatorum* were found to be abundantly in the sacred groves and conserved. This signifies the role of sacred groves in the conservation of biodiversity and particularly to the medicinal plants.

Major pharmaceutical industries depend on the plant products for the preparation of medicines. Currently 80 % of the world population depend on plant derived medicines[20] for primary healthcare for human alleviation because it has no side effects and safe. *Cynodon dactylon, Acalypha indica, Aegle marmelos and Anisomeles malabarica* are rarely used in other parts of the country and these medicinal plants are commonly used in the present investigation[21]. Therapeutic uses of many medicinal plants reported from four selected sacred groves in the present study resemble previous reports. People from rural areas have been using herbal remedies since ancient time without knowing their active chemical constituents[22]. Local people conserve the forest patches through a strict code of conduct on religious beliefs for several generations without any local administration and clearly defined management policy will make any minimal resource extraction.

## CONCLUSION:

There is an urgent need to preserve and acknowledge the efforts and practices of the local people inhabiting near the unique patches of sacred forests and conserving local biodiversity. Ethno botanically these areas remain unexplored and no comprehensive account on local traditional knowledge is available. To identify and explore the usage of valuable diagnostic medicinal plants, an ethnofloristic survey was conducted. Ethno floristic wealth assessment along with curative properties would provide a strong base for reshaping and reorienting the policies and strategies for conservation of medicinal plant diversity of the selected sacred groves in Southern Districts of Tamil Nadu.

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**Fig. 1. Location map of the study area**

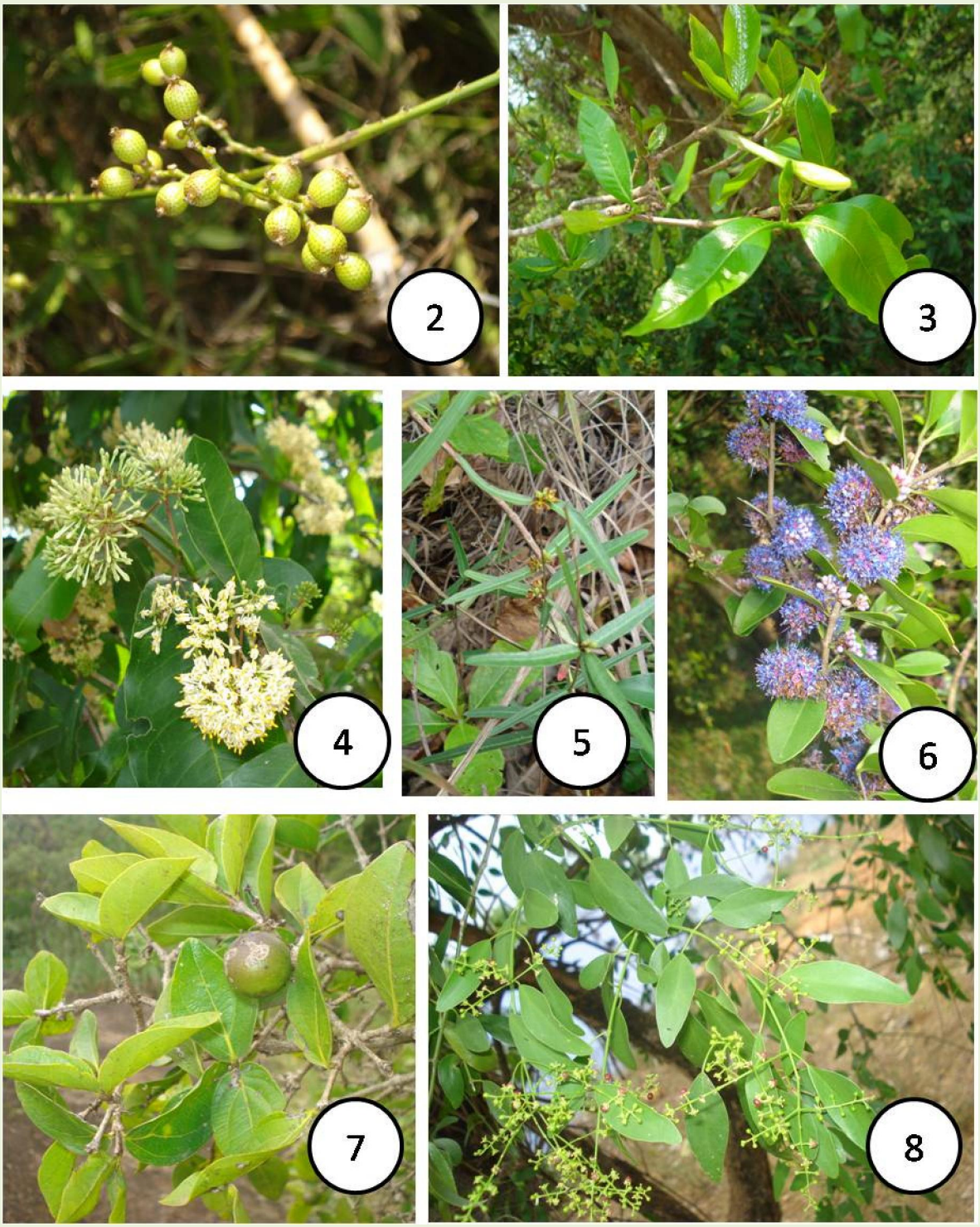


**Fig. 2.** ***Calamus rotung*** **L. 3.** ***Gardenia gummifera*** **L.f. 4.** ***Ixora arborea*** **Sm. 5.** ***Hemidesmus indicus*** **Ait. 6.** ***Memecylon umbellatum*** **Burm.f. 7.** ***Strychnos potatorum*** **L.f. 8.** ***Salvadora persica*** **L.**

**Table 1. Details of ethnomedicinal plants obtained from four selected sacred groves and their curative properties.**

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 1. | *Abrus precatorius* L. | Kundumani | Fabaceae | Climbing Shrub | Seeds, roots | LC (214.2) | Root extracts used to expel intestinal worms. Seed powder externally applied to cure tumours. |
| 2. | *Acalypha indica* L. | Kuppai meni | Euphorbiaceae | Herb | Whole plant | LC (312.6) | Whole plant used for dysentery, diarrhoea, cholera and scabies. |
| 3. | *Achyranthes aspera* L. | Nayurivi | Amaranthaceae | Herb | Roots, leaves | LC (288.0) | Decoction is administered orally to treat inflammation. |
| 4. | *Adenanthera pavonina* L. | Rata Chandan | Fabaceae | Tree | Seeds | LC (18.5) | Seeds infusion is used for cough, fever and to induce abortion. |
| 5. | *Aegeratum conizoides* L. | Kongi | Asteraceae | Herb | Leaves | LC (38.4) | Extract used as an antidote for snake - bite and to treat injuries; prevent hair fall. |
