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Ethnobotanical survey of medicinal plant species in Vellambi forest, Kanyakumari district

Shasheela P[1], Iren Amutha A[2], Jacklin Jemi R[2]
[1] Research Scholar, Department of Botany and Research Centre, Women's Christian College, Nagercoil, Tamil Nadu, India
[2] Asssistant Professor, Department of Botany and Research Centre, Women's Christian College, Nagercoil, Tamil Nadu, India

Abstract
An ethnobotanical study was done in the Vellambi forest, Kanyakumari District. A total of 86 plant species belonging to 43 families were reported in the study area. The medicinal plants used by the tribes were arranged by scientific name, common name, family name, plant parts used and theraperutic uses. Out of 43 families, Euphorbiaceae had 10 species which was the dominent family during the study period. The conservation of these species in specific and a search for natural alternatives to these would save way for excarating the hidden medicinal wealth in many other widely avilable plants in the region.

Keywords: ethnobotanical study, medicinal plants, therapeutic uses, euphorbiaceae

Introduction
Medicinal plants have been used for centuries in traditional health care systems and numerous cultures around the world still rely on plants for their primary health care. With the recent advancements in plant sciences, there has been a tremendous increase in the use of plant based health products in developing as well as developed countries. About 70-80% people around the globe rely on medicinal plants for primary health health care. Medicinal plants also form a source of income for millions of people. According to World Health Organisation (WHO), ethnomedicine has retained its reputation in all regions of the developing world and its use is rapidly growing in the industrialised countries. In India the medicinal plant related trade is estimated to be approximately 1billion per year. World health organization has made an attempt to identify all medicinal plants used globally and listed more than 20,000 species. Herbal medicine is not only easy accessible at low prices for primary health care, but also can serve as valuable reservoir for pharmacological drug development. Remarkably, a majority of the world's population cannot afford the costs for western-style drugs. This is especially true for Third World Countries. Hence it does not come as a surprise that traditional medicines are far distributed on the globe. On the other hand, it is estimated that there are between 30,000-70,000 medicinal plants worldwide, most of which have not been scientifically analyzed. Since prehistoric times, herbal medicines are used without the rigorous rules necessary to register drugs now a days. Herbal recipes are frequently comprised of complex mixtures of different plant species, and even within one and the same species, the composition and amount of chemical compounds can considerably vary, depending on exogenous (e.g. climate, soil composition and altitude) and endogenous factors (e.g. genetics, epigenetics).
India is also known as a mega-diversity center among twelve in the world (Kotwal *et al.,* 2009) [1]. There are 16 agro-climatic zones, 10 vegetative zones also. Gradually the demand of herbal medicines is increasing due to its eco-friendly, low cast, easily availability and effectiveness to cure many disease. In a country like India, according to recent estimates, 70 percent of inhabitants still rely on herbs. Our nation witnesses 2,500 species of plants from about 1000 genera which are used by traditional healers. A large number of plant species have great significance for the people. Among them medicinal plants are majorly utilized by the people to treat many disease not only in India and also all over the world. India is marked as home of around 15% medicinal plants over the world.
Approximately 90% of the plant population is growing in varied climatic zones of the India. Indumathi *et al.*, (2019) [2] studied provides significant ethnopharmacological information on medicinal polants in the Palaniyyappar hills, Namakkal district Eastern Ghats, Tamil Nadu, India. The ethnomedicinal information was collected through interviews among the Palaniyyappar hills tribes. Totally of 94 medicinal plants belonging to 45 families were identified in the region. Among them, 74 species are wild and 20 species are cultivated plants. The present study to collect the information on the present status of medicinal plants used by the tribal peoples in the study area.

Materials and Methods
Study Area
The present study is to collect the information of traditional uses of medicinal plants used by the people of Vellambi forest. Vellambi forest is situated at Thovalai taluk, Kanniya Kumari district. It is bounded by Thadikkaran Konam in south, Mara Malai in the northand Perunchani dam in the west. It is 27 kilometers away from Nagercoil. The people who leaves in this area is called as 'kanikaran'. The word kanikaran means herieditary proprietor of the land.It's total population is 200. In which the number of literates are 23 and illiterates are 177. A very old Kali Temple is situated ½ km away from Vellambi forest. The natural vegetation of this region represents biomass ranging from Southern thorn forests to evergreen hill shoals with grass downs. This region comprises of a large number of medicinal plants.

