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Original Research Article

Ethnobotanical studies on folkloric medicinal plants in Nainamalai, Namakkal District, Tamil Nadu, India

Kumar Ganesan and Baojun Xu ✉

Food Science and Technology Program, Beijing Normal University-Hong Kong Baptist University United International College, Zhuhai, 519085, China

ABSTRACT

Indian folkloric and traditional medicinal systems are abundantly using medicinal plants or their decoctions for the treatment of various ailments. However, this traditional knowledge is on the verge of extinction, and there is an urgent necessity to conserve this oral traditional knowledge mainly by proper documentation and scientific authentication. The present ethnobotanical study was carried out among the inhabitants in the rural areas of Nainamalai, Namakkal District, in order to document the folkloric medicinal knowledge and the potential uses against various diseases. The survey was conducted among the villagers during the period of August 2015-February 2016 in the rural, foothill settlement areas of Nainamalai, Namakkal District. Direct observation and oral communications with villagers in this foothill region were adopted to collect valid information regarding the herbal formulations used to treat various ailments. This study enumerates a list of 245 plant species from 78 angiosperm families with various therapeutic potentials. The scientific, family and vernacular names of these plants, along with the parts used and their application modes are also enumerated in this communication. Plants are believed to be potent therapeutic agents from immemorial time and knowledge about their use is strictly conserved among inhabitants through generations without any recorded data. Therefore, it is an urgent need to document for scientific validation and come up with new potent drug compounds for the treatment of various diseases.

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1. Introduction

The traditional medicinal system based on herbal remedies has always played a key role in the health systems of many developing and under developed countries. The significance of the traditional medicine has also gained vital importance in the developed countries (Rai and Nath, 2003). The practices in herbal medicine are continuing until today because of its biomedical benefits as well as cultural belief in many parts of the world (Savithramma et al., 2016). In India, the native people are exploiting a variety of herbals for effective curing of various ailments. The plant parts used, preparation and administration of herbal medicines vary from one place to another part of the country. However, the information of natural drugs is gradually perishing, despite the fact that some of the traditional herbal men are still working and recuperating on natural drugs successfully. These plants are now frequently consumed by the local inhabitants of these areas for treatment of various ailments (Saha et al., 2015).

Ethnobotany is the association between plants and people with a specific emphasis on traditional cultures and societies (Mesfin et al., 2013; Gbekley et al., 2017; Amjad et al., 2017; Andrade et al., 2017). Ethnobotanical investigations have provided an immense scope and opportunity for claiming new medications. Some advanced medicines have been deducted from folkloric and conventional drugs (Verma et al., 2007; Sulochana et al., 2015). Such knowledge and practices/experiences

✉ Corresponding author: Baojun Xu
Tel: +86-756-3620636, Fax: :+86-756-3620882
E-mail addresses: baojunxu@uic.edu.hk

were subjected to further modification or enriched with new knowledge of practice by succeeding generations and became a part of the culture, art, belief, folklore and traditional knowledge. These knowledge and practices are freely exchanged, cared for and nourished as a common property of the local communities (Pushpangadan and Kumar, 2005). The value and importance of traditional knowledge are now being increasingly acknowledged all over the world. The pharmaceutical industry continues to investigate and confirm the efficacy of many medicines used by traditional communities (Pío-León et al., 2017).

The Indian systems of medicine include Ayurveda, Homeopathy, Siddha and Unani, which are the most ancient restorative practices, known to the world and derive greater formulations from plants and plant extracts (Sharma and Kumar, 2011). These systems comprise a wide range of therapeutic approaches that include diet, herbs, metals, minerals, precious stones and their combinations as well as non-drug therapies. Ayurveda is the oldest system of medicine in the world and by far the most commonly practiced form of non-allopathic medicine in India, particularly in rural India, where 70% of the population lives (Gogtay et al., 2002). About 6000 plants are utilized as a part of customary conventional folk and natural medicine representing more than 75% of the therapeutic needs of the nation (Rajashekharan, 2002). However, urbanization and deforestation processes exert an antagonistic effect on the resource base of restorative plants. The poor rural people, whose reliance on these items are overwhelming, are the worst sufferers. The problems are compounded by market-demand driven harvesting without any concern for representation and conservation. In the process, essential regenerative components of a plant like root, tuber, fruit, seed, flower, and bark are indiscriminately collected, leading to degradation and depletion and even extinction of particular species (Amiri and Joharchi, 2016; Amjad et al., 2017; Pío-León et al., 2017). Due to this ruthless exploitation, many important species of medicinal plants are becoming rare and some of them are critically endangered. It is estimated that around 10% of all plant species are currently endangered in India (Pandey et al., 2005).

Namakkal is one of the inhabited towns of Tamil Nadu, and one of the most important Hindu pilgrimage sites. Nainamalai is a small hill situated at the 10th mile from Namakkal on the National Highways to Salem city. Nainamalai has Lord Vishnu temple on the top of the hill, which was built by Poligar Ramachandra Nayakar in the 16th Century. The temple is regarded with special veneration by the people in the District, who visit it in large numbers on Saturdays in the month of September and October. During the rainy season, this hilly area comes under the vegetation of dry deciduous forest having timber yielding, thorny, bushy trees along with herbaceous flora, covering 900 acres of land comes under Nainamalai region of Eastern Ghats. Namakkal District experiences semiarid tropical climate wherein four distinct seasons viz., Southwest monsoon (June-Sep) North East monsoon (Oct-Dec) winter season (Jan-Feb) and summer season (April-May) are experienced. The maximum temperature ranges from 28 to 40 ºC while the minimum temperature falls within the 14-26 ºC range. In general, Namakkal district records higher relative humidity due to the surroundings of hill areas. Relative humidity variation between day and night are higher resulting in higher probability of pest and disease incidences. The normal annual rainfall of the region will be 776 mm; about 80 percent of the total rainfall is received by Southwest and Northeast Monsoon (http://www.namakkal.tn.nic.in/ 2012).

2. Experimental

2.1. Study area

The chosen area is Nainamalai, Namakkal District, which belongs to the Eastern Ghats. It is located in 11º 05' and 12º 04' of the North latitude and 77º 44' and 78º 09' of the East longitude of approximately 300 m above the sea level (Fig. 1).

2.2. Data Collection

All plants were collected, identified, and vouchers were stored at the Rapinat Herbarium and Molecular Systematics, St. Joseph's College, Tiruchirapalli, Tamil Nadu. The field survey covered different seasons. The survey was started in rainy seasons (August) and collections were repeated every month until February 2016. Seasonal changes of the plants occurrence were noted in this period. To document the ethnomedicinal knowledge, the inhabitants belonging to the foothills of Ninamalai area were selected to integrate their traditional knowledge on medicinal plants. Ethno-medicinal information was gathered through personal communication. Plant material was prepared using scientific name, family, vernacular name (Tamil), common name and medicinal uses, and parts of the plant. Plant species were identified with the help of flora books and medicinal uses of plants were compiled with the help of earlier publications (Chopra et al., 1956; Gamble, 1979; Kirtikar and Basu, 1985; Henry et al., 1987; Krishnan Marg, 1992; Nadkarni, 1995; Maheswari et al., 1996).

3. Results and Discussion

Many researchers have published the medicinal plants and their uses in the Eastern Ghats and their surrounding hill tracts in Namakkal district (Murugesan et al., 2011; Karthik et al., 2011; Senthilkumar et al., 2012; Kumeshini et al., 2013; Ramanathan et al., 2014; Bhuvaneswari et al., 2015; Sathiyaraj et al., 2015). However, no more ethnomedicinal study is carried out

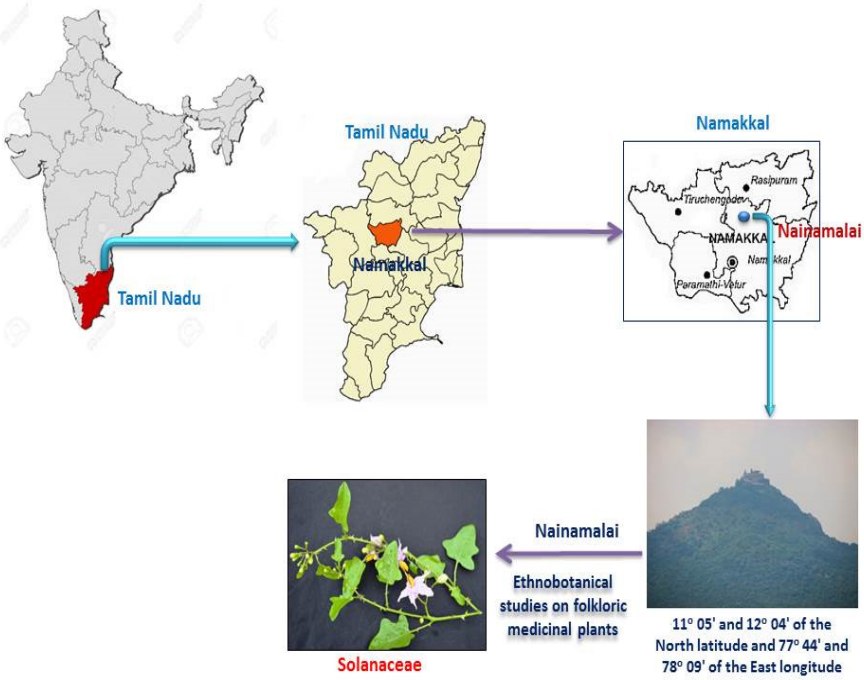

Fig. 1. Map of hilly region of Nainamalai in Namakkal district of Tamil Nadu, India.