| 6. | *Aegle marmelos* Correa | Vilvam, Koovilam | Rutaceae | Tree | Leaves, roots | T (464.2) | Leaves and root extracts given for chronic dysentery, diarrhoea, intermittent fever and gastric troubles. Leaf poultice used to cure opthalmia. Tender leaves used to cure veneral diseases. Dried leaf powder used to cure bed sores. Leaf paste used to cure skin diseases. |
| 7. | *Ailanthus excelsa* Roxb. | Perumaram | Simaroubaceae | Tree | resin | LC (28.5) | Resin obtained from the bark used to treat asthma, disorders in menstrual cycle and liver. |
| 8. | *Alangium salvifolium* (L.) Wang. | Alingil | Alangiaceae | Tree | Stem bark, fruits | LC (250.3) | Bark and fruits given for rheumatism, snake bites, urinary infections and anti-inflammatory. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 9. | *Albizia procera* (Roxb.) Benth. | Kondavagai | Mimosaceae | Tree | Stem bark | LC (54.0) | Bark extract used to treat stomach disorders, rheumatism and haemorrhage. |
| 10. | *Alibizia lebbeck* (L.) Willd. | Nattu Vagai | Mimosaceae | Tree | Stem bark | LC (82.8) | Bark extract used to cure leprosy, eye irritation, bronchitis, paralysis, helminthiasis and piles. |
| 11. | *Aloe vera* (L.) Burm.f. | Sortukartalai | Aloeaceae | Herb | Leaves | LC (528.0) | Leaf gel used to cure ulcers, burns, tone skin, osteo problems, cancer, and constipation. |
| 12. | *Andrographis paniculata* Nees | Nilavembu | Acanthaceae | Herb | Whole plant | NT (614.2) | Whole plant extract or infusion given for dysentery, worm infections, viral fever, liver ailments and an antidote. |
| 13. | *Anisomeles malabarica* (L.) R.Br. | Aruca chedi | Lamiaceae | Herb | Leaves | LC (112.0) | Extract is given orally to cute diarrhea and dysentery. |
| 14. | *Aristolochia indica* L. | Aduthinnappalai, Adagam, Eswaraooli | Aristolochiaceae | Climber | Leaves | LC (210.1) | Leaves used as febrifuge, stimulant, tonica and to cure gastroenteric disorders. |
| 15. | *Asparagus racemosus* Willd. | Sathavaeri, Ammayikizhangu | Asparagaceae | Climber | Root tubers | T (340.2) | Tubers eaten for induce diuretic. Tuber extracts administered orally for kidney stones. |
| 16. | *Atalantia monophylla* (L.) Correa | Kattu elumichai | Rutaceae | Shrub | Fruits | LC (42.6) | Essence used to cure skin diseases, chronic rheumatism and paralysis. |
| 17. | *Azadirachta indica* A. Juss. | Nattu vembu | Meliaceae | Tree | leaves | LC (624.2) | Leaf decoction used to cure all viral fevers and to regulate menstrual cycles. Leaf paste externally applied on boils of viral infections, fungal patches and bacterial infections. Orally administered to kill and expel intestinal worms. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 18. | *Bambusa arundinacea* (Retz.) Willd. | Moongil | Poaceae | Tree | Leaves, seeds | LC (25.4) | Leaf paste is given for cough. Seed paste orally given for dysentery, diarrhoea and stomach problems. |
| 19. | *Barleria strigosa* Willd. | Nilambaram | Acanthaceae | Herb | Roots | LC (15.8) | Root extracts considered as anthelmintic and aphrodisiac, antidote for snake bite. |
