

TRADITIONAL MEDICINAL PLANTS OF SELECTED SACRED GROVES, PACHAMALAI AGAINST POTENTIAL DISEASES

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Abstract:

The present study focused to document the routinely used traditional medicinal plants against potential diseases in the selected sacred groves of Pachamalai, Tamil Nadu, India. Medicinal plants are the important potential sources of the place particularly in the sacred groves. Totally 62 medicinally important routinely used plants were recorded with their mode of preparation and administration. These information's gathered from the traditional medicinal practitioners by the regular scientific interaction. From our observation tree species are most dominant than other habits in the studied sacred groves followed by shrub, herb and climbers. And decoction was the most preferable administration to cure diseases with 28.75% followed by paste and fresh parts (26.5%), raw juice (16.5%) and food (1.6%). Leaves (41%) are the most preferable plant part as medicine than other parts. Most potential diseases like jaundice, skeleton muscular disorders, and diabetics have been cured by the herbal practitioners in the study area. This kind of scientific documentation may serve as a platform for the scientific communities for their drug discovery research.

Key words: Potential diseases, Sacred groves, Pachamalai, Jaundice.

1. Introduction

Sacred groves are the shelters of many plants and animal since very long period. A sacred grove made a special kind of religious importance to a particular place. It featured in various cultures throughout the world. Since time immemorial humans rely on plants and their products for the basic needs like medicines, production of foodstuff, shelters, clothing, means of transportation, fertilizers, flavors, and fragrances, and not the least (Ezhil vani et al., 2016). Olden day's humans acquired the knowledge on plant utilization for pharmaceutical values through many years of attentive observations, experience, and trial and error experiments (Gurib, 2006). Traditionally available medicinal plants are an important source of indigenous medical systems in this world (Kong, et al., 2003; Salai Senthil Kumar. et al. 2014). It refers to the system of medicinal practices have transmitted through oral verbs of their ancestors in the particular group of communities since prolonged time (Cotton, 1996). One of oldest system of medicinal practices to live healthy life is traditional medicinal system. This kind of unique practices have adopted by the

indigenous people for centuries among best renowned Indian, Chinese and African system of traditional medicine (Vaidyanathan, et al., 2014; Karunamoorthi. et al., 2012; Sisubalan. et al.,2014).

The readily available and the culturally acceptable plants are these traditional medicinal plants. They provide an easily affordable and accessible health care system and serve as a potential source of livelihood to the indigenous and rural communities (8). Now a day's research on plant and use of traditional medicinal knowledge has again achieved considerable significance of interest. This study aimed on the following views in particular selected sacred groves; a) To document the routinely used traditional medicinal plants of tribal communities around sacred groves in Pachamalai b) To record mode of administration and mode of preparation of herbal drugs c) To explore the herbal knowledge in the scientific way throughout the globe by scientific communications.

2. Materials and Methods:

2.1 Sacred groves (Study Area):

The sacred groves in Pachamalai like Kaaliyamman Kovil, Alagu perumal kovil, Periyannan kovil, Karuppu Kovil, Andy kovil, Lakshmanan kovil, Murugan kovil in Tiruchirappalli and Salem district of Tamil Nadu were taken for this study. Temperature is moderately high and the average temperature during summer is 34°C and fewer less in winter. The average humidity ranged from 45 to 49 % during November to December.

2.2 Data Collection

The survey was undertaken to identify routinely used traditional medicinal plant species using structured questionnaire. The structured questionnaire was used to collect in formations on locality, scientific and vernacular names, part(s) of the plant used, method(s) of preparation for use, with/without additive(s), disease(s) for which plant is used. In addition, the traditional healers were interviewed using semistructure questionnaires and open-ended conversations. An interview was conducted with five local healers in local languages and then translated in to English. No further attempt was made to influence those traditional practitioners who completely refused to provide information. Plants recorded in the results were

mentioned by at least two traditional healers as treating the same disease in order to confirm its use. Finally, data were compiled for further analysis.

2.3 Statistical analysis:

The data was accessed on Microsoft Excel work sheets to summarize the various proportions like habit, plant parts used, frequency of citation and disease category for medicinal plants used in the study area.

2.4 Fidelity level (FL):

The fidelity level (FL), the percentage of informants claiming the use of a certain plant for the same major purpose, was calculated for the most frequently reported diseases or ailments as follows:

$$FL(\%) = N_p / N \times 100$$

Where N_p is the number of informants that claim a use of a plant species to treat a particular disease, and N is the number of informants that use the plants as a medicine to treat any given disease (Giday et al., 2009; Alexiades and Sheldon, 1996; Teklehaymanot, 2009). Before calculating FL, reported ailments were grouped into major disease categories following the approach of Heinrich (Heinrich, et al., 1998). Generally plants which are used in a repetitive manner are more likely to be biologically active (Trotter and Logan, 1989).