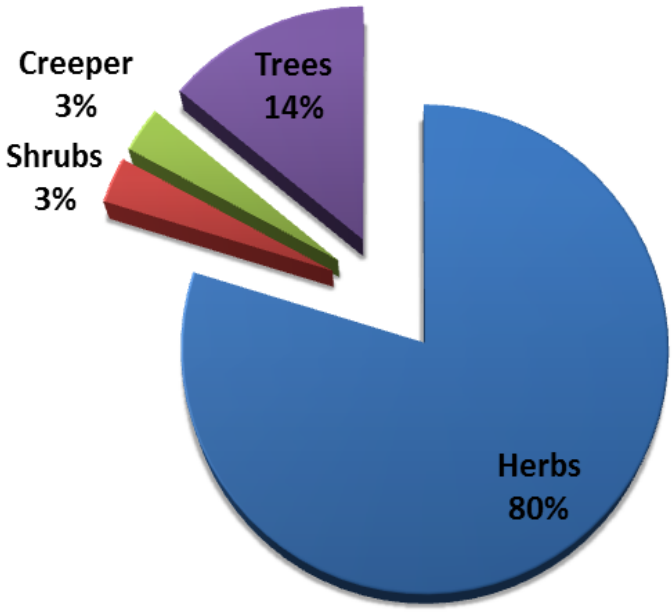

Fig. 2. Enumeration of medicinal plants in Nainamalai, Namakkal district.

in Nainamalai, one of the Eastern Ghats in Namakkal district. A brief survey of literature reveals that since ancient times of India, the life of local tribes has been closely depending on these medicinal plants for the treatment of various ailments.

In the present study, 245 plant species belonging to 78 families have been identified from the study area. Of these, all the plants have medicinal values. While enumerating the plant species, they are arranged according to the Bentham and Hooker system of classification with their botanical names and common names, family, plant parts used and uses (Table 1). The study also reveals that most of the medicinal plants available are herbaceous forms (79.7%), shrubs (3.1%), creeper (3.1%) and trees (14.1%) (Fig. 2). The shrubs and trees withstand the dry season and disappear. However, during the rainy season, the available medicinal plants are significantly high and appear more

Table 1

Enumeration of Medicinal plants from Nainamalai, Namakkal District.

NO.	Botanical Name	Family name	Vernacular name	Parts used	Therapeutic uses
1	*Adhatoda vasica Nees*	Acanthaceae	Adathoda	Leaves	Bronchitis, bronchial asthma, local bleeding, cough, breathlessness, diaphoretic thrombocytopenic purpura, peptic ulcer, piles, and tuberculosis
2	*Andrographis peninculata* L.	Acanthaceae	Nelavembu	Herb Leaves and roots	Bitter tonic and febrifuge Anodyne tonic, alexipharmic and astringent, used in dysentery, cholera, diabetes, constipation, influenza, bronchitis, and piles. Decoction is used for sluggishness of liver and jaundice, febrifuge, cholagogues and anthelmintic
3	*Dipteracanthus prostratus* Nees Syn	Acanthaceae	Kiranthi Nayakam	Leaves	Remedy for gonorrhoea and ear diseases
4	*Hygrophylla auriculata* L.	Acanthaceae	Neermulli	Roots, leaves and seeds	Jaundice, chronic Bright's disease, inflammation, ascites, and vesicle calculi
5	*Indoneesiella echiodes* L.	Acanthaceae	Kopuranthanki	Whole plant	Purgative, acidic, diuretic
6	*Justice tranquebariensis* L.	Acanthaceae	Thavasi Murungai	Roots and leaves	Bronchitis, rheumatism, arthritis, amenorrhoea, debility
7	*Rhinacanthus nasutus* (L.) Kurz	Acanthaceae	Nagamalli	Roots	Remedy for ringworm, skin disease, and as an antidote for snake bite
8	*Barleria prionitis* L.	Acanthaceae	Semmulli	Bark and leaves	Relief for cough, toothache, boils and swellings
9	*Fucrea foetida* L.	Agavaceae	Anai Katralai	Whole plant	Antibacterial action
10	*Gisekia pharnceoides* L.	Aizoaceae	Manal keerai	Herb	Aperient and antihelmintic used for cases of taenia
11	*Glinus lotoides* L.	Aizoaceae	Seruppadai	Dried plant	Purgative, cure for boils, bilious attack, wounds, and pains
12	*Mollugo nudicaulis* L.	Aizoaceae	Parpadagam	Leaves	Whooping cough, applied to boils for suppression
13	*Mollungo pentaphylla* L.	Aizoaceae	Parpadagam	Leaves	Stomachic, aperients antiseptic, emmenagogue, used in poultices for sore legs
14	*Trianthema decandra* L.	Aizoaceae	Sathisaranai	Root Leaves	Hepatitis, asthma, suppression of menses Headache
15	*Trianthema portulacastrum* L.	Aizoaceae	Saruvelai	Leaves Root	Diuretic, edema, dropsy, liver tonic Abortifacient, cathartic, and menstrual disorder
16	*Achyranthes aspera* L.	Amaranthaceae	Nayurivi	Herb	Decoction of herb diuretic, used in renal dropsy
17	*Aerva lanata Juss.*	Amaranthaceae	Sirupulai	Whole plant	Used in cough, sore throat, diabetes and lithiasis and diuretic
18	*Alternanthera sessillis* L.	Amaranthaceae	Ponnankanni keerai	Whole plant	Used for night blindness
19	*Amaranthus spinosus* L.	Amaranthaceae	Mullukeerai	Whole plant	Leprosy, sudorific, and bronchitis
20	*Amaranthus spinosus* L.	Amaranthaceae	Millagu keerai	Whole plant	Sudorific and febrifuge, emollient. recommended for eruptic fevers, also used as lactagogue. Ingestion of shoots used in eczema
21	*Amaranthus tricolor* L.	Amaranthaceae	Sirukeerai	Whole plant	Antidote for poison, astringent, and diuretic
22	*Celosia argenta* L.	Amaranthaceae	Punnaipoo	Seeds	Cure acute conjunctivitis, keratitis, chronic uveitis, and hypertension
23	*Gomphrene globosa* L.	Amaranthaceae	Vadamalli	Root Fruit	Cough Laxative, diuretic
24	*Mangifera indica* L.	Anacardiaceae	Mango	Bark Seeds	Uterine hemorrhage Asthma
25	*Annona squamosa* L.	Annonaceae	Sita palam	Fruits	Cooling, sedative, stimulant, expectorant and cure anemia, burning sensation, and vomiting cough
26	*Anona muricata* L.	Annonaceae	Ramasita	Fruits	Treating stomach pain, antimalarial, uterine stimulant, antibacterial, antifungal and vasodilator
27	*Polyalthia longifolia* (Sonn.) Thwaites	Annonaceae	Nettilingam	Bark	Diabetes, skin diseases, hypertension, fever, cooling, febrifuge
28	*Coriandrum sativum* L	Apiaceae	Kothamalli	Leaves and fruits	Used for cough, bronchitis, vomiting, anorexia, colic, flatulence, diarrhoea, chronic conjunctivitis, rheumatism
29	*Cuminum cyminum* L.	Apiaceae	Siragam	Fruits	The oil of cumin is used to flavour curries and other culinary preparations, confectionery, beverages, liqueurs and cordials
30	*Catheranthus roseus* L.	Apocynaceae	Nithya kalyani	Leaves and roots	Oliguria, haematuria, Diabetes, menstrual disorders, hypertension, leukemia, cerebrovascular dilations and wasp sting
31	*Ervatamia divaricata* L.	Apocynaceae	Nanthia vattai	Root and stem	To cure toothache, and eye diseases
32	*Nerium oleander* L.	Apocynaceae	Arali	Roots and leaves	Scabies, haemorrhoids, cardiac asthma, renal and vesicle calculi, and leprosy
33	*Rauvolfia serpentina* (L.) Benth. *ex* Kurz.	Apocynaceae	Sarpaganthi	Roots	Chronic mental illness, anthelmintic, antidote to snake venom, and uterine contraction
34	*Acorus calamus* Sinn.	Arecaceae	Vasambu	Rhizome	Stimulant, emetic, nauseant, stomachic, expectorant, and carminative
35	*Calamus rotang* L.	Arecaceae	Pirambu	Whole plant	Astringent, cooling, alexiteric, hypotensive, antidysenteric, depurative, diuretic, febrifuge, anti-inflammatory, hyperdipsia, cough, bronchitis, vesical calculi, chronic fever, and to treat skin disease
36	*Cocus nicifera* L.	Arecaceae	Tennaimaram	Whole plant	Coconut milk is used for fish poisoning the root is used for toothbrush, and the oil is used for treat rheumatism.
37	*Arum maculatum* L.	Araceae	Black sempu	Root	Diaphoretic, expectorant, sudorific and excellent for paralysis
38	*Colocasia esculenta* (L.) Schott	Araceae	Sempu	Leaves	Used for somatalgia, hemorrhods, and congestion of the portal system