Data Collection

In the field study, the botanical knowledge of kani tribals was collected by the informal interviews to the elder peoples, between the age group of 50 and 90. The local name of the plants, uses, useful parts, cultural activities and indigenous technical knowledge were recorded. Plants were studied with reference to their local name, binomial name, habit, description, useful parts and medicinal values by referring standard books and photographs were taken.

Plan of Presentation of Data

Families are arranged in the alphabetic order and the species are also arranged alphabetically under each family. Artificial dichotomous bracketed keys are provided for families, genera, species and subspecies / variety. Each genus includes its correct name with author citation and species is provided with the correct name and author citation.

Result and Discussion

In the present study eighty six medicinal plants belonging to fourty three families were recorded. The family Euphorbiaceae is the dominent family during the study period is the study area. This result was in accordance with findings of Rahman and Akter (2013) [3] and Jenisha and Jeeva (2014) [4]. The members of family Euphorbiaceae were dominant in the traditional uses of medicinal plants by native people in Odisha (Dhal *et al*., 2015) [5]. Sharma *et al*. (2014) [6] found 168 medicinal plants in Urban Homegardens of Raipur, among them the maximum number of plants were belonged to the family Euphorbiaceae (10species). Smita *et al*. (2013) [7] also found 50 medicinal plants in semiliguda block of Koraput. Among them, Euphorbiaceae is the dominent family.

In the present investigation, the traditional using plants as medicinal value at Vellambi forest were identified. There are using antifungal, antiseptic, asthma, anemia, Anthelmintic, antibacterial, astringent, anti-cancer, anti-inflammatory, bronchitis, blood sugar level, body pain, blood pressure, cough, cold, cooling, chicken box, cardiac diseases, cancer, chest diseases, chronic asthma, cholera, colicdiarrhea, diabetes, dysentery, digestive problems, epilepsy, fever, gum problems, gastric problem, headaches, heart pain etc., it was similar with the previous finding of Kalaiselvan and Gopalan (2014) [8]. This valuable survey may be useful to improve the pharmaceutical application in future. (Kalaiselvan and Gopalan, 2014) [8].

Table 1: The medicinal plants collected from Vellambi forest

Botanical Name	Common Name	Local Name	Family	Useful Part	Medicinal Uses
Acalypha indica Linn.	Indian Acalypha, Indian mercury	Kuppaime -ni	Euphorbiaceae	Whole plant	Stomach aches, hernia, asthma, Pneumonia, scabies and skin diseases
Achyranthes aspera Linn.	Shiru kedaladi	Nayuruvi	Amaranthaceae	Whole plants is used especially the roots and seeds	Hemorrhoids, indigestion, cough,anemia, Jaundice and snake bite, skin diseases
Achras sapota Linn.	Sapodilla plum	Sapota	Sapotaceae	Bark and fruits	The milky latex obtained from the bark is used to make Chewing gum and used in Dental surgery.
Aloe vera (L.) Burm.f.	Aloe vera, Medicinal aloe	Chottu Kathalai	Lilliaceae	Leaves	Cooling, anthelmintic, febrifuge, urinary diseases. Stomach ache
Amaranthus viridis Linn.	Slenden amaranth, green amaranth	Kuppai keerai	Amaranthaceae	Whole plant	Fever, pain, asthma, diabetes
Annona muricata Linn.	Soursop	Mullu Munthiri	Annonaceae	Fruit and leaves	Fever, pain, respiratory and skin illness
Annona squamosa Linn.	Custard apple	Munthiri, Sitapalam	Annonaceae	Root, leaves, fruit and seed	The leaf paste is applied on the head to Kill head lice.
Areca catechu Linn.	indian nut.	Paaku	Arecaceae	Nut	Glaucoma and digestive aid.
Aristolochia indica Linn.	Indian Birthwort	Garudakko -di	Aristolochiaceae	Root	Treat snakebite, intestinal pain
Artocarpus heterophyllus Lam.	Jackfruit	Palaa	Moraceae	Fruit, Root and Leaves	ulcers, diarrhoea, Stomachache
Asparagus racemosus Willd.	shatawari	Shatavari	Asparagaceae	Root	Upset stomach, stomach pasms
Azadirachta indica A.juss	Neem	Veppu	Meliaceae	Leaves and Bark	Plant is used in curing fever like malaria and chronic Fever.
Borassus flabellifer Linn.	Palm tree	Panai	Arecaceae	Root bark and Leaves	The root-bark is used against poisonous bites
Calotropis gigantea Linn	Crown flower	Erukku	Apocynaceae	Root and Bark	Useful in treating leprosy
Calotropis procera (Aiton) W.T.	Sodom Apple	Erukku	Apocynaceae	Bark and Root Bark	It is used for digestive disorder
Capsicum annuum Linn.	Bird's eye Chilli	Kanthari	Solanaceae	Fruit and Leaves	The fruit and leaves are ground into Paste and applied externally for wounds.
Cardiospermum Halicacabum Linn.	Balloon vine	Ulinja	Sapindaceae	Root, Leaves and seed	The root decoction is Useful in fever.
Careya arborea Roxb.	Wild guava	Puta-tanni-maram	Lecythidaceae	Bark, Fruit and leaf	ulcer, cough, eruptions in the skin, wound and promotes digestion
Carica papaya Linn.	Papaya	Papali	Caricaceae	Fruit and Leaves	Leaf juice is taken orally to treat malaria.