| 20. | *Bauhinia racemosa* Lam. | Aathi, Koolaathi | Caesalpiniaceae | Tree | Stem bark | LC (45.1) | Extract used for poisonous bites, leucorrhoea, dysentery, diarrhoea and piles. |
| 21. | *Butea monosperma* (Lam.) Taubert. | Palasa, Purasu | Fabaceae | Tree | Leaves, seeds | LC (38.0) | Leaves paste applied externally to treat rheumatic pain. Seeds considered as sexual stimulant. |
| 22. | *Cadaba fruiticosa* (L.) Druce | Katta kattai | Capparaceae | Shrub | Leaves | LC (12.5) | Extract and infusion is taken for carminative, relieves stomach disorders and common fever. |
| 23. | *Cadaba trifoliata* (Roxb.) Wight & Arn. | Viluthi | Capparaceae | Shrub | Roots | LC (28.4) | Root extract is given as laxative. |
| 24. | *Calamus rotung* L. | Perambu | Arecaceae | Climbing shrub | Seeds | T (78.4) | Crushed seeds with water applied over the cut wounds and to cure psoriasis. |
| 25. | *Calophyllum inophyllum* L. | Punnai | Calophyllaceae | Tree | Stem bark, leaves, flower | LC (104.6) | Decoction of the plant parts used to cure typhoid fever. Seed oil applied externally to cure scabies, infected spots, leprosy and gonorrhoea. |
| 26. | *Capparis zeylanica* L. | Aathandai | Capparaceae | Climber | Root | LC (58.9) | Root extract administered to external tumors and to cure paralysis. |
| 27. | *Carissa spinarum* L. | Kazha | Apocynaceae | Shrub | Root, fruits, flowers | LC (260.0) | Root and fruits considered appetizer and digestive. Flower extract used as eye drops. |
| 28. | *Cassia fistula* L. | Sarakkonrai | Caesalpiniaceae | Tree | Stem bark | LC (258.5) | Barks, leaves and flowers used to cure fungal infections, urinary tract infections and piles. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 29. | *Cassia tora* L. | Nilakkonnai Thakarai | Caesalpiniaeae | Herb | Leaves, seeds | LC (105.3) | Paste applied externally to cure skin diseases like ring worm, itches and psoriasis. |
| 30. | *Ceiba pentandra* (L.) Gaertn. | Ilavu | Bombacaceae | Tree | Stem bark, seeds, flowers | LC (24.1) | Extracts from the bark, seeds and young flowers used to treat gonorrhoea and skin diseases. |
| 31. | *Centella asiatica* (L.) Urban | Vallarai | Apiaceae | Herb | Leaves | T (630.5) | Leaf extract and paste used to treat ulcers, Jaundice, dysentery and to improve memory. |
| 32. | *Cissampelos pareira* (L.) Forman | Appata | Menispermaceae | Shrub | Root | LC (39.4) | Root extract used to treat bronchitis. |
| 33. | *Cissus quadrangularis* L. | Pirandai | Vitaceae | Climber | Stem, leaves | LC (395.3) | Succulent stem and leaves considered as digestive, used for gas troubles and stomach problems. |
| 34. | *Cissus repens* Lam. | Pirandai | Vitaceae | Climber | stem | LC (48.2) | Stem juice cures nasobronchial diseases. |
| 35. | *Cleistanthus collinus* (Roxb.) Benth. & Hook. | Parashu, Oduvan | Euphorbiaceae | Tree | Leaves, fruits | LC (210.4) | Leaves and fruits in small doses as gastrointestinal irritant, poisonous and used to treat rheumatism. |
| 36. | *Clerodendrum inerme* (L.) Gaertn. | Peenari sangu | Verbenaceae | Shrub | Root | LC (118.0) | Extract is administered orally to treat rheumatism. |