Table 1 (Continued)

39	*Aristolochia bracteolate* Lam.	Aristolochiaceae	Aduthinna palai	Roots and leaves	Thermogenic, anthelmintic, cathartic, anti-inflammatory and useful for amenorrhoea, boils, syphilis, as well as skin diseases
40	*Asclepias currssavica* L.	Asclepiadaceae	Ratha Ilai	Roots	Emetic, purgative remedy for piles and gonorrhoea
41	*Asclepias tuberosa* L.	Asclepiadaceae	Manjal Ilai	Roots	Expectorant, and diaphoretic
42	*Calotropis procera* L.	Asclepiadaceae	Erukku	Whole plant	Expectorant, depurative, asthma anthelmintic, febrifuge, intestinal worms, cough, paralysis, laxative bronchitis, and fever
43	*Daemia extensa* L.	Asclepiadaceae	Veli paruthi	Whole plant	Leprosy, menstrual disorder and facilitating parturition
44	*Gymnema sylvestre* L.	Asclepiadaceae	Sirukurinchan	Whole plant	Astringent, thermogenic, anti-inflammatory, anodyne, digestive, liver tonic, diuretic, stomachic, stimulant, anthelmintic, laxative, cardiotonic, dyspepsia, jaundice, diabetes, constipation, helminthiasis, cardiopathy, cough, asthma, bronchitis, and conjunctivitis
45	*Hemidesmus indicus* (L.) R.Br.	Asclepiadaceae	Nannari	Roots and leaves	Vomiting, leucoderma, wounds, hepatopathy, cerebropathy, inflammations, nephropathy, syphilis, cough, and asthma
46	*Pergularia daemia* (Forssk.) Chiov	Asclepidaceae	Veliparuthi	Whole plant	Helminthiasis, leprosy, uterine and menstrual disorder and facilitating parturition
47	*Chrysanthemum indicum* L.	Asteraceae	Samanthi	Flowers	Possessing antibacterial and anti- hypertensive properties
48	*Eclipta alba* L.	Asteraceae	Karisalnkanni	Herb	Tonic, deobstruent, hepatic, spleen enlargements, skin troubles, antiseptic, and wound healing
49	*Eclipta prostrata* L.	Asteraceae	Vellai Karisalankanni	Whole plant	Antidote for snake venom, antihepatotoxic, eruption, anti-inflammatory, leucorrhoea, and enterohemorrhage
50	*Helianthus annus* L.	Asteraceae	Suriakanthi	Seeds and flowers	Hepatopathy, pneumonitis, ophthalmia, ascities, and amenorrhoea
51	*Kleinia grandiflora* L.	Asteraceae	Muyulkadhu	Leaves	Scabies and skin eruptions
52	*Vernonia cinerea* Less	Asteraceae	Puvamkuruntal	Whole plant	Diaphoretic, spasm of the bladder, anthelmintic, and conjunctivitis
53	*Wedelia chinensis* L.	Asteraceae	Manjal karisilankanni	Leaves	Cough, skin diseases, and uterine hemorrhage
54	*Bambusa arundinaceae* L.	Bambusaceae	Mulmungil	Root	Astringent, cooling, laxative, depurative, diuretic, leprosy, skin disease, burning sensation, ringworm, and arthralgia
				Leaves	Ophthalmic, constipating, diarrhoea, gonorrhoea, amenorrhoea, dysmenorrhoea, wounds, skin disease, and fever
				Sprouts	Laxative, thermogenic, anti-inflammatory, digestive, nausea carminative, and intestinal worms
				Grains	Aphrodisiac, anthelmintic, and alexiteric
				Bamboo and manna	Cooling, expectorant, jaundice, cardiac disease, hemorrhages, bronchitis, cough, asthma, tuberculosis, stomatitis, syphilis, fever, ophthalmic, and general debility
				Gum	
55	*Ceiba pendtandra* L.	Bombacaceae	Ilava maram		Alternative, astringent, laxative, and bowel complaints
				Roots	Diuretic, scorpion sting, and diabetes
56	*Trichodesma indicum* L.	Boraginaceae	Thumbai	Herb	Emollient and diuretic prescribed for expulsion of dead fetus
				Root	Dysentery pounded and applied to swelling of joints
57	*Brassica juncea* Czern. & Coss.	Brassicaceae	Kadugu	Seeds	Antidote for any poison, burning sensation, dengue fever, abdominal colic, and intestinal worms
58	*Opuntia dillenii* Haw.	Cactaceae	Nagathali	Fruit and leaves	Gonorrhoea, whooping cough, expectorant, and boils
59	*Opuntia nigricans* Haw.	Cactaceae	Nagathali	Fruit and leaves	Gonorrhoea, whooping cough, expectorant, and boils
60	*Opuntia vulgaris* Mill.	Cactaceae	Sappathi kalli	Whole plant	Laxative, and emetic
61	*Bauhinia variegate* L.	Caesalpiniaceae	Sigappu Mantharai	Roots	Astringent, acrid, cooling, constipating, depurative, anthelmintic, and cure for dysentery, skin disease, leprosy, intestinal worms, tumors, and ulcer
				Root bark	Febrifuge, expectorant, anthelmintic, stomachic, amenorrhoea, fevers, cough, asthma, intestinal worms, colic, flatulence, and dyspepsia
62	*Caesalpinia bonduc* (L) Roxb.	Caesalpiniaceae	Kalarchi kay		Elephantiasis, splenomegaly, hepatomegaly, and menstrual disorders
				Leaves	Astringent, anti-inflammatory, anthelmintic, liver tonic, diabetes, hydrocele, depurative, expectorant,
				Seeds	contraceptive, antipyretic, leprosy, aphrodisiac, leucoderma, intestinal worms, and fevers
63	*Caesalpinia sappan* L.	Caesalpiniaceae	Padungam	Trunk wood	Dysentery, diarrhoea, intestinal and uterine hemorrhage, and anemia
64	*Cassia alata* L.	Caesalpiniaceae	Seemayagathi	Leaves and stem	Antiseptic, laxative, constipation, edema, hepatitis, dermatomycosis, ringworm and scabies
65	*Cassia angustifolia* Vahl.	Caesalpiniaceae	Nilavarai	Leaves	Cure for hepatomegaly, splenomegaly, jaundice, skin diseases, and anemia
66	*Cassia auriculata* L.	Caesalpiniaceae	Avaram	Bark, leaves and fruits	Astringent Anthelmintic
				Seeds	Eye troubles, diabetes, and chylous urine
				Root	Skin troubles

Table 1 (Continued)

