

The assessment of florestic diversity towards the conservation of biodiversity in Pachamalai hills of Eastern Ghats

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Priyadharshini MA, Raja DJ, Sri SR, et al.. The assessment of florestic diversity towards the conservation of biodiversity in Pachamalai hills of Eastern Ghats. AGBIR.2025;41(3):1-20.

The goal of the current study was to identify plants that the tribal people in the Pachamalai hills, which are situated in the Tiruchirappalli region of Tamil Nadu, India, use and to record the local names, medical applications,

preparation techniques and other uses of the plants that were gathered. This is the first ethno botanical report from this region in which the reported plants' Cultural Indices (CIs) are used to calculate statistics. This study will pave the way to conserve the ecological factors and maintain the environment and biodiversity.

Key Words: Biodiversity conservation; Traditional medicinal plants; Pachamalai hills; Eastern Ghats

INTRODUCTION

Plants have always been vital to human existence since they provide necessities including food, clothing, medicine and shelter. Knowledge about the art of using herbs is a legacy that is transmitted from generation to generation. Ethnobotany is a branch of science that studies the interactions between people and plants. According to Khajoei and Khosravi, ethnobotanical surveys involve local people being interviewed, as well as utilizing data from the literature and each region's folklore [1]. The preservation and transfer of priceless and practical traditional knowledge to next generations is the aim of ethnobotany. People's uncontrolled harvesting of medicinal plants has raised the possibility of many species going extinct and as a result, the loss of traditional knowledge on how to use them.

MATERIALS AND METHODS

Geographical location of Pachamalai hills

The Pachamalai hills are situated in Northeastern Tamil Nadu, India, at 11.306638° LAT to 78.570924° LONG. They cover an area of 14,122 square kilometres and are elevated above sea level (Figure 1) [2]. The Tamil Nadu districts of Salem and Tiruchirappalli are separated by Pachamalai hills. The three most significant rivers to emerge from the Pachamalai hills are the Veera Ramar Dam, the Kallar and the Solamathi.



Figure 1) The Pachamalai hills study area, biodiversity hot spot

Residence in the study area

The Pachamalai hills are in Tamil Nadu's Eastern Ghats. Pachamalai hills had 12, 872 residents as of the 2012 census, of whom 8,072 (62.70%) lived in rural areas and just 4,750 (36.90%) in metropolitan cities. The percentage of nomads in the population is less than 0.38%. The majority of inhabitants in the Pachamalai hills speak Tamil; however some regions are home to a small number of tribes who speak Malayalam [3]. The majority of people living in rural areas work in agriculture, primarily growing grains, pineapples and jackfruit.

The local climate

The Pachamalai hills have a semi-arid climate with hot, dry summers and cold, dry winters. Maximum temperatures in the region range from 23 to 31 degrees celsius, while minimum temperatures fall between 12 and 18 degrees celsius. The Northeast monsoon brings the most rainfall to these highlands in the months of September, October and November. In the last ten years, a maximum rainfall of 1250 mm has been documented.

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Received: 09-Apr-2024, Manuscript No. AGBIR-24-131900; **Editor assigned:** 11-Apr-2024, PreQC No. AGBIR-24-131900 (PQ); **Reviewed:** 24-Apr-2024, QC No. AGBIR-24-131900; **Revised:** 09-Jun-2025, Manuscript No. AGBIR-24-131900 (R); **Published:** 16-Jun-2025, DOI: 10.37532/0970-1907.25.41(3):1-20



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Data collection

The study region was examined in order to collect data from Malayaliethnic individuals who have firsthand knowledge of therapeutic herbs [4]. In order to document the ethnomedical information, the author conducted surveys in eight villages (Keelkarai, Kamboor, Puthoor, Thannerpallam, Topsengattuppatti, Pallangudi, Thenparanadu and Solamathi) between November 2023 and February 2024. Face-to-face interviews with participants were conducted using a questionnaire approach. Twenty-one field excursions were conducted in the study area during the duration of the study, accounting for 423 field days spent with the Kerala ethnic population. The process of choosing informants is based on the distribution of ethnic individuals who own. They were asked to share details about the medicinal plants they utilized and to display the types of plants they saw in the field. The individuals chosen were those who were known to be attending to their own families, relatives and other individuals who came to them for assistance with their health [5]. The district's residents have a wealth of medical plant knowledge that has been passed down orally from generation to generation. However, given that younger generations do not seem to be interested in carrying on this practice, it appears that this information is disappearing from modern culture.

Preservation of plant specimens

The standard procedure for collecting plants was adhered to, which included mounting, drying, preparing and preserving plant specimens.