| 37. | *Clerodendrum serratum* (L.) Moon | Angaravalli, Chiruthekku | Verbenaceae | Shrub | Root | LC (69.2) | Root extract is used as digestive. |
| 38. | *Clitoria ternatea* L. | Kakaraton | Fabaceae | Climber | Leaves, root, seeds | LC (118.1) | Leaves, roots and seed extracts act as diuretic, anthelmintic and to cure headache and leucorrhoea. |
| 39. | *Coccinea grandis* (L.f.) Voight. | Kovai | Cucurbitaceae | Climber | Leaves | LC (210.5) | Leaves and fruits used to treat liver, heart and stomach problems. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 40. | *Cochlospermum religiosum* (L.) Alston | Kargilavu | Cochlospermaceae | Tree | Seeds | LC (35.4) | Juice is taken internally for sedative. |
| 41. | *Combretum albidum* Roxb. | Vennangukodi | Combretaceae | Climber | Stem bark | LC (10.5) | Stem bark extract is used as demulcent. |
| 42. | *Commelina benghalensis* L. | Kana vazhai | Commelinaceae | Herb | Whole plant | LC (240.8) | Plant juice used to treat burns, leprosy, boils, wounds and itches. |
| 43. | *Commiphora caudata* (Wight & Arn.) Engl. | Kiluvai | Burseraceae | Tree | Resin | LC (83.6) | Resin obtained from stem considered as carminative. |
| 44. | *Cordia obliqua* Willd. | Virianpalam | Cordiaceae | Tree | Seeds | LC (14.9) | Kernal powder used to treat ringworms. |
| 45. | *Crataeva adansonii* DC. | Mavilingam | Capparaceae | Tree | Leaves, root | LC (84.7) | Leaf juice and bark powder used for hepatopathy, urinary tract infections, fever and gastric irritation. Root bark is laxative given for leucorrhoea, stomach ulcers. |
| 46. | *Curculigo orchioides* Gaertn. | Nilappanai | Hypoxidaceae | Herb | Rhizome | T (395.8) | Rhizome extract used to treat leucoderma and blood related diseases. |
| 47. | *Cynodon dactylon* (L.) Kuntze | Arukampullu | Poaceae | Herb | Whole plant | LC (210.4) | Plant juice cures piles diuretic, antiallergic and regulate menstrual cycle. |
| 48. | *Dalbergia lanceolaria* L.f. | Shisam Thodagatti | Fabaceae | Tree | Leaves | LC (18,6) | Extract used to treat eye and stomach problems, nausea, vomiting and skin diseases. |
| 49. | *Datura stramonium* L. | Umathai | Solanaceae | Herb | Leaves | LC (28.4) | Leaf juice used to treat burns and wounds. |
| 50. | *Delonix elata* (L.) Gamble | Vadhanarayanan | Caesalpiniaceae | Tree | Leaves | LC (42.5) | Leaf extract is given for muscle pain and body pain. |
| 51. | *Dioscorea bulbifera* L. | Siruvalli | Dioscoreaeae | Climber | Bulbils and tuber | LC (38.8) | Boiled Tubers and bulbils used to cure dysentery, ulcers and piles. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 52. | *Dodonaea viscosa* Jacq. | Virali | Sapindaceae | Shrub | Leaves | LC (95.2) | Leaf paste used for wound healing, hepatitis, haematuria, skin diseases, diarrhoea, diphtheria and itches. |
| 53. | *Eclipta prostrata* L. | Manjakarisalai | Asteraceae | Herb | Whole plant | LC (200.2) | Whole plant juice used for skin diseases, hair fall problems and urinary tract infections. |
| 54. | *Evolvulus alsinoides* L. | Vishnu kiranthai | Acanthaceae | Herb | Whole plant | LC (364.1) | Plant extract is considered as strong antidote for snake bite and scorpion sting. |