67	*Cassia fistula* L.	Caesalpiniaceae	Konnai	Whole plant	To cure leprosy, diabetes, constipation, boils, and inflammations
68	*Cassia occidentalis* L.	Caesalpiniaceae	Ponnavarai	Whole plant	To cure elephantiasis, ring worm, colic, flatulence, epilepsy, and scorpion sting
69	*Cassia tora* L.	Caesalpiniaceae	Thagarai	Whole plant	To cure hypertension, ocular congestion, and eczema
70	*Delonix elata* Gam.	Caesalpiniaceae	Vatanarayana	Leaves	Rheumatism and flatulence
71	*Peltophorum pterocarpum* L. (Roxb.)	Caesalpiniaceae	Vagai	Bark	Dysentery, tooth powders and lotions used for eye troubles, muscular pains and sores
72	*Saraca indica* L.	Caesalpiniaceae	Asogam	Whole plant	Syphilis, cervical adenitis, dysentery, inflammation, scabies, and bone fractures
73	*Saraca asoca* (Roxb.) de Wilde.	Caesalpiniaceae	Asoka maram	Bark	Febrifuge, astringent, anthelmintic, refrigerant, stomachic, styptic, demulcent and constipating useful in fever, dyspepsia, burning sensation, colic, ulcers, and pimples
					Depurative
				Leaves Flowers	Uterine tonic, cervical adenitis, syphilis, hyperdipsia, burning sensation, dysentery, diabetes, bone fractures and vesical calculi
				Roots	Astringent, constipating, diarrhoea, asthma, and ulcers
74	*Tamirandus indica* L.	Caesalpiniaceae	Puli	Leaves	Thermogenic, anodyne, anti-inflammatory, antifungal, diuretic, febrifuge, ophthalmic, fever, boils, jaundice, scabies, tumors, ringworms, smallpox, and conjunctivitis
				Fruits	Digestive, carminative, laxative, antiseptic, and febrifuge
75	*Canna indica* L.	Cannaceae	Kalvazhai	Stalks and roots	Diaphoretic, diuretic used for fever and dropsy
76	*Cleome ico sandra* L.	Capparaceae	Naikaduku/ Naivelai	Leaves	Rubifacient, vesicant and sudorific, constipation
				Seeds	Efficacious in chronic painful joint, febrifuge, cardiac stimulant, fever, diarrhoea, worm infestations, dyspepsia, carminative and anthelmintic
77	*Cleome viscose* L.	Capparaceae	Naivelai	Whole plant	Anthelmintic, cardiac stimulant and useful in fever, diarrhoea, and dyspepsia
78	*Carica papaya* L.	Caricaceae	Pappali	Unripe fruits	Cosmetic, anthelmintic, expulsion of lumbricid
				Ripe fruit	Stomachic, carminative, and diuretic
				seeds	Vermifuge, quench thirst
79	*Chenopodium album* L.	Chenopodiaceae	Paruppu keerai	Seeds	To cure helminthiasis, flatulence, seminal weakness, cardiac disorder and general ability
80	*Commelina bengalensis* L.	Commelinaceae	Kanavazhai	Herb	Demulcent, emollient, laxative, refrigerant used in leprosy
81	*Launaea sarmentosa*	Compositae	Eluthani poondu	Leaves	Headache, eyeache, and fever
82	*Sphaeranthus zeylanica* L.	Compositae	Sivakaranthai	Whole plant	Alternative, anthelmintic, cooling, and fish poison
83	*Tagetes erecta* L.	Compositae	Thulukka samanthi	Flowers and leaves	Earache, ulcers, and bleeding piles
84	*Tridax procumbens* L.	Compositae	Vettu kayathalai	Leaves	Bronchial catarrh, dysentery, and diarrhoea
85	*Ipomoea batatus* (L.) Lam	Convolvulaceae	Chakkaravalli	Tuberous root	Hyperdipsia, constipation, renal and vesicle calculi, diabetes, and general weakness
86	*Merremia emerginata* Burm.	Convolvulaceae	elikathilai	Whole plant	Astringent, thermogenic, general debility, calefacient, laxative, anodyne, hemiplegia, uropathy, hemorrhoids, and inflammations
87	*Merremia hastate* L.	Convolvulaceae	Tala neli	Root	Toothache
88	*Evolvulus alsinoides* L.	Convulvulaceae	Vishnukarandai	Whole plant	Nootropic agent, chronic bronchitis, general weakness, loss of memory, syphilis tonic and febrifuge also used as a vermifuge and with oil for promoting growth of the hair
89	*Bryophyllum heterophyllum*	Crassulaceae	Ranahalli	Leaves	To cure wounds, boils, and insect bites
90	*Kalanchoe pinnata* (Lam.) Pers	Crassulaceae	Ranahalli	Whole plant	Burns, wounds, ulcer, congestive ophthalmia, and hemostatic
91	*Raphanus sativus* L.	Cruciferae	Mullanki	Leaves, seed, roots	Diuretic, carminative, edema, skin infections, and laxative
92	*Benincasa hispida (*Thunb.*). Cogn*	Cucurbitaceae	Pusanikkay	Fruits	Cooling, laxative, diuretic, aphrodisiac and useful in asthma cough, diabetes, epilepsy and syphilis
93	*Citrullus colocynthis* L.	Cucurbitaceae	Peykumatti	Fruit	Colocynth, a drastic hydragogue cathartic
				Root	Purgative, ascites, jaundice, rheumatism, and urinary troubles
94	*Coccinia indica*	Cucurbitaceae	Kovai	Root	Cooling, aphrodisiac, burning sensation, and uterine discharges
				Fruits	Cooling, depurative, antipyretic, expectorant, leprosy, fever, bronchitis, jaundice, diabetes, asthma, cough, and anemia
95	*Cucumis sativus* L.	Cucurbitaceae	Vellarikay	Fruits and seeds	Used for fever, insomnia, bronchitis, jaundice, burning sensation, constipation, renal calculus, and general debility
96	*Cucumis trigonus* Roxb.	Cucurbitaceae	Kattu tummatti	Roots and fruits	Purgative, thermogenic, diabetes, anthelmintic, febrifuge, cough, expectorant, liver tonic, stomachic,

Table 1 (Continued)

					intellect promoting, flatulence, leprosy, jaundice, bronchitis, ascites, anemia, and constipation
97	*Cucurbita maxima* L.	Cucurbitaceae	Pusanikay	Fruit	Refrigerant, emollient, diuretic, sedative, burns, inflammations, boils, and neuralgia
				Seed	Anthelmintic, diuretic, nervine tonic, and taeniasis
				Roots	Emetic, purgative, anti-inflammatory
98	*Lagenaria sicerarial* L.	Cucurbitaceae	Suraikkay		Refrigerant, emetic, anodyne, and expectorant Diuretic, and febrifuge
				Leaves	Diuretic, brain tonic, cough, fever, otalgia,
				Seeds	inflammations, and dropsy
99	*Luffa acutangula* (L.) Roxb	Cucurbitaceae	Pirkangai	Fruit and seeds	Diabetes, diuretic, tumors, syphilis, fever, emetic, and dermatopathy
100	*Melothria maderaspatana* (L.) Cogn	Cucurbitaceae	Musumusukkai	Whole plant	For the treatment of asthma, ulcers, constipation, burning sensation, neuralgia, flatulence, and colic
101	*Momordica charantia* L	Cucurbitaceae	Pagal	Fruit	Leprosy, malignant ulcers, stomach worms, fever, phlegm, hypertension, dysentery, diabetes, and jaundice
102	*Cyperus kylinga* L.	Cyperaceae	Sampirani chedi	Rhizome	Diuretic, refrigerant, demulcent and tonic also given in fever and diabetes to relieve thirst
103	*Cyperus rotundus* L.	Cyperaceae	Korai	Rhizomes	Irregular menstruation, dysmenorrhoea, dyspepsia, diarrhoea, and vomiting
104	*Cyprus esculentus* L.	Cyperaceae	Korappullu	Tubers	Helminthiasis, diarrhoea, dysentery, leprosy, hepatopathy, and general debility
105	*Dioscorea alata* L.	Dioscoreaceae	Perumvalli Kilangu	Tubers	Aphrodisiac, anthelmintic, diabetes, leprosy, gonorrhoea, and helminthiasis
106	*Acalypha indica* L.	Euphorbiaceae	Kuppaimeni	Herb	Cough associated with bleeding from the lungs (hemoptysis) and insipient phthisis
				Leaves	juice employed for cutaneous troubles reliable emetic found useful in cases of croup
				Root	Thermogenic, purgative, anti-inflammatory, anodyne, digestive, anthelmintic, diuretic, diaphoretic,
107	*Baliospermum montanum* (Willd)	Euphorbiaceae	Nakatanti		rubefacient, febrifuge, dropsy, flatulence, jaundice, leucoderma, anemia, fever
				Leaves	Asthma, and bronchitis
108	*Euphorbia heterophylla* L.	Euphorbiaceae	Palperuki	Roots	Rheumatism, deafness, neuropathy, gout, cough and cutaneous disease
109	*Euphorbia hirta* L.	Euphorbiaceae	Amman pacharisi	Herb	Medicine for cough and asthma colic, dysentery and disease of genito urinary tract
110	*Euphorbia neriifolia* L.	Euphorbiaceae	Ilai Kalli	Root	Scorpion sting and snake bite
111	*Jatropa curcas* L.	Euphorbiaceae	Kattamanakku	Leaves and seeds	Wounds, splenomegaly, skin diseases, and paralytic action
112	*Jatropha gossypifolia* L.	Euphorbiaceae	Kattamanukku	Seeds	Purgative, aphrodisiac, digestive tonic, anthelmintic, depurative, wounds, splenomegaly, skin disease, rheumatism, and paralytic affections
113	*Manihot esculenta* Crantz	Euphorbiaceae	Maravalli Kilangu	Tuberous roots	Diarrhoea, sore eyes, and nutritious
					Astringent, ulcerative stomatitis, gastro heliosis, gonorrhoea, jaundice, diarrhoea, and myalgia
				Root bark	Conjunctivitis, inflammation, and dyspepsia
114	*Phyllanthus embilica* L.	Euphorbiaceae	Nelli		Astringent, laxative, aphrodisiac, diuretic, antipyretic, diabetes, bronchitis, ophthalmopathy, cough, asthma,
				Leaves	peptic ulcer, skin disease, leprosy, inflammations,
				Fruit	anemia, emaciation, hepatopathy, jaundice, cardiac disorders, hemorrhages, leucorrhoea, fever, and grayness of hair
115	*Phyllanthus fratemus* L.	Euphorbiaceae	Keelanelli	Leaves	Astringent, deobstruent, stomachic, diuretic, and febrifuge used for stomach troubles such as diarrhoea, dysentery, dyspepsia and colic also used in dropsy and disease of urino-genital tract
				Root	Jaundice and galactagogue
116	*Phyllanthus maderaspatensis* L.	Euphorbiaceae	Mella nelli	Seeds	Diuretic and carminative
				Leaves	Headache
				Plant	Diuretic, dropsical affections, gonorrhoea, and genito-urinary tract
117	*Phyllanthus niruri* L.	Euphorbiaceae	Kilkkaynelli	Shoot	Dysentery
				Root	Jaundice
				Leaves	Stomachic, offensive sores, swellings, and ulcer
118	*Ricinus communis* L.	Euphorbiaceae	Amanakku	Seeds	Purgative, skin inflammations, breast tumors, and boils
119	*Tragia involucrata* L.	Euphorbiaceae	Kanchori	Roots and fruits	Diaphoretic, leprosy, baldness, fever, and itching
				Seeds	Purgative, emetic, antiphlogistic, aphrodisiac, abortifacient and used in nervous disorders
120	*Abrus precatorious* L.	Fabaceae	Kuntumani	Leaves	Used for cough, colic pain, swelling, leucoderma and other skin diseases
				Root	Diuretic, emetic, and alexiteric
121	*Arachis hypogaea* L.	Fabaceae	Verkadalai	Seeds	Aphrodisiac, galactagogue, constipating and useful in diarrhoea and general debility