Cassia fistula Linn.	Golden Rain tree	Konna	Fabaceae	Fruit bark root	The bark is used in treating skin disease.
Catharanthus roseus Linn.	Periwinkle, medagascar perwinkle	attanari	Apocynaceae	Whole plant	Lymphomas and childhood cancer
Centella asiatica (L.) Urban	Indian Penny Wort	Vallarai	Umbelliferae	Whole plant	Paste of the leaf applied over the stomach cures chronic ulcers.
Cissus quadrangularis Linn.	Devil's ackbone	Pirandai	Vitaceae	Stem	The stem is Crushed and its juice is used in bandaging.
Citrus limon (L.) Burm.F.	Lemon	Elumichai	Rutaceae	Fruit	Lemon juice is remedy for scurvy.
Cleome viscosa Linn.	Cleome	Naikadugu	Capparidaceae	Leaves And seed	Leaf juice is used in earache and eye troubles.
Clitoria ternatea Linn.	Butterfly pea	Sangu pushpam	Fabaceae	Leaves And root	Seed paste is applied in swollen joints.
Cocos nucifera Linn.	Coconut tree	Thengu	Arecaceae	Fruit	Coconut milk is diuretic and destroys intestinal Worms.
Coffea Arabica Linn.	Coffee	Kappi	Rubiaceae	Beans	Coffee is a stimulant beverages for the nervous system Due to the alkaloids 'Caffeine'
Coleus amboinicus Lour.	Indian Borage	Navara Pachilai	Lamiaceae	Leaves	Half spoon of juice, a pinch of pepper powder and honey controls cough and fever in children.
Cucumis sativus Linn.	Cucumber	Vellari	Cucurbitaceae	Fruit	The fruits are diuretic and good for burning sensation.
Curcuma longa Linn.	Turmeric	Manjal	Zingiberaceae	Rhizome	Rhizome is mixed with warm milk is beneficial to common cold
Cynodon dactylon (L.) Pers.	Cough grass	Arukapul	Poaceae	Whole plant	Juice is applied to bleeding cuts and wounds.
Datura stramonium Linn.	Devil's trumpet	Oomathai	Solanaceae	Roots, leaves, lowers and seeds	Leaves and seed juice isuseful in respiratory ailments, Ear ache and eye diseases.
Ecbolium viride (Forssk.) Alston	Green shrimp plant	Neelambari	Acanthaceae	Whole plant	Jaundice, menorrhea, rheumatism, inflammation.
Elephantopus scaber Linn.	Elephant's Foot	Yaani Chamuid -dadi	Asteraceae	Whole plant	reduce fever and eliminate bladder stones
Ensete superbum (Roxb.)	Rock banana	Kal vaalai	Musaceae	Whole plant	Cancer, diabetes, dog bite, dysuria, kidney stone,
Euphorbia hirta Linn.	red euphorbia	chitakuti,	Euphorbiaceae	Whole Plant, latex	Asthma, bronchitis, respiratory problems,
Euphorbia nivulia Linn.	Mil hedge	Mantha kalli	Euphorbiaceae	Leaves	asthma, leprosy, jaundice
Ficus religiosa Linn.	Bodhi tree,	Arasha maram	Moraceae	Leaves, Bark, Seeds and fruit	antiulcer, antibacterial, antidiabetic,
Gomphrena lobosa Linn.	Globe amaranth	Vada malli	Amaranthaceae	Flowers	It is used for baby gripe, oliguria, cough and diabetes.
Heliotropium indicum Linn.	Indian eliotrope	thelkodukai	Boraginaceae	Whole plant	ulcer, sores, wounds, skin affections
Hemidesmus indicus (L.) R.Br.	Indian sarsaparilla	Nannari	Apocynaceae	Roots, Leaves And stem	Keep the body cool.
Hibiscus rosa- sinensis Linn.	Shoe Flower plant	Chembaru -thi	Malvaceae	Roots, Leaves And flowers	Cough, venereal diseases and feaver.
Ixora coccinea Linn.	Juncle flame	Thetti	Rubiaceae	Leaves, Roots, Flowers and fruit	They are useful in cure cough, fever, gonorrhoea, dysentery, sores, chronic ulcers and skin diseases.
Jasminum grandiflorum Linn.	Spanish jasmine	Pichi	Oleaceae	Whole plant	Leaves if chewed control stomatitis. The Leaf juice is best remedy for ring-worm infection.
Jasminum sambac (L.) Ait	Arabian jasmine	Kundumal -likai	Oleaceae	Roots, Leaves and flowers	The roots along with leaves are useful in Ophthalmopa -thy
Jatropha curcas Linn.	Purging- nut	Kattamana -kku	Euphorbiaceae	Leaves, seeds and oils	The leaf paste is useful in foul ulcer, tumours and scabies.
Jatropha gossypiifolia Linn.	Cotton-leaf physic nut	Chuvanna -kadalava -nakku	Euphorbiaceae	Leaves	It is traditionally used for family planning.
Jatropha multifida Linn.	Coral plant	Churakkalli	Euphorbiaceae	Leaves and latex	treatment of infected wounds, Skin infection and ulcer.
Justicia adhatoda Linn.	Malabar nut	Adhatoda	Acanthaceae	Leaves, Root, Flowering and bark	Cough, colds, asthma, bronchitis and tuberculosis.