| 55. | *Ficus benghalensis* L. | Aalamaram | Moraceae | Tree | Stem bark | LC (263.9) | Decoction is taken for relieve frequent painful piles and exudation of puss. |
| 56. | *Ficus glomerata* Roxb. | Athimaram | Moraceae | Tree | Root | LC (183.5) | Root juice is taken to cure dysentery, diabetes, lung disorders and skin irritation. It consider laxative and aphrodisiac. |
| 57. | *Ficus hispida* L.f. | Peyathi | Moraceae | Tree | Stem bark | LC (83.1) | Bark juice is purgative and emetic, used to treat anaemia, jaundice, fever, ulcer, ring worms and dysentery. |
| 58. | *Ficus microcarpa* L.f. | Kal Icci | Moraceae | Tree | Aerila roots | LC (29.4) | Aerial root powder used to treat dental caries and odontalgia. |
| 59. | *Ficus religiosa* L. | Arasu | Moraceae | Tree | Stem bark | LC (205.8) | Bark powder used to treat scabies, pain, urinary tract infections, skin infections and throat infections. It is also used in the treatment of gonorrhoea, diarrhoea, dysentery, haemorrhoids. |
| 60. | *Flacourtia indica* (Burm.f.) Merr. | Sothaikazha | Flacourtiaceae | Tree | Root | LC (120.4) | Roots are sweet, refrigerant, depurative, alexipharmic and diuretic. Useful in poisonous bites, skin diseases, pruritus, strangury, nephropathy and psychopathy. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 61. | *Gardenia gummifera* L.f. | Kampilipisin | Rubiaceae | Tree | Resin | EN (110.4) | Resin is antispasmodic, expectorant, appetizer, carminative, digestive, anodyne, anthelmintic, cardiotonic and useful in neuropathy, cough, bronchitis, colic, constipation, odontalgia, foul ulcers, wounds, leprosy, intermittent fever, skin diseases, cardiac debility, splenomegaly and obestity. |
| 62. | *Gisekia pharnaceoides* L. | Manalikeerai | Aizoaceae | Herb | Whole plant | LC (212.4) | Leaves and roots used to cure cold, cough, psychological problems, anthelmintic. |
| 63. | *Glinus lotoides* L. | Siruseruppadai | Aizoaceae | Herb | Whole plant | LC (39.4) | Decoction is taken internally to cure scabies, syphilis, indigestion and stomach pain. |
| 64. | *Gloriosa suberba* L. | Kandhal | Liliaceae | Climber | Rhizome | EN (451.2) | Extract is said to be a poisonous, abortifacient and suicidal. |
| 65. | *Glossocardia bosvallea* (Burm.f.) Wedd. | Kaathukothamalli | Asteraceae | Herb | Whole plant | LC (62.1) | Past used to cure cut wounds and external tumors. |
| 66. | *Glycosmis pentaphylla* (Retz.) DC. | Kattuvizha | Rutaceae | Shrub | Root | LC (218.9) | Extract is administered orally to treat fever, skin troubles, cough, rheumatism and jaundice. |
| 67. | *Gymnema sylvestre* R.Br. | Sirukurinjan | Apocynaceae | Climber | Leaves | T (140.6) | Dried powder of the leaves used as antidiabetic. |
| 68. | *Hedyotis umbellata* (L.) Kuntze | Imbural | Rubiaceae | Herb | Whole plant | LC (97.2) | Decoction from whole plant arrest bleeding, cure cold and cough and improves bile secretion. |
| 69. | *Heliotropium indicum* L. | Thelkodukku | Boraginaceae | Herb | Leaves | LC (50.1) | Extract used to cure scabies, acne, antidote for scorpion sting. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 70. | *Hemidesmus indicus* (L.) Aiton | Nannari | Apocynaceae | Climber | Root | LC (620.5) | Infusion is taken to cure piles, dry cough, diabetes, scabies, indigestion, boils, jaundice, swellings and leprosy. |