Table 1 (Continued)

				Leaves	Astringent, laxative, cooling, ulcers, odontalgia, and inflammations
122	*Cajanus cajan* L.	Fabaceae	Thuvarai	Seeds	Cooling, anthelmintic, resolvent, pectoral, constipating, febrifuge, intestinal worms, oral ulcers, tumors, bronchitis, cough, vomiting, and cardiac diseases
123	*Clitoria ternatea* L.	Fabaceae	Sankupoo	Roots and leaves	Used for elephantiasis, inflammation, leucoderma, leprosy, asthma, and pulmonary tuberculosis
124	*Crotalaria retusa* L.	Fabaceae	Kilukiluppai	Whole plant	Cure ptyalism, diarrhoea, scabies, leprosy, and skin disorder
125	*Cyamopsis tetragonoloba* (L) Taub.	Fabaceae	Kothavarankay	Pods and seeds	Used for constipation, dyspepsia, anorexia, agalactia, and nyctalopia
126	*Dolichos biflorus* L.	Fabaceae	Kollu	Seeds	Astringent, diuretic and tonic
127	*Dolicus lablab* L.	Fabaceae	Avarai	Seeds	Nutritious, sunstroke, nausea, vomiting, diarrhoea, abdominal pains, and alcoholism
128	*Indigofera enneaphylla* L.	Fabaceae	Sheppunerinji	Whole plant	Juice diuretic and antiscorbutic used chronic venereal diseases and insanity
129	*Indigofera tinctoria* L.	Fabaceae	Kattavuri/ Nili	Whole plant	Thermogenic, laxative, expectorant, diuretic, promoting hair growth, gastropathy, splenomegaly, cardiopathy, chronic bronchitis, asthma, ulcers, skin diseases, and antitoxic property
130	*Vigna mungo* (L.) Hepper	Fabaceae	Ulundhu	Root	Rheumatism, nervousness, hepatic diseases, dropsy, cephalalgia, diuretic, narcotic, and aching bones
131	*Cynodon dactylon* Pers.	Graminaeae	Arugam pillu	Whole plant Rhizome	Decoction: Diuretic anasarca Genito urinary troubles
132	*Leucas aspera* Wild.	Labiteae	Thumbai	Whole plant Flowers	Insecticide, and antipyretic Cold
133	*Ocimum canum sims*	Labiteae	Naythulasi	Leaves Leaves	Psoriasis, scabies, skin eruptions, and rheumatism Parasitical skin disease, fever, and cold
134	*Ocimum gratissimum* L.	Labiteae	Holy basil	Whole plant Leaves	Headache, influenza, and diaphoretic
135	*Ocimum sanctum* L.	Labiteae	Thulasi	Seeds Root Plant	Expectorant, diaphoretic, earache, bronchitis, gastric disorder, hepatic affections, and snuff in ozaena Disorders of genito-urinary tract Diaphoretic, malarial fever Snake bite, and scorpion sting
136	*Coleus aromaticus* Benth.	Lamiaceae	Karpuravalli	Leaves	Urinary disease, vaginal colic discharge, carminative, and dyspepsia
137	*Coleus forskohlii* L.	Lamiaceae	Njavara	Roots and leaves	To lower blood pressure, antispasmodic and dilate the blood vessel, and heart tonic
138	*Mentha arvensis* L.	Lamiaceae	Pudina	Whole plant	To treat headache, vomiting, cough, sore throat, and colic
139	*Ocimum americanum* L.	Lamiaceae	Naythulasi	Seeds	Diuretic, tonic and used in the preparation of a cooling drink
140	*Ocimum basilicum* L.	Lamiaceae	Tirunitrupachai	Plant Leaves Seeds Flowers	Expectorant, stomachic, antipyretic, alexipharmic, carminative, anthelmintic, diaphoretic, and stimulant Nasal druche and for ringworm Demulcent, stimulant diaphoretic and diuretic used in the cases of habitual constipation and piles and in poultices for sores and sinuses, gonorrhoea, dysentery, and diarrhoea Carminative, diuretic, and stimulant
141	*Plectranthus amboinicus* (Lour.) Spreng.	Lamiaceae	Oomavalli	Whole plant	Vomiting, diarrhoea, burning sensation, fever, leucoderma, and ulcers
142	*Allium cepa* L.	Lilliaceae	Venkayam	Bulb	Thermogenic, antiperiodic, antibacterial, aphrodisiac, emollient, expectorant, carminative, stomachic, diuretic, anodyne, dysentery, flatulence, dyspepsia, colic, jaundice, spleenopathy, hepatopathy, asthma, bronchitis, ophthalmic, vomiting, malarial fever, epilepsy, tumors, wounds, and paralysis
143	*Allium sativum* L.	Lilliaceae	Vella Poondu	Bulb	Thermogenic, antiperiodic, antibacterial, aphrodisiac, emollient, expectorant, carminative, stomachic, diuretic, anodyne, dysentery, flatulence, dyspepsia, colic, jaundice, spleenopathy, hepatopathy, asthma, bronchitis, ophthalmic, vomiting, malarial fever, epilepsy, tumors, wounds, and paralysis
144	*Aloe vera* L.	Lilliaceae	Kumari	Leaf juice and root	Dyspepsia, constipation, burns, ophthalmic, alexiteric, hyper adenosis, spleenopathy, hepatopathy, skin diseases, cathartic, colic, cooling, painful inflammations, menstrual suppression and useful in fevers Cholera
145	*Strychnos nux-vomica* L.	Loganiaceae	Etti	Bark Leaves Seed	Chronic wounds, ulcers, paralytic complaints Acrid, alexiteric, purgative, stimulant, stomachic, anemia, asthma, bronchitis, constipation, diabetes, malaria, insomnia, skin disease, paralysis, and weakness of limbs

Table 1 (Continued)