Lantana camara Linn.	Wild sage	Poochadi	Verbenaceae	Stem and Root bark	It is used as an anti- septic for wounds.
Lawsonia inermis Linn.	Cypress shrub	Maruthani	Lythraceae	Roots, Leaves, Flower and seeds	The root paste is applied topically for burning sensation, skin diseases and premature graying of hair.
Mangifera indica Linn.	Maango tree	Mavvu	Anacardiaceae	Fruit	The kernel juice is snuffed once for 3 days to stop nasal Bleeding.
Manihot esculenta Crantz	Topioca	Maravalli - kilagu	Euphorbiaceae	Tuberous roots	They are useful in dyspepsia and wounds
Mimosa pudica Linn.	Touch-me- not	Thoddalsur - ingi	Fabaceae	Whole plant	Whole plant is used to cure burning sensation and diarrhoea.
Mirabilis jalapa Linn.	4'o clock plant	Nalumani	Nyctaginaceae	Roots and leaves	The paste of leaf and roots are applied to lesions, inflammations and boils.
Moringa oleifera Lam.	Drum stick	Muringai	Moringaceae	Whole plant	Flower, leaf, fruit, seeds all are used in renal disorders.
Murraya Koenigii (L.) Spreng.	Curry leaf	Kariveppila	Rutaceae	Leaves and bark	Decoction of the leaves controls fever and cough.
Musa acuminata Colla.	Banana Tree	Vaalai maram	Musaceae	Fruit, Flowers and youg stem.	Fever, cough, dysentery and allergic infections.
Myristica fragrans Houtt.	Nut meg	Chatikai	Myristicaceae	Seed and fruit	It is used treat stomach ulcers, indigestion, liver disorders,
Nephelium lappaceum Linn.	Rambutan	Rambutan	Sapindaceae	Fruit and leaves	It is used in treatment of various diseases, especially fever and diarrhoea.
Nerium oleander Linn.	Nerium	Arali	Apocynaceae	Seeds and leaves	It is used for heart conditions, asthma, cancer, painful menstrual periods, leprosy, malaria, indigestion
Ocimum sanctum Linn.	Holy basil	Thulasi	Lamiaceae	Leaves	Cough, cold and headache.
Oldenlandia umbellata Linn.	Chay root	Saya	Rubiaceae	Root, Leaves, Bark and fruit	Cough, cold, fever, blood vomitting
Pandanus maryllifolius Roxb.	Fragrant andan, Screwpine	Rampeh	Pandanaceae	Leaves	Chest pains, reduce fevers and inflammation from arthritis in human as well as in animals.
Pergularia Daemia (Forssk.) Chiov.	hair knot plat	Veliparuthi	Apocynaceae	Whole plant	diarrhea, cough, asthma, skin condition, piles and uterus related problem
Phyllanthus emblica Linn.	Indian Goose berry	Nelli	Euphorbiaceae	Bark, leaves and fruit	diabetes, cough, bronchitis, peptic ulcer, flatulence, jaundice, leukoderma, cardiac disorder
Phyllanthus niruri Linn.	Phyllanthus plant	Kellanelli	Euphorbiaceae	Whole plant	Paste of whole plant is good for ulcer.
Piper longum Linn.	Long pepper	Tippili	Piperaceae	Fruit	cough, cold and throat pain
Piper nigrum Linn.	Black pepper	Nallami -laku	Piperaceae	Fruit	Asthma, fever, cough, dyspepsia, hiccough, flatulence and dermatopathy.
Psidium guajava Linn.	Guava	Perai, koyya	Myrtaceae	Fruit and leaves	The fruits are Used as a good laxative
Punica granatum Linn.	Pomergran -ate	Maathulai	Punicaceae	Whole plant	The root and bark decoction is used as cooling body and are good for tape worm
Ricinus communis Linn.	Caster bean	Aamanaku	Euphorbiaceae	seed	The oil extracted from the seed is antipyretic and thermogenic.
Santalum album Linn.	Sandal	Chanda -num	Santalaceae	Heard wood	The heart wood is bitter, sweet, aromatic and diuretic.
Saraca asoca L.	Asoka tree	shoka	Fabaceae	Bark	The bark extract is given to treat many uterine disorders Such as leucorrhea, menorrhea.
Solanum melongena Linn.	Brinjal	Kanthari	Solanaceae	Fruit, root, Seeds and leaves	Root are used as anti-asthmatic and stimulant.
Solanum nigrum Linn.	Black night shade	Manathakk	Solanaceae	Whole plant	Whole plant part is taken as a food to treat cough
Solanum torvum Sw.	Turkey berry	Chundakai	Solanaceae	Fruit and leaves	It is used to control a range of microbial activities.
Solanum trilobatum Linn.	Purple fruited pea egg plant	Thuthuva -lai	Solanaceae	Leaves	The leaf juice is taken orally to treat cough and itching
Syzygium aromaticum (Linn.)	Clove	Kirampu	Myrtaceae	Dried flower buds	Clove oil is extracted from the dried flowers are used to prevent dental