3. Results and Discussion

3.1 Medicinal plant documentation:

The regular survey has been made in the selected sacred groves in regular interval during the year July 2015 to August 2016. The traditional healers in and around the sacred groves taken for this study; we observed that they have much more conscious of faith, beliefs, myth in the plants of sacred groves. The routinely used important traditional medicinal plants only observed and documented through this study. Totally 62 traditionally used medicinal plants which are used from prolonged generations were documented; uses, mode of administration for the respective parts have been recorded. All the documented plants has immense amount of medicinal usage against many harmful diseases and disorders like jaundice, Diabetes, Diarrhea and etc. The whole information regarding this 62 medicinal plants were tabulated (Table 1; Figure

1-3). The documented medicinal plants should be very useful for scientific communities on conservation and drug preparation basis. Similarly there are many reports have been supported our studies by the usage of documented medicinal plants (Subramanian, et al., 2016; Karthik, et al., 2015; Thandavamoorthy, 2017; Jayapal, et al., 2014; Walter, 2015; Sambandan and Dhatchanamoorthy, 2012; Manjula, et al., 2017; Manna, et al., 2017).

3.2 Fidelity value (FL):

The FL of a plant species for a specific disease in the study area varied between 35.50% for skeleton muscular treatment and 100% for fever as shown in Table 2. The maximum FL of 100% expressed by *Pergularia daemia*, *Pterocarpus marsupium* (70%), *Phyllanthus Sps.*, and *Amorphophallus campanulatus* (75%) were used to treat fever, cold, cough, Jaundice, Poisonous bites and so on. The result indicated that *Pergularia daemia*, *Phyllanthus Sps.*, and *Amorphophallus campanulatus* is the choice of most healers or plant practitioners for treating such diseases. Similarly 100% FL was reported in *P. amarus* for jaundice among the herbal healers in Shimoga district of Karnataka (Rajakumar and Shivanna, 2009) and Malasar tribals in Velliangiri hills of Tamil Nadu, India (Ragupathy, et al., 2008).