| 71. | *Holoptelia integrifolia* (Roxb.) Planch. | Aavilpungu | Ulmaceae | Tree | Stem bark | LC (115.0) | Bark extract is taken to cure leucoderma, fever and rheumatism. |
| 72. | *Ichnocarpus frutescens* R.Br. | Paravelli | Apocynaceae | Climber | Leaves, root | LC (89.3) | Extract is taken internally for indigestion, stomach ulcer and constipation. |
| 73. | *Indigofera aspalathoides* L. | Sivanarvembu | Fabaceae | Herb | Root | LC (30.6) | Roots demulcent, refrigerant, cure tooth ache, psoriasis, skin infections and leucoderma. |
| 74. | *Ipomoea obscura* (L.) Ker Gwal. | Narunthali | Convolvulaceae | Climber | Leaves | LC (18.5) | Leaf juice is considered aphrodisiac. Cure ulcers, urinary tract infections and skin diseases; Improves sperm count and strengthen sperms. |
| 75. | *Ixora arborea* Sm. | Marapaavattai | Rubiaceae | Tree | Leaves | LC (62.4) | Decoction is diuretic, laxative and said to be strengthen sperms. |
| 76. | *Justicia adhatoda* L. | Adathodai | Acanthaceae | Shrub | Leaves | LC (273.9) | Extract and decoction used to treat cold, cough, fever, chronic bronchitis and haemorrhoids |
| 77. | *Launea sarmentosa* L.f. | Eluthanippoondu | Compositae | Herb | Leaves | LC (17.3) | Extract and juice used to treat diarrhoea, dysentery, scabies, boils and acne. |
| 78. | *Leucas aspera* L. | Thumbai | Lamiaceae | Herb | Leaves | LC (148.2) | Boiled leaf vapour inhale to cure head ache and migraine. Leaf juice is taken for scabies, antidote for scorpion sting, regulate menstrual cycle. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 79. | *Limonia acidissima* L. | Vizha | Rutaceae | Tree | Leaves | LC (112.8) | Extract used to cure cold, cough, fever, dryness, ulcers, burning sensation, dysentery and diarrhoea. |
| 80. | *Manilkara hexandra* (Roxb.) Dubard | Veeramaram | Sapotaceae | Tree | Leaves, latex | LC (264.9) | Extract and latex is used to cure septic wounds. Leaf extract is orally administered for tonic and immunoprotective agent. |
| 81. | *Memecylon umbellatum* Burm.f. | Kaya | Melastomataceae | Shrub | Leaves | LC (472.3) | Extract is externally applied for removal of wound scar. |
| 82. | *Mimusops elengi* L. | Mahilam | Sapotaceae | Tree | Flowers | LC (83.2) | Flowers yield aromatic oil. Flower powder relieves head ache and tonic. |
| 83. | *Mitragyna parvifolia* (Roxb.) Korth. | Kadambu | Rubiaceae | Tree | Stem bark | T (210.4) | Bark extract used as febrifuge, astringent and to improve general health. |
| 84. | *Mollugo cerviana* (L.) Ser. | Parpadagam | Molluginaceae | Herb | Whole plant | LC (79.2) | Whole plant extract is purgative, laxative, appetizer, cure fever, strengthen uterus. Root oil is applied on joint swellings. |
| 85. | *Mucuna pruriens* (L.) DC. | Punaikkali | Fabaceae | Climber | Seeds | T (218.6) | Boiled seeds consumed for nervine tonic and improves general health. |
| 86. | *Ocimum basilicum* L. | Thiruneertru pacchai | Lamiaceae | Herb | Leaves | LC (306.2) | Leaf juice cures acne and ear ache. Leaf powder and juice anthelmintic. |