146	*Strychnos potatorum* L.	Loganiaceae	Thethankottai	Seed	Eye diseases, dysentery, diabetes, gonorrhoea, astringent, emetic, diuretic, water purifier, cholera aphrodisiac, ophthalmic, anthelmintic, gastropathy, bronchitis, and leucorrhoea
				Root	Refrigerant, depurative, diuretic, abortifacient, burning sensation, leprosy, skin disease, menstrual disorder, and premature of graying hair
147	*Lawsonia inermis* L.	Lythraceae	Maruthondri		
				Leaves	Refrigerant, depurative, diuretic, abortifacient, burning sensation, bronchitis, cough, inflammations, diarrhoea, dysentery, leprosy, leucoderma, scabies, boils, hepatopathy, spleenopathy, anemia, fever, ophthalmic, and jaundice
				Herb	Febrifuge, anti-emetic and anti-inflammatory; also employed in urinary troubles and lumbago
148	*Abutilon indicum* L.	Malvaceae	Thuthi		
				Root bark	Extract is diuretic and demulcent, nervine tonic and antipyretic; and also in piles
149	*Hibiscus abelmoschus* L.	Malvaceae	Sembaruthai/ Kattu Kasturi	Seeds	Cooling tonic, carminative antidote for snake bite
150	*Hibiscus cannabinus* L.	Malvaceae	Pulichai	Leaves	Purgative, acidic, and diuretic
151	*Hibiscus esculantus* L.	Malvaceae	Vendai kay	Fruits and seeds	Gonorrhoea, nutritious
152	*Hibiscus rosa-sinensis* L.	Malvaceae	Semparuthai	Leaves and flowers	Headache, postpartum relapse sickness, boils, sores, inflammations, and hair growth
153	*Malva sylvestris* L.	Malvaceae	Common Mallow	Leaves and root	Cough, chest ailments, and emollient
154	*Sida caprinifolia* L.	Malvaceae	Arivalmanai poondu	Root	Diaphoretic, antiperiodic, malarial fever, hemorrhoids, swellings, gonorrhoea, and refrigerant
					Demulcent and febrifuge also used in dysentery
				Leaves	Astringent, diuretic and tonic, infusion given in urinary troubles, cystitis, strangury, and hematuria. in
155	*Sida cardifolia* L.	Malvaceae	Nila tutti or palampasi		hemiplegia, sciatica and facial paralysis, roots are used
				Root	in combination with asafoetida and rock salt powdered roots given with milk in leucorrhoea and frequent micturition
				Leaves	Cough, influenza, headache, relapses in illness
156	*Thespesia populnae* L.	Malvaceae	Poovarasu	Bark	Dysentery, diabetes, indigestion, pelvic infection, appetite loss, ulcers, worms
				Stem	Breast cancer, eye injuries, and typhoid
				Bark	Skin troubles
				Leaves	Antiseptic, ulcer and eczema
157	*Azadirachta indica* Juss.	Meliaceae	Vembu	Flower	Tonic for stomachic
				Berries	Purgative emollient
158	*Tinospora cardifolia* L.	Menispermaceae	Seenthil kodi	Stem	Thermogenic, anodyne, alternant, antiperiodic, anti-inflammatory, antipyretic, carminative, fever, constipating, cardiotonic, cough, expectorant, flatulence, anemia, leprosy, skin disease, asthma, jaundice, seminal weakness, and spleenopathy
159	*Acacia arabica* L.	Mimosaceae	Karuvelam	Gum	Diarrhoea, dysentery and useful in diabetes mellitus
160	*Acacia nilotica* L.	Mimosaceae	Karuveli	Bark pods	Urinary genital diseases
161	*Acacia pennata* L.	Mimosaceae	Indu	Leaves	Cure bleeding gums
				Bark	Antidote for snake bite
162	*Albiziz lebbeck* L.	Mimosaceae	Vagai	Bark	Thermogenic, expectorant, aphrodisiac, anti-inflammatory, anodyne, cephalic, ophthalmic, depurative, restorative, asthma, nyctalopia, strengthening gums, skin eruptions, leprosy, leucoderma, ulcers, and diarrhoea
163	*Albiziz amara* Roxb.	Mimosaceae	Usala maram	Whole plant	Anti-inflammatory, carminative, anodyne, depurative, sudorific, febrifuge, expectorant, diuretic, aphrodisiac, dental caries, inflammation, colic, dyspepsia, anorexia, leprosy, skin disease, hypertension, rheumatoid fever, cough, asthma, bronchitis, urolithiasis, menstrual disorder, cardiac disorder, rhinopathy, and epilepsy
164	*Mimosa pudica* L.	Mimosaceae	Thottarsinungi	Root	Gravellish complaints
				Leaves and root	Piles, fistula, hydrocele, and scorpion sting
				Latex	Rheumatism and lumbago
165	*Ficus benghalensis* L.	Moraceae	Alamaram	Bark	Tonic and astringent, diarrhoea, dysentery and diabetes
				Leaves	Tonic and cooling
166	*Ficus religiosa* L.	Moraceae	Arasa maram	Bark	Astringent, cooling, aphrodisiac, antibacterial activity, inflammatory swellings, and burns
167	*Morus alba* L.	Moraceae	Musukatte	Root bark	Cough, dropsy, edema, oliguria, and injury
				Whole plant	Ascities, venomous bites, rheumatism and as a cardiac and circulatory stimulants
				Root	Rubefacient and vesicant
168	*Moringa oleifera* Lam.	Moringaceae	Murungai	Leaves	Rich in vitamin A and C useful in scurvy and catarrhal affections, emetics
				Flower	Tonic, diuretic, and cholagogue
				Seed	Antipyretic, and rheumatism

Table 1 (Continued)

169	*Musa paradisica* L.	Musaceae	Vazhai	Fruit	Intestinal disorders, uremia, nephritis, hypertension and other vascular diseases
170	*Psidium guajava* L.	Myrtaceae	Koyya	Leaves	Diarrhoea, cough, stomachache, dysentery, toothaches, indigestion
				Fruits	Constipation
171	*Syzygium cuminii* L.	Myrtaceae	Naval maram	Bark and seeds	Decoctions are used in diabetes, anthelmintic, febrifuge, fever, gastropathy, dermatopathy, diarrhoea, pharyngitis, ringworm. spleenopathy, and urethrorrhoea
172	*Boerhaevia diffusa* L.	Nyctaginaceae	Mookkarattai	Root and leaves	Root pounded with cow milk is used in itchy eyes. Leaf juice mixed with milk is used as diuretic. It is a diuretic laxative useful in diseases of chest, jaundice and as an effective antidote to snake poison
173	*Mirabilis jalapa* L.	Nyctaginaceae	Anthi mantharai	Root and leaves	Aphrodisiac, purgative, inflammatory agent
174	*Jasminum auriculatum* Vahl.	Oleaceae	Usi malligai	Roots and flowers	Cardiotonic, diuretic, skin diseases, nephrolithiasis, and burning sensation
175	*Jasminum grandiflorum* L.	Oleaceae	Kodi malli	Whole plant	Odontalgia, fixing loose tooth, ulcerative stomatitis, leprosy, skin diseases, ulcers, wound, and skin diseases
176	Jasminum sambac (L.) Ait	Oleaceae	Kundu malligai	Flowers	Leprosy, ulcers, fever, and vomiting
177	*Nervilia aragoana* Gaud.	Orchidaceae	Orithal thamarai	Whole plant	Uropathy, colic, diarrhoea, asthma, cough, vomiting, and epilepsy
178	*Oxalis cornyculata* L.	Oxialidaceae	Puliyarai	Whole plant	Dysentery, swelling tongue, and internal bleeding
179	*Pandancus odoratissimus* L.F.	Pandanceae	Thaalai	Roots and flowers	Leprosy, skin disease, flatulence, colic, diabetes, smallpox, and syphilis
180	*Argemone mexicana* L.	Papaveraceae	Bramathandu	Root	Alternative, chronic skin disease
					Emetic, expectorant, dropsy, jaundice, and purgative
				Seeds	As an antidote to snake poison
181	*Argemone mexicana* L.	Papaveraceae	Ponnummattai	Whole plant	Useful in guinea worm, skin diseases, leprosy, colic, flatulence, and all types of poisoning
182	*Pongamia glabra* L.	Papilionaceae	Punkamaram	Whole plant	Ulcers, cleaning teeth, strengthening gums, gonorrhoea, dermatopathy, vaginopathy, leprosy, diarrhoea, laxative, anthelmintic, flatulence, and diabetes
183	*Sesbania grandiflora* (L.) Poiret	Papilionaceae	Akathi	Whole plant	Having remedial properties against nyctalopia, cephalagia, colic, anemia, laxative, and alexiteric
				Leaves	Tonic, laxative, diuretic and deobstruent, used in bronchitis and bilious febrile attacks; and also for boils, pimples, and bleeding piles
184	*Tephrosia purpurea* Pers.	Papilionaceae	Kolingi	Pod	Decoction given in dyspepsia, diarrhoea, rheumatism, asthma and urinary disorders Root given with black pepper in colic. A liniment prepared from roots is used in elephantiasis. Pulverized toots smoked for relief from asthma and cough
				Seeds	Decoction is used as a vermifuge and to stop vomiting
					Oil specific against scabies, itch, and eczema
185	*Trigonella foenum graecum* L.	Papilionaceae	Venthayam	Seeds and leaves	Carminative, aphrodisiac, smallpox, diabetes, and dysentery
186	*Pedalium murex* L.	Pedaliaceae	Yanai nerunjil	Seeds and leaves	Carminative, anti-inflammatory, splenomegaly, and ulcers
				Fruits and seeds Mucilage	Demulcent diuretic, tonic properties and used in dysuria
187	*Pedalium murex* L.	Pedaliaceae	Anai nerunjil	Root	Gonorrhoea and other diseases of urogenital system Antibilious
				Fruits	Aphrodisiac and given as a decoction for incontinence of urine, nocturnal emissions, and spermatorrhoea
				Seed	Nourishing, emollient, lactagogue and diuretic
188	*Sesamum indicum* L.	Pedaliaceae	Ellu	Leaves	Used in affections of kidneys and bladder externally applied in ophthalmic and cutaneous complaints
189	*Petiveria alliacea* L.	Phytolaccaceae	Visha pachilai	Whole plant	Fever, abscesses
190	*Piper longam* L.	Piperaceae	Thippili	Fruit and root	Chronic bronchitis, cough, cold, antidote to snake bite, scorpion sting
191	*Piper nigram* L.	Piperaceae	Milagu	Fruit	Cholera, fever, dyspepsia, flatulence, malarial fever, paraplegia, arthritic disease, rubefacient, sore throat, piles, and skin disease
192	*Erythrina indica* Lam.	Plumbaginaceae	Kalyana murungai	Leaves	Sedative, insomnia, anxiety, ulcer
193	*Plumbago zeylanica* L.	Plumbaginaceae	Kodiveli	Root	Diabetes, stimulate sweating, leprosy, dysentery, skin problems, and antidote
194	*Chrysopogon zizanioides* (L.) Roberty	Poaceae	Vetiver	Seeds and roots	Possess remarkable antioxidant activity
195	*Oryza sativum* L.	Poaceae	Nellu	Roots and grains	To treat diarrhoea, colonopathy, bilious fever, and diuretic
196	*Sorghum vulgare* Pers.	Poaceae	Cholaam	Seeds	As a diuretic, and an Asian aphrodisiac agent
197	*Persicaria hydropiper* (L.) Spach.	Polygonaceae	Kakkai karuppu	Whole plant	Used as sedative, antiseptic and antidote
198	*Punica granatum* L.	Punicaceae	Madulai	Seeds and flowers	Recommended as a remedy against syphilis, jaundice, diarrhoea, nose bleeding, stomachic, and anthelmintic