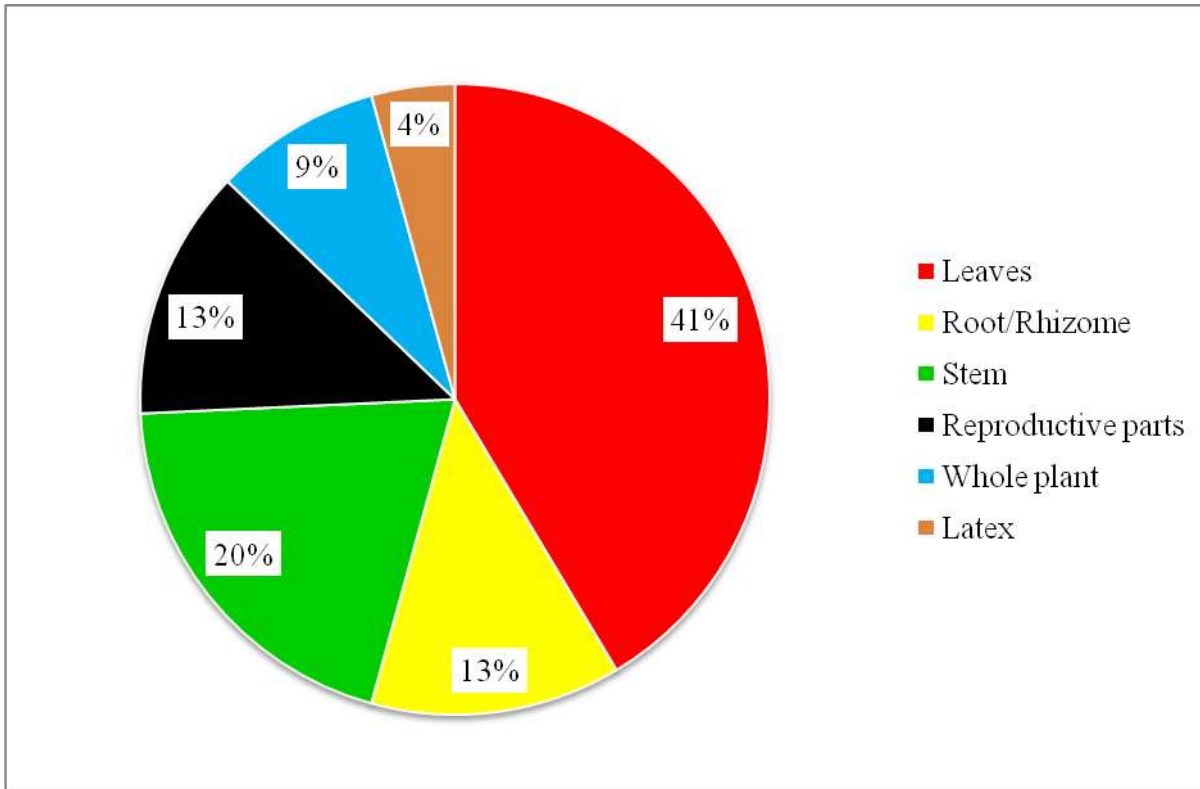


Figure 1: Percentage of Plant part utilization

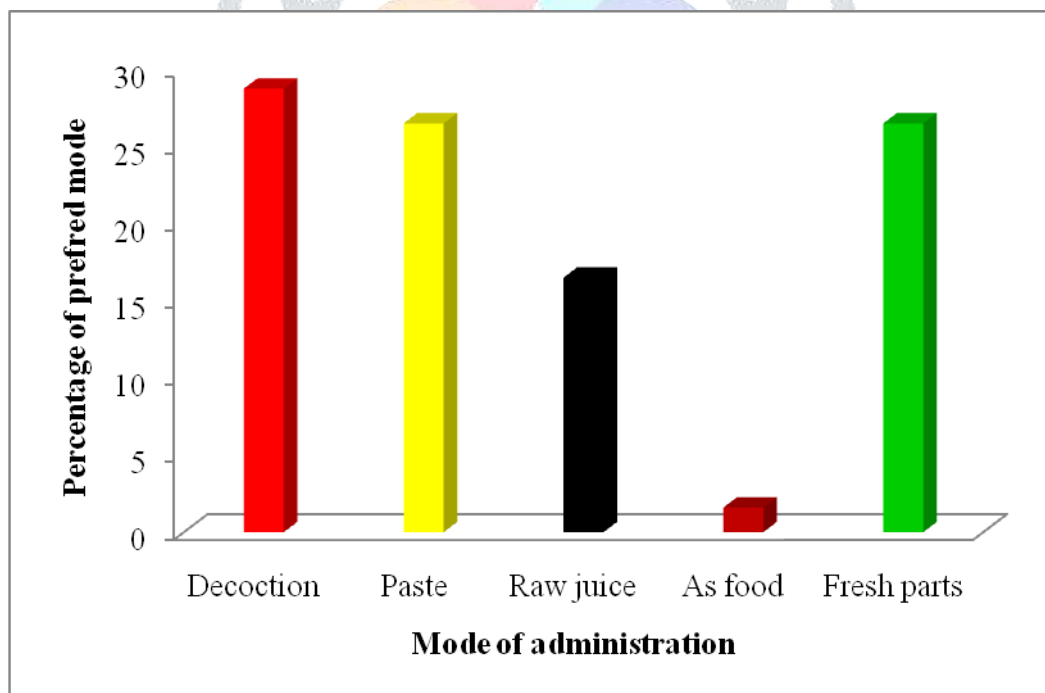


Figure 2: Mode of administration

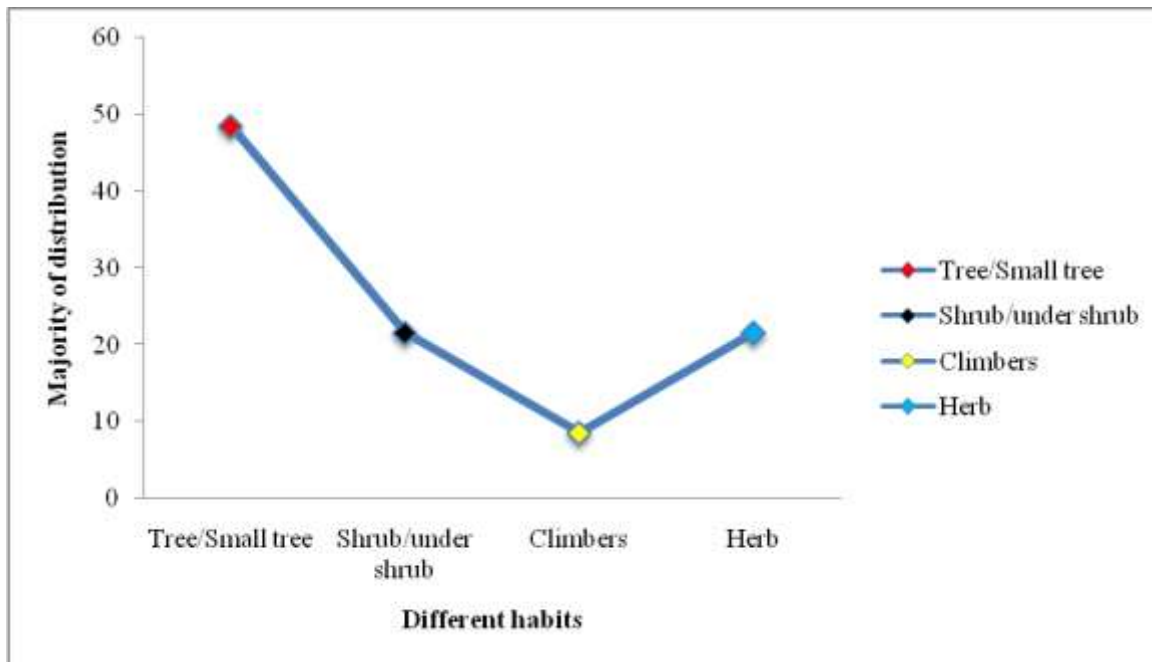


Figure 3: Plant distribution under different habits

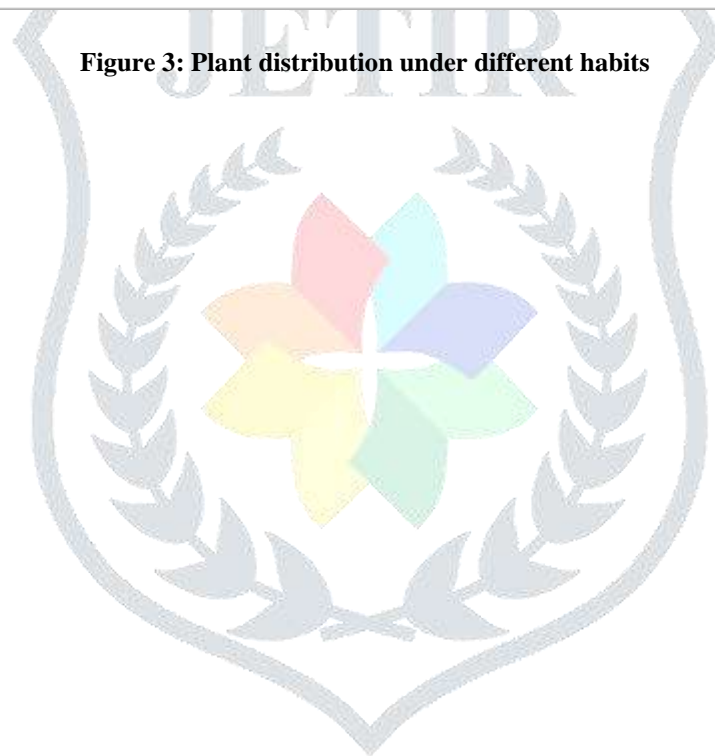


Table 1: List of routinely used medicinal plants recorded in and around the selected sacred groves of pachamalalai

List of routinely used medicinal plants from selected sacred groves in Pachamalalai (Kaaliyamman Kovil, Alagu perumal kovil, Periyannan kovil, Karuppu Kovil, Andy kovil, Lakshmanan kovil, Murugan kovil)							
1.	<i>Aegle marmelos</i> Corr.ex.Roxb.	Rutaceae	Vilvam	Tree	Leaf, fruit	Head to Get cooling effect to eyes, heal wounds.	Leaf paste is applied topically to heal wounds; Ripened fruit pulp paste is applied on head to get cooling effect to eyes.
2.	<i>Citrus medica</i> L.	Rutaceae	Campalam	Small tree	Fruits	Foul breath, scurvy, nausea and vomiting.	A small quantity of insipid juice, if any
3.	<i>Murraya koenigii</i> (L.)	Rutaceae	Karuveppilai	Tree	Leaves	Arrest vomiting.	Juice of tender leaves is taken orally
4.	<i>Toddalia asiatica</i> Lam.	Rutaceae	Mila karanai	Straggler	Whole plant	Cure fever, diarrhea, Cough, wound and ulcer, Fits	Fruits are useful