| 87. | *Ocimum gratisissimum* L. | Elumichan thulasi | Lamiaceae | Herb | Leaves | LC (138.1) | Leaves chewed for get relief of cold and cough. |
| 88. | *Ocimum tenuiflorum* L. | Thulasi | Lamiaceae | Herb | Leaves | LC (528.4) | Leaf decoction cures cold, cough, catarrh. |
| 89. | *Pedalium murex* L. | Anainerungil | Pedaliaceae | Herb | Seeds, leaves | LC (294.6) | Powder is febrifuge. |
| 90. | *Pergularia daemia* (Forssk.) Chiov. | Velipparuthi | Asclepiadaceae | Climber | Leaves, root | LC (214.8) | Root extract is used for respiratory problems. |

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|---|---|---|---|---|---|---|---|
| 91. | *Phoenix sylvestris* (L.) Roxb. | Pereechai | Arecaceae | Tree | Fruits | LC (82.5) | Juice diuretic and aphrodisiac; taken to relieve cold and cough, and as liver tonic. |
| 92. | *Phyllanthus amarus* Schum. | Kilkainelli | Phyllanthaceae | Herb | Whole plant | LC (618.7) | Whole plant extract is used to cure fever, jaundice, kidney stones and skin diseases. |
| 93. | *Phyllanthus emblica* L. | Nelli | Phyllanthaceae | Tree | Fruits | T (682.3) | Fruits are refrigerant, diuretic, digestive, purgative, laxative, tonic, rejuvenator. Cure fever, digestive problems, piles, arrest bleeding, anaemia, vomiting. |
| 94. | *Plectranthus amboinicus* (Lour.) Spreng. | Vilamichu | Lamiaceae | Herb | Root | LC (113.8) | Root extract is refrigerant, control pitha, cure diabetes, eye irritation and hair fall. |
| 95. | *Plumbago zeylanica* L. | Chitramoolam | Plumbaginaceae | Herb | Root | LC (469.0) | Root extract and decoction is astringent, antidote and externally applied for all skin patches. It is considered to be a potential abortive agent. |
| 96. | *Polygala chinensis* L. | Siriyanangai | Polygalaceae | Herb | Root | LC (182.4) | Root extract is used to treat snake bite. |
| 97. | *Pongamia pinnata* (L.) Pierre | Pungum | Fabaceae | Tree | Stem bark | LC (258.1) | Bark juice tonic, pain reliever. Digestive and also cure scabies, skin infections, patches, whooping cough, bronchitis and leucorrhoea. |
| 98. | *Rhinacanthus nasutus* (L.) Kurz | Nagamalli | Acanthaceae | Shrub | Root | LC (93.8) | Root decoction used as antidote. |
| 99. | *Ricinus communis* L. | Amanakku | Euphorbiaceae | Shrub | Seed oil | LC (394.0) | Seed oil cure dryness. Purgative laxative and digestive. |
| 100. | *Salvadora persica* L. | Uga, Kunnimaram | Salvadoraceae | Tree | Stem bark | LC (180.4) | Bark extract is used for piles and skin infection. |

| No. | Botanical Name | Vernacular name (Tamil) | Family | Habit | Plant part(s) used | IUCN Diversity status (Use Value Index-UVI) | Curative Properties |
|---|---|---|---|---|---|---|---|
| 101. | *Santalum album* L. | Santhanamaram | Santalaceae | Tree | Hard wood | EN (249.0) | Heart wood oil diuretic. Cure venereal diseases, dysuria, leucorrhoea, protect skin. |
| 102. | *Sapindus emarginatus* Vahl | Manipungu, Poorthikkottai | Sapindaceae | Tree | Fruits | T (328.1) | Fruit juice applied on external swellings. Antidote for all insect bites and scorpion sting. |
| 103. | *Sesamum indicum* L. | Ellu | Pedaliaceae | Herb | Seeds | LC (340.50 | Seed oil used to cure all ulcers, eye pain, ear pain, scabies, and strengthen body. |