					carries.
Syzygium jambos (L.) Alston	Malabar plum	Jambakai	Myrtaceae	Whole plant	Digestive and tooth ailments. A decoction of the leaves as used as a diuretic
Tecoma stans (L) Juss. ex Kunth	Trumpet flower	Manjal paddi	Bignoniaceae	Whole plant	Treatment of diabetes, dig estive problems, control of yeast infections
Tectona grandis Linn. f.	Teak	Thekku	Lamiaceae	Wood and flowers	Cooling, laxative, sedative to gravid uterus and useful in treatment of piles, leukoderma and dysentery.
Tridax procumbens Linn.	Coat buttons	Muriyam pachilai	Asteraceae	leaves	Leaf paste is applied on cuts and wounds.
Vitex negundo Linn.	Three leaved chaste tree	Nochi	Verbinaceae	Roots, Leaves and fruit	Headache, fever, cold and cough.
Zingiber zerumbet Linn.	Shampoo ginger	Kolinchi	Zingiberaceae	Rhizome	Cough, stomachache, asthma and also as a vermifuge vermiufuge.

Conclusion

The study area, due to over exploitation and unsustainable harvesting, several important commercial medicinal plants are facing great threats and need to be conserved properly. Moreover, lack in interest of present generation about the use of medicinal plants augments the threat. Therefore, suitable conservation planning is strongly recommended to conserve medicinal plants including biomedical research, transfer of technology to harvest the existing medicinal plants sustainably, organization of educational and awareness programmes among local communities.

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