5.	<i>Atylosia albicans</i> (Wight & Arn.) Benth.	Fabaceae	Kollukoppankodi	Climbing shrub	Whole plant	Galactagogue in cows	This plant is used as a galactagogue in cows.
6.	<i>Terminalia arjuna</i> Roxb.Ex. Dc Wight & Arn.	Combretaceae	Maruthamaram	Tree	Fruit	Headache to kill worms in teeth.	Fruit paste is applied topically on wounds. Bark powder is boiled with water and inhaled to cure headache to kill worms in teeth.
7.	<i>Terminalia chebula</i> Retz.	Combretaceae	Kadukkai	Tree	Fruits, flowers	Cough and asthma	Fruits of the above and flowers of <i>Cinnamomum</i> <i>zeylanicum</i> (Elavangam) are powdered and mixed with honey administered thrice daily for curing cough and asthma.
8.	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Naval maram	Tree	Stem, bark	Swellings reduce body heat.	Paste of stem bark is applied topically to treat swellings. The ripe fresh Fruits are taken orally to reduce body heat.
9.	<i>Desmodium gangeticum</i> (L.) DC.	Fabaceae	Pullati	Under shrub	Leaves	Ear to kill insects	Leaves are boiled with castor oil and decanted. This is applied in the ear to kill insects.
10.	<i>Indigofera linnaei</i> Ali.	Fabaceae	Seppunerinji	Herb	Leaves	Paralysed parts of	Leaves and floral parts of the plants