| 104. | *Sida cordifolia* L. | Sirtra mutti | Malvaceae | Herb | Leaves | LC (40.6) | Whole plant extract cures dryness, astringent, digestive, tonic and diuretic. Used for urinary infections, leucorrhoea, paralysis and bone fever. |
| 105. | *Solamum trilobatum* L. | Thoothuvalai | Solanaceae | Climber | Leaves, fruits | LC (403.5) | Leaf extract and decoction is taken orally to cure head ache, cough, stomach pain due to indigestion, and constipation. Ripe fruits given for bronchitis and asthma. |
| 106. | *Solanum nigrum* L. | Manathakkali | Solanaceae | Herb | Leaves, fruits | LC (508.6) | Leaves and fruits used to treat ulcers, dysentery, piles, skin diseases and liver problems. |
| 107. | *Solanum surattense* Burm.f. | Karimulli | Solanaceae | Herb | Leaves, fruits | LC (210.4) | Extracts used to strengthen nerves, to cure cough, cold and increase sweating. Leaf juice given for bronchitis and dry cough. Boiled fruits cure tooth ache. |
| 108. | *Solanum torvum* Sw. | Sundaikkai | Solanaceae | Shrub | Fruits | LC (130.5) | Boiled fruits cure bronchitis, anthelmintic. Given for cold, cough, tuberculosis, piles, asthma and indigestion. |
| 109. | *Streblus asper* Lour. | Paper maram | Moraceae | Tree | Stem bark | LC (98.3) | Extracts used as antiseptic, anti-inflammatory. Cure sinusitis and bronchitis. |

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|---|---|---|---|---|---|---|---|
| 110. | *Strychnos nux-vomica* L. | Yeti | Loganiaceae | Tree | Seeds | T (210.3) | Seed powder is antidote for snake bite. |
| 111. | *Strychnos potatorum* L.f. | Thetham kottai | Loganiaceae | Tree | Seeds | T (420.5) | Seeds powder consumed internally to treat haematuria. |
| 112. | *Terminalia bellerica* Roxb. | Thanrikkai | Combretaceae | Tree | Fruits | LC (390.2) | Fruit extracts taken as refrigerant. |
| 113. | *Terminalia chebula* Retz. | Kadukkai | Combretaceae | Tree | Fruits | LC (289.4) | Fruit powder laxative, cure ulcers and a component of tripala. |
| 114. | *Tinospora cordifolia* (Willd.) Hook.f. & Thomp. | Seenthil | Menispermaceae | Climber | Leaves | LC (100.3) | Extract is hepatoprotectant and blood purifier. |
| 115. | *Tylophora indica* (Burm.f.) Merr.. | Nancharuppan | Apocynaceae | Climber | Leaves | LC (154.0) | Leaf extract cure respiratory problems, bronchitis and asthma. |
| 116. | *Vitex negundo* L. | Vennochi | Verbenaceae | Shrub | Leaves | LC (319.5) | Extract is used as tonic, antiseptic, anthelmintic and tranquillizer. Boiled leaf vapour inhale to cure head ache, cough and bronchitis. |
| 117. | *Wrightia tinctoria* (Roxb.) R.Br. | Veppalai | Apocynaceae | Tree | Stem bark | LC (94.0) | Bark powder used for venereal diseases, skin patches of gonorrhoea. |
| 118. | *Ziziphus oenoplia* (L.) Mill. | Karunjoorai | Rhamnaceae | Shrub | Fruits | LC (40.5) | Fruit juice is uterine tonic. |
| 119. | *Ziziphus xylopyros* (Retz.) Willd. | Mullukkottai | Rhamnaceae | Shrub | Fruits and seeds | LC (10.4) | Fruit powder is antidiabetic. |
| 120. | *Ziziypus mauritiana* Lam. | Ilandhai | Rhamnaceae | Tree | Root | LC (42.5) | Root decoction is used in diarrhoea and fever. |