Table 1 (Continued)

199	*Ziziphus mauritiana* Lamk.	Ramnaceae	Ilanthai	Whole plant	Cooling, anodyne, fever, wounds, ulcers, cephalgia, astringent, constipating, dysentery, diarrhoea, anthelmintic, diaphoretic, antipyretic, typhoid fever, stomatitis, purgative, pectoral, styptic, aphrodisiac, depurative, hyperdipsia, leprosy, skin disease, cough, asthma, astringent, encephalopathy, ophthalmopathy, vomiting, leucorrhoea, and insomnia
200	*Nigella sativa* L.	Ranunculaceae	Karum siragam	Seeds	Thermogenic, carminative, diuretic, anodyne, sudorific, febrifuge, jaundice, skin disease, flatulence, diarrhoea, dysentery, menstrual disorder, fever, anorexia, inflammation, dyspepsia, paralysis, helminthiasis, and expectorant
201	*Rosa indica* L.	Rosaceae	Rosappu	Petals and fruits	Applied to wounds, injuries, astringent, and removing bile
202	*Ixora coccinea* L.	Rubiaceae	Vetchi	Roots and leaves	Dysentery, leucorrhoea, bronchitis, ulcers
203	*Morinda citrifolia* L.	Rubiaceae	Nunamaram	Root bark Leaves Fruit	Hypertension, osteodynia Fever, dysentery, diarrhoea Stomachic, aperient, dysentery, uterine hemorrhage, cough, coryza, edema, and neuralgia
204	*Sansevieria roxburghiana* Schult.	Ruscaceae	Marul	Roots	Cough, and throat infection
205	*Aegle marmeoles* L.	Rutaceae	Vilvam	Root Leaves Fruits	Diarrhoea, dysentery, dyspepsia, cardio palmus, seminal weakness, uropathy, vomiting, fever, swellings, and gastric irritability Laxative, febrifuge, expectorant, ophthalmic, deafness, inflammations, diabetes, and asthma Cooling, laxative, recommended as a remedy against heart and brain diseases, and dyspepsia
206	*Citrus limon* (L) Burm.f.	Rutaceae	Elumichai	Fruits	Used for scabies, vomiting, hemicrania, cough, bronchitis, and heartburn
207	*Citrus medica* L.	Rutaceae	Narattai	Roots Fruits	Laxative, anthelmintic, diuretic, constipation, colic, flatulence, strangury, vesical calculi, tumors, vomiting, and dental caries Astringent, emollient, stimulant, refrigerant, carminative, digestive, cardiac stimulant, cough, asthma, hyperdipsia, hepatopathy, flatulence, menstrual disorders, leprosy and skin disease
208	*Feronia limonia* L.	Rutaceae	Vilanga maram	Fruit and leaves	To stimulate digestion, and to treat flatulence, as well as diarrhoea
209	*Limonia acidissima* L.	Rutaceae	Vilankay	Bark and leaves	Cooling, astringent, carminative, gastropathy, anorexia, diarrhoea, vomiting, cough, bronchitis, and cardiac debility
210				Fruit	Refrigerant, anodyne, aphrodisiac, antiemietic antiscorbutic, alexipharmic, cardio tonic, diuretic, and expectorant
211	*Murraya koenigii* L.	Rutaceae	Karivembu	Leaves	In the treatment of diabetes, hepatitis, vomiting, and inflammations
212	*Ruta graveolens* L.	Rutaceae	Pachai	Whole plant	For the treatment of acro narcotic poison, abortifacient, and rheumatic pain
213	*Cardiospermum halicacabum* L.	Sapindaceae	Mudakkathan	Plant Root Leaves	Rheumatism, stiffness of limbs, snake bite and a potent diaphoretic, diuretic, and laxative remedy Rubifacient, rheumatism, nervous disease Rubifacient, rheumatism, and earache
214	*Madhuca longifolia* L.	Sapotaceae	Iluppai	Bark Flowers Seeds	Astringent, emollient, and an effective remedy for itching Laxative, stimulant, anthelmintic, snake bite, and fish poison Oil from seeds are promising for skin disease, and rheumatism
215	*Capsicum annuum* L.	Solanaceae	Milakai	Fruit	Garnishing or flavoring savory dishes
216	*Capsicum furtisens* L.	Solanaceae	Sigappu Milakai	Fruit	Cure skin diseases, tuberculosis, conjunctivitis, and jaundice
217	*Datura metal* L.	Solanaceae	Umattai	Whole plant Leaves and seed Fruits	Fever, cerebral complaints, skin disease, antispasmodic Antispasmodic, anodyne, narcotic Sedative, intoxicating
218	*Datura stramonium* L.	Solanaceae	Karu Umattai	Leaves Flowers and fruits	Boils, sores, and fish bites Earache Applied to scalp for curing dandruff, hair loss
219	*Hyoscyamus niger* L.	Solanaceae	Kurunai omum	Leaves	Sedative, narcotic, anodyne, antispasmodic, mydriatic, asthma, whooping cough
220	*Lycopersicon esculentum* Mill.	Solanaceae	Takkali	Fruits	Liver and kidney stimulant, digestive, to cure asthma, bronchitis, hepatopathy, nephropathy
221	*Nicotiana tabacum* L.	Solanaceae	Pugaiyilai	Leaves	Sedative, narcotic, emetic, antiseptic, rheumatic swelling, and skin diseases
222	*Physalis minima* L.	Solanaceae	Tottakkali	Whole plant	Splenomegaly, ascities, cough, bronchitis, ulcer, colic, and gastropathy

Table 1 (Continued)

223	*Solanum surattense* Burn.f.	Solanaceae	Kuthukananthai	Whole plant	Leprosy, skin disease, anti-inflammatory, anorexia, asthma, and bronchitis
				Root	Antiasthmatic and general stimulant its juice is employed for otitis; pounded and applied to ulcer in the nose
224	*Solanum melongena* L.	Solanaceae	Kathirikkay	Leaves	Sialagogue, used in bronchitis, asthma, and dysuria
				Fruit	Given in liver complaints; they stimulate enterohepatic metabolism of cholesterol
225	*Solanum erianthum* D. Don.	Solanaceae	Chundai	Leaves	Inhibit choline esterase activity of human plasma Hemorrhage, and dermatitis
226	*Solanum nigram* L.	Solanaceae	Manathakkali	Whole plant	Anti-inflammatory, carminative, anodyne, depurative, sudorific, febrifuge, expectorant, diuretic, aphrodisiac, dental caries, inflammation, colic, dyspepsia, anorexia, leprosy, skin disease, hypertension, rheumatoid fever, cough, asthma, bronchitis, urolithiasis, menstrual disorder, cardiac disorder, rhinopathy, epilepsy, and jaundice
227	*Solanum trilobatum* L.	Solanaceae	Thuthuvalai	Root and leaves	Cough, and chronic bronchitis
228	*Solanum xanthocarpum* L.	Solanaceae	Kandankathri	Whole plant	Anti-inflammatory, carminative, anodyne, depurative, sudorific, febrifuge, expectorant, diuretic, aphrodisiac, dental caries, inflammation, colic, dyspepsia, anorexia, leprosy, skin disease, hypertension, rheumatoid fever, cough, asthma, bronchitis, urolithiasis, menstrual disorder, cardiac disorder, rhinopathy, and epilepsy
229	*Withania somnifera* Dunal.	Solanaceae	Ashwagandha	Root	Astringent, thermogenic, aphrodisiac, diuretic, leucoderma, constipation, insomnia
				Leaves	Ulcers, and painful swellings
230	*Withania coagulans* Dunal.	Solanaceae	Amukkira	Root	Astringent, thermogenic, aphrodisiac, diuretic, leucoderma, constipation, insomnia
				Leaves	Ulcers, and painful swellings
231	*Melochia corchorifolia* L.	Sterculiaceae	Pinnakku keerai	Seeds	Used for pneumonia
232	*Corchorus acutangula* L.	Tiliaceae	Punnakkutalai	Seeds	Used for pneumonia
233	*Centella asiatica* L.	Umbilliferae	Vallarai	Whole plant	Antibacterial, anti-inflammatory, antifebrile, galactgogic activity, therapy for fiber, measles, epistaxis, diarrhoea, dysentery, leucorrhoea, jaundice, dysuria, and varices
234	*Lantana camera* L. Modenke	Verbenaceae	Unnicedi	Whole plant	Bilious fever, all types of dysentery, tumors, rheumatism
235	*Lippia nodiflora* Mich.	Verbenaceae	Poduthalai	Whole plant	Digestion, diuretic, fabrifuge
236	*Phyla nodiflora* (L.) Greene	Verbenaceae	Poduthalai	Whole plant	Internal hemorrhage, burning sensation, anorexia, diarrhoea, colic, and fever
237	*Vitex negundo* L.	Verbenaceae	Nochi	Leaves	Vermifuge, head ache, discutient, swellings of joints, acute rheumatism, gonorrhoea, worms, ulcer, sinuses, and sores
				Root	As an expectorant, and febrifuge
238	*Vitex trifolia* L.	Verbenaceae	Neer Nochi	Fruits	Amenorrhoea, rheumatic pains, headache
				Whole plant	Diuretic, tonic
239	*Hybanthus enneaspermus* L.	Violaceae	Orythal thamarai	Root	Bowel complaints
				Fruit	Scorpion sting
240	*Cissus quadrangularis* L.	Vitaceae	Pirandai	Root	Powdered, specific for fractures
241	*Curcuma domestica* L.	Zingiberaceae	Manjal	Rhizomes	Stimulant tonic stomachic depurative and carminative
242	*Zingiber officinale* Rosc.	Zingiberaceae	Inji	Rhizome	Thermogenic, carminative, cough, laxative, digestive, anorexia, asthma, dyspepsia, pharyngopathy, inflammations, emollient, laxative, stimulant, dropsy, anthelmintic, diarrhoea, flatulence vomiting, elephantiasis, and against inflammations
243	*Alpinia galangal* L.	Zingiberaceae	Chittarathai	Rhizome	An antibacterial agent and digestive stimulant
244	*Costus specious* (Koenig) Smith	Zingiberaceae	Insulin sensitizing plant	Rhizomes and seeds	Possessing anti-inflammatory activity and treatment of biliuria, rheumatism, and bronchitis
245	*Curcuma aromatica* L.	Zingiberaceae	Kasthuri manjal	Rhizomes	Used for bronchitis, cough, leucoderma and skin eruptions
246	*Tribulus territris* L.	Zygophyllaceae	Nerunji	Fruit	Diuretic, used in painful micturition, calculous affections; Bright's disease
				Leaves	stomachic, used as lithontriptic
				Root	Aperient
				Whole plant	Tonic stimulant used in chest complaints Convulsions, cramps and inflammatory tumors. Ash is mixed with lime juice and given for stomach ache
				Leaves and root	Styptic, decoction for diabetes, asthma and phthisis