						the body	of <i>Evolvulusalsinoides</i> , <i>Crotalaria pallida</i> , <i>Indigoferalinnaei</i> and <i>Salanumseafortianum</i> are made into paste and applied on the paralysed parts of the body
11.	<i>Lablab purpureus</i> (L.) Sweet var.	Fabaceae	Avarai	Vine	Seeds	Disorders, diarroehea, inflammation and stranguary	To use internally
12.	<i>Pongamia pinnata</i> L.	Fabaceae	Ponka	Tree	Bark, leaf	Cattle for better Digestion.	Bark and leaf powder is given orally to cattle For better Digestion.
13.	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	Vengai	Tree	Aerial part	Astringent, inflammation, diabetes, cough, asthma and graying hair.	The heartwood is used as an astringent and in the treatment of inflammation and diabetes.
14.	<i>Sesbania grandiflora</i> (L.) Pers.	Fabaceae	Agathei	Tree	Leaf	Cooling effect to infected eyes	Cooked leaves are taken to get cooling effect to infected eyes.
15.	<i>Tephrosia purpurea</i> (L.) Pers.	Fabaceae	Kavali	Under shrub	Leaves	Breast milk for infantile	Leaves and root bark of the above and fruits of <i>elettaria cardamomum</i> are powdered and again mixed with hot water or preferably with breast milk for infantile.
16.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Vembu	Tree	Leaf	Small pox, Rheumatism and skin diseases, strong teeth	Leaf paste is applied topically on the body to treat smallpox, Rheumatism and skin diseases. The young twigs are used as toothbrush To develop strong teeth.
17.	<i>Melia composite</i> Willd.	Meliaceae	Malaiavempu	Tree	Leaves, seeds	Small pox, rheumatism and skin diseases. Strong teeth	Leaves paste is applied topically on the body to treat small pox, rheumatism and skin diseases. The young twigs are used as toothbrush to develop strong teeth.
18.	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Kattuillanthai	Tree	Fruit, root, leaf, bark,	Wounds, ulcer, fever, vomiting,	Decoction, infusion

					flower	diarrhea	
19.	<i>Cissus quadrangularis</i> L.	Vitaceae	Pirandai	Shrub	Stem	Easy digestion.	Paste of stem is taken orally for easy digestion.
20.	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Mudakkathan	Vine	Root	Throat infection and headache.	Root is boiled with oil and applied on head before bath to treat
21.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Anaikarai	Tree	Leaf	Wounds, bruises, ulcer, ophthalmia, Odontalgia, diarrhoea and dysentery.	Leaf paste applied
22.	<i>Mangifera indica</i> L.	Anacardiaceae	Maamaram	Tree	Leaf and stem bark	Heel cracks.	The latex from leaf and stem bark is used to treat heel cracks.
23.	<i>Odina wodier</i> Roxb.	Anacardiaceae	Uthiyam, Odimaram	Tree	Leaves	Prevent white discharge in women.	Juice of leaves is taken orally to prevent white discharge in women.
24.	<i>Moringa oleifera</i> Lam.	Moringaceae	Murungai	Tree	Leaf, Flower	Indigestion and eye diseases, Eyes and increases sperm production in men.	The leaf is taken as food and it reduces body heat and to treat Indigestion and eye diseases. Flower is taken as food and it gives chillness to Eyes and increases sperm production in men.
25.	<i>Cassia tora</i> Linn.	Caesalpiniaceae	Tagarai	Herb	Leaf, stem	Malaria, ring worm, chronic inflammation of The skin and Other skin diseases.	Paste of leaves is applied on skin
26.	<i>Delonix elata</i> (L.) Gamble	Caesalpiniaceae	Vaadha mudakki	Tree	Leaves and bark	Anti-inflammatory Activity	Fresh leaves were carefully cleaned, dried in shade, powdered stored to use
27.	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Puli	Tree	Fruit	Painful muscle swelling	Fresh fruit pulp paste mixed with lime is Applied on the painful muscle swelling.
28.	<i>Acacia dealbata</i> Link.	Mimosaceae	Seegai	Small tree	Bark, leaf and Wood, gum	Cuts and wounds, bronchial diseases	The gum has been as a remedy in bronchial diseases and as an antitode to poisoning by alcohol and ammonia.

29.	<i>Acacia nilotica</i> (L.) Del.ssp. indica (Benth.) Brenan	Mimosaceae	Tiritapicam	Tree	Leaf	Astringent, acrid, cooling, stypic, Aphrodisiac, vulnerary, Anthelmintic, dysentery	Tender leaf juice is taken internally to cure dysentery
30.	<i>Acacia pennata</i> (L.) Willd.	Mimosaceae	Kattuchikai	Straggler	Stem, bark	Diarrhea	Decoction of stem bark is given orally
31.	<i>Albizia amara</i> (Roxb.)B.Boivin	Mimosaceae	Oosillai	Tree	Stem, bark	Healing wounds.	Stem bark paste is applied externally for healing wounds.
32.	<i>Albizia lebbek</i> (L.)Benth.	Mimosaceae	Vaagai	Tree	Leaf	Rheumatic joint pain.	Tonic is taken orally
33.	<i>Mimosa pudica</i> L.	Mimosaceae	Thottasinungi	Herb	Whole plant	Prevent Excess menstrual bleeding	Whole plants used
34.	<i>Rubus racemosus</i> Roxb.	Rosaceae	Neer mundi	Stragglng shrub	Leaves	Oedema	Decoction of the leaves is given for Oedema.
35.	<i>Basella alba</i> L.	Basellaceae	Vennangkodi	Climbing herb	Whole plant	Poultice for setting bones	Paste made out of the above are used as poultice for setting bones
36.	<i>Polygonum plebejum</i> R. Br.	Polygonaceae	Tharaikodi	Herb	Root	Dysentery	Root paste with curd is administered for dysentery.
37.	<i>Aristolochia bracteata</i> Retz.	Aristolochiaceae	Aadu tintappalai	Herb	Leaf	Dandruff and fungal infection.	Leaf paste applied over the scalp to relieve Dandruff and Fungal infection.
38.	<i>Aristolochia indica</i> L.	Aristolochiaceae	Perumarunthu	Tree	Leaf	Stomach pain.	The leaf juice of the plants three days torelieve stomach pain.
39.	<i>Cinnamomum verum</i> J. S. Presl	Lauraceae	Lavangappattai,	Tree	Stem, bark	Cough, dysentery And to keep the body cool.	Decoction of stem bark is taken internally to treat cough, dysentery and to keep the body cool.
40.	<i>Bridelia retusa</i> (L.) A.Juss.	Euphorbiaceae	Aanvengai	Small tree	Stem, bark	Relieve chest pain	Powdered stem, bark with water used as corminative for cows. Latex is applied on the chest of humens to relieve chest pain.
41.	<i>Ficus benghalensis</i> L.	Moraceae	Alamaram	Tree	Stem, latex	Tooth brush.	Stem, latex is applied topically on heel cracks. Young stem is used as Tooth brush.

42.	<i>Ficus microcarpa</i> L.f.	Moraceae	Kalathi	Shrub	Latex	Join to relieve pain	Plant latex is applied on Join to relieve pain.
43.	<i>Ficus racemosa</i> L.	Moraceae	Athimaram	Tree	Stem latex	Heel cracks.	Stem, latex is applied topically to treat heel cracks.
44.	<i>Ficus religiosa</i> L.	Moraceae	Arasu	Tree	Leaf	Relief from body pain.	Dried leaf powder is mixed with water and taken orally to get relief from body pain.
45.	<i>Hugonia mystax</i> L.	Linaceae	Motirakanni	Shrub	Roots	The roots are useful in fevers, verminosis, externally as a paste for inflammations. Fever	Applied externally; Decoction for fever
46.	<i>Argyreia speciosa</i> (L. f.) Sweet	Convolvulaceae	Samuttra palai	Woody climber	Root	Chronic cough, cold and in consequent fever.	A paste of roots along with <i>Asparagus racemosus</i> , <i>Grewia hirsute</i> and <i>Hemidesmus indicus</i> is used for chronic cough, cold and in consequent fever.
47.	<i>Merremia hastata</i> L. (Desr.) Hallier.f.	Convolvulaceae	Talanelli	Twining herb	Whole plant	Promote hair growth	Hair oil prepared with extract of whole plant to promote hair growth
48.	<i>Solanum trilobatum</i> L.	Solanaceae	Toothuvilai	Under Shrub	Leaf	Cold	Juice of leaves is taken orally
49.	<i>Solanum surattense</i> Burm.f.	Solanaceae	Kandan kattiri	Herb	Seed	Skeletal Diseases	2-5ml seed oil with ginger juice is given once a day in rheumatic arthritis and also applied externally.
50.	<i>Andrographis echioides</i> (L.) Nees	Acanthaceae	Malaithangi	Herb	Leaves	Chest pain	Leaf is ground into a paste and taken orally to get relief from chest pain.
51.	<i>Asteracantha longifolia</i> (L.) Nees,	Acanthaceae	Golmidi	Herb	Whole plant	Rheumatism, inflammation, jaundice, hepatic obstruction, pain, urinary infections	The whole plant are extensively used in traditional system of medicine for various ailments like rheumatism, inflammation, jaundice, hepatic obstruction, pain, urinary infections
52.	<i>Clerodendrum inerme</i> (L.) Gaertn.	Verbenaceae	Piei nari sangu	Shrub	Leaf	Fever	Leaf is ground in water and the juice is taken orally to treat fever.
53.	<i>Clerodendrum serratum</i>	Verbenaceae	Sirutekku	Shrub	Leaf	Stimulant	Decoction of leaves and root used to