Table 2
List of identified number of plant species and its family.

Name of the Family	Number of species identified
Solanaceae	16
Caesalpiniaceae, Euphorbiaceae	14
Fabaceae	11
Cucurbitaceae	10
Malvaceae	9
Acanthaceae, Amaranthaceae	8
Asclepiadaceae, Asteraceae, Rutaceae	7
Aizoaceae, Lamiaceae, Mimosaceae	6
Verbenaceae, Zingiberaceae	5
Apocynaceae, Compositae, Convolvulaceae, Labiteae, Papilionaceae	4
Annonaceae, Aracaceae, Cactaceae, Cyperaceae, Lilliaceae, Moraceae, Oleaceae, Pedaliaceae, Poaceae	3
Apiaceae, Araceae, Capparaceae, Crassulaceae, Loganiaceae, Myrtaceae Nyctaginaceae, Papaveraceae, Piperaceae, Plumbaginaceae, Rubiaceae	2
Agavaceae, Anacardiaceae, Aristolochiaceae, Bambusaceae, Bombacaceae, Boraginaceae, Brassicaceae, Cannaceae, Caricaceae, Chenopodiaceae, Commelinaceae, Cruciferae, Dioscoreaceae, Graminaeae, Lythraceae, Meliaceae, Menispermaceae, Moringaceae, Musaceae, Orchidaceae, Oxialidaceae, Pandanceae, Phytolaccaceae, Polygonaceae, Punicaceae, Ramnaceae, Ranunculaceae, Rosaceae, Ruscaceae, Sapindaceae, Sapotaceae, Sterculiaceae, Tiliaceae, Umbilliferae, Violaceae, Vitaceae, Zygophyllaceae	1

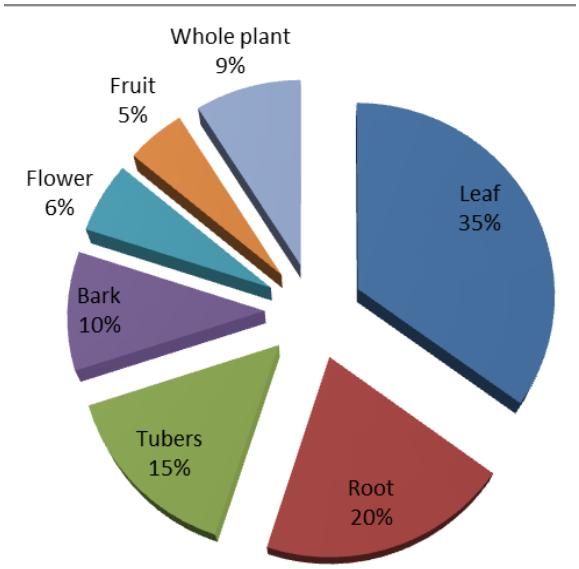

Fig. 3. Percentage of plant parts used as herbal medicines by inhabitants of Nainamalai, Namakkal District.

greenish covering on the hill of Nainamalai. Among the documented data, most of the medicinal plants materialized from *Solanaceae* by 16 species followed by *Caesalpiniaceae* and *Euphorbiaceae* by 14 species, *Fabaceae* by 11 species, and *Cucurbitaceae* 10 species. The complete list of the other plant species and their families is given in Table 2.

The usage of medicinal plants from diverse plant families like Solanaceae is so prevalent by the inhabitants in therapeutic and management intervention against various ailments. Our findings regarding the highest prescriptions of these family plants are due to the wide distribution of these family plants in the study area and a known number of traditional uses. This type of wide documentation of Solanaceae members was previously observed in Malayali tribals in Kolli hills, Namakkal district (Suresh et al., 2011; Xavier et al., 2011). Furthermore, the common uses of the leaf in the preparation of remedies could partly due to its high availability. The leaves remain green and available in plenty throughout the year. The same types of results were observed in the medicinal plants in Kolli hills, Namakkal district (Kadirvelmurugan et al., 2014).

The collected parts of the plants were used as complementary and alternative medicine, which were mostly prepared from leaf (35%) followed by root (20%), tubers (15%), bark (10%), whole plant (9%), flower (6%), and fruit (5%) parts (Fig. 3). Inhabitants

from local areas in Nainamalai have a deep knowledge about the use of many plants. They believe that all afflictions are caused by supernatural forces. They were using these plants to cure diseases like skin problems, body pain, cough, cold, fever, asthma, kidney and stomach problems, ulcer, sore throat, as well as typhoid (Zahoor et al., 2017; Prescott et al., 2017; Ribeiro et al., 2017). People shared knowledge of the ethnomedicinal plants to use as "living long healthy life". The people also live in spiritualism and believe that using many of ethnomedicinal plants leads to intellect and morale. Due to more demand of ethnomedicinal plants and more profit, local villagers have been motivated for conservation and cultivation of these plant species (Vaidyanathan et al., 2013). Inhabitants usually transfer the information from generations to generations. However, the younger generations are not interested in learning and practicing the traditional system of medicine. They are inconvenient with this system and desire immediate relief from their afflictions, due to this cumulative reduction of interest on herbal treatments, which become extinct in near future.

Due to modernization and impact of glamorous advertisements, the usages of chemical oriented products are prevalent in cities in comparison to herbal treatment. Their growing interest in bioresources in the form of the herbal formulation is a part of a movement towards the change in their lifestyle. On the other hand, the inhabitants of villages are still associated with the traditional system of medicine, and the knowledge of medicinal plants is restricted only to a few persons; hence it is imperative and cause of concern, especially for the scientists of the young generations not only to collect, identify and gather information on these plants but also to isolate the active principles so that these plants can be properly used as a routine resource in the modern system of medicine. Efforts should also be made to increase common awareness with respect to medicinal plants and their economic values among the local population, farmers and government organization so that steps could be taken for their conservation, maintenance, and preservation. These observations are of special significance for Indian medicinal plants and there is a need for pharmacognostic investigations.

4. Concluding remarks

The inhabitants of Nainamalai, Namakkal District, Tamil Nadu have been using numerous herbs of therapeutic purpose since the immemorial time. Villagers chiefly depend on the herbs to cure all their diseases. They are aware of the plant remedies for common ailments like diarrhea, jaundice, rheumatism, dyspepsia, asthma, diabetes, dysentery, antipyretic, gonorrhoea and skin diseases. The present study revealed that 245 medicinal plants belonging to 78 different families are used to treat various types of diseases in the Indian folk medicine. The plant species belonging to Solanaceae are widely used for the preparation of herbal medicine of which their leaves are the most preferred parts of these study areas. Local villages attracted to this natural medicine, due to its cost effective and availability. Most of the data claimed in these areas were only collected from the age group of 40-60 years and the people of younger generations were not interested in practicing of folkloric and alternative medicine. Hence, this is the right time to document the disappearing ethnomedicinal uses of these inhabitants and to explore this data to the globe.

Conflict of interest

The authors declare that there is no conflict of interest.

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