	(Linn.) Moon.						treat stimulant
54.	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Koulouvai	Herb	Leaves	Colic and stomach ache	Crude leaf extract is also used as a relief to colic and stomachache
55.	<i>Rosmarinus officinalis</i> L.	Lamiaceae	Agavu	Shrubby herb	Leaves	Cold, scurf and dandruff	An infusion of the dried plant (both leaves and flowers) combined with borax and used when cold, makes one of the best hair washes known
56.	<i>Cleistanthus collinus</i> (Roxb.) Benth. and Hook.f.	Euphorbiaceae	Oduvan	Tree	Leaves	Poisonous purpose	Leaves are used as insect repellent in agricultural fields and fruit used
57.	<i>Pergularia daemia</i> (Forssk.) Chiov.	Asclepiadaceae	Veliparutthi	Straggler	Leaf	Fever, Stomach ache and ulcer	Leaf juice is mixed with egg and taken orally to cure stomach ache and ulcer.
58.	<i>Plecospermum spinosum</i> Trec.	Moraceae	Ekkimullu	Shrub	Root	Checks cholera, colds, cough, syphilis	Decoction of roots used for colds, cough, syphilis
59.	<i>Asparagus racemosus</i> Willd.	Liliaceae	Thaneervitan kizhangu	Shrub	Root	Uterine disorder	Root powder mixed with taken internally for increasing lactation and uterine disorder
60.	<i>Phyllanthus debilis</i> L. (Klein exWilld)	Euphorbiaceae	Keelanelli	Herb	Whole plant	Jaundice	Whole plant parts are ground into a paste and taken orally 3 times a day for 3days to treat jaundice
61.	<i>Amorphophallus campanulatus</i> (Roxb.) Bl	Araceae	Karunaik kizhangu	Herb	Tubers	Snake bite	The tubers are crushed and applied in wounds of snake bite
62.	<i>Vetiveria zizanioides</i> (L.) Nash	Poaceae	Vettiver	Herb	Root	Reduce the dandruff, and hair falling	Dried roots are mixed with coconut oil to reduce the dandruff, and hair falling.

Table 2 - Fidelity level (FL) values for common medicinal plants used by traditional healers by ailment category.

Ailment Category	Most preferred species with specific ailment	FL %
Dental care	<i>Azadirachta indica</i> (Tooth ache)	45.00
Dermatological infections/ diseases	<i>Cassia tora</i> (Skin diseases),	65.00
	<i>Aegle marmelos</i> (Wound)	65.50
Ear, Nose, Throat problems	<i>Desmodium gangeticum</i> (Ear ache)	45.50
Endocrinal disorders	<i>Pterocarpus marsupium</i> (Diabe.),	70.00
Fever/Cold	<i>Pergularia daemia</i> (Fever),	100.00
Liver Problems (Jaundice)	<i>Asteracantha longifolia</i> ,	75.00
	<i>Phyllanthus Sps.</i>	100.00
Poisonous bites	<i>Amorphophallus campanulatus</i> (Snake bite)	75.00
Skeleto-muscular system disorders	<i>Solanum surattense</i> (Rheumatism),	55.50

4. Conclusion:

In conclusion the local peoples in and around the studied sacred groves, has more knowledge of using plants as a medicine throughout their lifespan as well as passed their knowledge to generations through oral communication not by written documents. Up to date they still were following their customs and beliefs. This kind of research studies may helpful to explore the knowledge and utilization of medicinal plants without affecting the plants in the natural habitat. The peoples belong to the study area still rely on the medicinal plants and using those medicinal plants in their daily beliefs. And there is an urgent need to document all information's about the uses of medicinal plants from the traditional healers for future research.

References

- Alexiades MN, Sheldon JW. *Advances in Economic Botany*. Bronx, New York, The New York Botanical Garden. **1996**. 10.
- Cotton, CM. *Ethnobotany: Principles and Applications*. Chichester, England: Wiley; 1996.
- Giday M, Asfaw Z, Woldu Z, Teklehaymanot T. *Journal of Ethnobiology and Ethnomedicine*. **2009**. 5:34.
- Gurib-Fakim, A. Medicinal plants: traditions of yesterday and drugs of tomorrow. *Mol Aspects Med*. 2006;27:1–93.
- Heinrich M, Ankli A, Frei B, Weimann C, Sticher O. *Social Science and Medicine*. **1998**. 47:1859–71.
- Jayapal, J. Tangavelou, AC. , and A.Panneerselvam. Studies on the Plant diversity of Muniandavar Sacred Groves of Thiruvaiyaru, Thanjavur, Tamil Nadu, India. *Hygeia.J.D.Med*.2014, 6(12).
- Karthik,S. Subramanian, M and S. Ravikumar. Floristic Studies on Kilcheruvi (Edaicheruvi) Sacred Grove at Cuddalore District, Tamil Nadu, South India *Int. J. Curr. Res. Biosci. Plant Biol*. 2015, 2(7): 192-205.
- Karunamoorthi, K, Jegajeevanram, K, Jerome, X, Vijayalakshmi, J, Melita, L. Tamil traditional medicinal system—siddha: an indigenous health practice in the international perspectives. *Int J Genuine Trad Med*. 2012;2 (2):1–11.
- Kong, JM, Goh, NK, Chia, LS, Chia, TF. Recent advances in traditional plant drugs and orchids. *Acta Pharmacol Sin*. 2003;24:7–21.
- Kurt J. WaLter. Sacred Trees Among the Tamil People of South India *Suomen Antropologi: Journal of the Finnish Anthropological Society* 40(1) Spring 2015.
- Manjula, V and T Selvin Jebaraj Norman. Sacred grooves – The drug store of herbal medicine. *The Pharma Innovation Journal* 2017; 6(9): 462-464.
- Manna,S. Ghora,TK. Roy, A. Sacred grove as remnant forest: A vegetation analysis *Biodiversitas*, 2017, 18: 899-908.
- Pradeepkumar R, Sisubalan N, Ghouse Basha M, Anwardeen I. *Spatula* dd. 2015. 5(1):27-34.

- Ragupathy S, Steven NG, Maruthakkutti M, Velusamy B, Ul-Huda MM. *Journal of Ethnobiology and Ethnomedicine*.**2008**. 4(8).
- Rajakumar N, Shivanna MB. *Journal of Ethnopharmacology*.**2009**. 126:64–73.
- Salai Senthilkumar MS, Vaidyanathan D, Sisubalan N, Ghouse Basha M. *Adv. in Appl. Sci. Res.* 2014. 5(2):292-304.
- Sambandan, K. and N. Dhatchanamoorthy. Studies on the Phytodiversity of a Sacred Grove and its Traditional Uses in Karaikal District, U.T. Puducherry *Journal of Phytology* 2012, 4(2): 16-21.
- Sisubalan N, Velmurugan S, Malayaman V, Thirupathy S, Ghouse Basha M, Ravi kumar R. *Spatula* dd. 2014. 4(1):41-47.
- Subramanian, M. Karthik, S. Ravikumar, S. and R. Dhamodaran. A Study on the Plant Biocultural Diversity of Palrampattu and Vadakanandal Sacred Groves in Villupuram District, Tamil Nadu, *Int. J. Curr. Res. Biosci. Plant Biol.* 2016, 3(6): 92-104 doi.org/10.20546/ijcrbp.2016.306.012.
- Teklehaymanot T. *Journal of Ethnopharmacology*.**2009**. 124:69–78.
- Thandavamoorthy M. Floristic diversity of ilangudipatti ayyanar sacred grove at pudukottai district of Tamil Nadu, India. *World Journal Of Pharmacy And Pharmaceutical Sciences*, 2017: 6(8): 1056-1063. 2017.
- Trotter RT, Logan MH. Informants Consensus: A New Approach for Identifying Potentially Effective Medicinal Plants. *Plants in Indigenous Medicine and Diet*, edited by N L. Etkin, Bedford Hill, NY: Redgrave Publishing Company. **1989**. 1–112.
- Vaidyanathan D, Salai senthilkumar MS, Sisubalan N, Ghouse Basha M. *Adv. In Appl. Sci. Res.*, 2014. 5(1):244-253.