TABLE 1
Reported ailments treated in the Pachamalai hills

No	Ailment categories	Biomedical terms
1	Circulatory System/Cardiovascular Diseases (CSCD)	Anemia blood clots, blood purification, blood pressure, blood flow, memory power, proliferation of blood piles
2	Cooling Agents (CA)	Body cooling
3	Dental Care (DC)	Gingivitis, foul odor, teeth strength, toothache, worms in gums and teeth
4	Dermatological Infections/Diseases (DID)	Burns cuts itching, the lesions odor skin disease, scabies, skin irritation, wounds stomatitis allergy inflammation, heel cracks facilities, irritation lice harassment dandruff
5	Ear, Nose, Throat problems (ENT)	Ear ache, eye irritation, eye diseases, nasal obstruction, sore throat, sneezing, throat pain, sore throat distaste
6	Endocrinal Disorders (ED)	Sinusitis, dry throat
7	Fever (FVR)	Diabetes
8	Fever scarlet fever viral fever	
9	Gastro-Intestinal Ailments (GIA)	Bloody diarrhea, constipation dysentery indigestion intestinal worms, mucus diarrhea, peptic ulcer, gastric complaints, dyspepsia stomach ache stomach flu, stomach problems, loss of appetite, vomiting, nausea, jaundice
10	General Health (GH)	Body heat, body strength, weight loss, physical energy, disease resistant
11	Genito-Urinary Ailments (GUA)	Abortion diuretic, easy delivery, increase breast milk menstrual disorders, sperm production, strangury urinary obstruction, urinary stones, venereal diseases, vulva diseases over bleeding, stone formation
12	Hair Care (HC)	Graying of hair, hair growth, hair loss
13	Neurology (NEU)	Neurasthenia, nerves problems
14	Oncology (ONC)	Abscess cancer tumor

Triple-vetted voucher specimens of medicinal plants were gathered, prepared and identified. Plants that were identified correctly were categorized alphabetically based on family name, colloquial name, traditional medicinal applications and other uses. The plants that were collected were identified and given names based on the Madras Presidency Flora and the Tamil Nadu Carnatic Flora. Later on, they were confirmed by the southern circle botanical survey of India, located in Coimbatore, India. All of the conserved herbarium specimens were placed in the Heber Herbarium Cabinet, Bishop Heber College in Tiruchirappalli [6].

Ailment categories

All reported illnesses were divided into 16 categories based on data gathered from the Malayali ethnic community in the study area (Table 1). These categories included: Cardiovascular and Circulatory System Diseases (CSCD), Cooling Agents (CA), Dental Care (DC), Dermatological Infections/Diseases (DID), ENT (Ear, Nose and Throat problems), Endocrine Disorders (ED), Fever (FVR), Gastrointestinal Disorders (GIA), General Health (GH), Genito-Urinary Ailments (GUA), Hair Care (HC), Neurology (NEU), Oncology (ONC), Poisonous Bites (PB), Respiratory System Diseases (RSD) and Skeleto-Muscular System Disorders (SMSD). Based on the body systems treated, many disorders were grouped together under one ailment category.

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15	Poisonous Bites (PB)	Insect bite, poison bite, snake bite, scorpion sting
16	Respiratory Systems Diseases (RSD)	Asthma, cold cough, pneumonia tuberculosis
17	Skeleto-Muscular System Disorders (SMSD)	Arthritis joint pain, body pain, rheumatisms, swelling pains brain disorders, giddiness bile, bile allure, vomiting bile, bile lightheadedness

Analyzing data

The quantitative value indices Fic, RFC and CI the most widely used metrics in quantitative ethnobotany based on "informant consensus" were used to assess the data that was gathered. The informant consensus factor or Fic, is one of the measurable indices utilized in this study. It is computed using the method below: Fic is equal to $Nur-Nt/(Nt-1)$.

Where Nt denotes the total number of species utilized for the sickness category by all informants and Nuris the number of use reports of informants for a specific ailment category. The same species for the treatment of the same disorders [7]. Fic values range from 0 to 1. High variation in the use of species is indicated by a number close to zero, meaning that informants disagree about which species to use in the treatment of a certain sickness category.

The relative frequency of citation is another index that is employed in this manner (RFC). This measure is calculated by dividing the total number of survey informants (N) by the number of informants who mentioned a helpful species (FC or frequency of citation). According to Tardio and Pardo-de Santayana, the RFC value ranges from 0 (when no one mentions a plant as useful) to 1 (when all informants mention it as useful). RFC index, which is determined by the following formula and does not take into account the use category (Arouse report is a single record for use of a plant mentioned by an individual) and RFC solid understanding of medicinal plant usage.

$$RFC_s = \frac{FC_s}{N} = \frac{\sum_{i=1}^N UR_i}{N}$$

Cultural Importance Index (CII) is the third strategy employed in this study. The calculation of this index involves adding up the percentage of

informants who discuss the usage of each species or dividing the total number of participants who mention using a species by the total number of informants (N) [8]. This index is determined using the formula.

$$CII = \sum_{u=1}^{uNC} \sum_{i=1}^{iN} UR_{ui}/N$$

This index considers the diversity of applications and the distribution of use (number of informants) for each species.

RESULTS AND DISCUSSION

A total of 103 species of medicinal plants, categorized into 92 taxa and 57 families, were gathered from the Pachamalai hills for this study. Thirteen informants were chosen based on their extensive expertise and background in the usage of medicinal plants. Table 2 contains information on local names for the plants, their purposes and the parts of the plants that are used to treat illnesses. Fabaceae was the most commonly utilized family, with nine species, followed by Solanaceae and Euphorbiaceae, each with six species, Cucurbitaceae and Lamiaceae, with five species apiece and others (Table 3) [9-10]. According to a survey conducted in Tamil Nadu's Western Ghats, the Fabaceae family had the highest number of plant species, as reported by Revathi, et al. in 2013. According to Marles and Farnsworth, the Fabaceae family is also recognized to include the greatest number of plant species worldwide. Studies on medicinal plants are becoming more and more prevalent.

TABLE 2

List of traditional medicinal plants used by the Malayali ethnic people in the Pachamalai hills

No.	Name of the plant with specimen voucher no	Family	Traditional and vernacular names	Parts used	Ailment types with number of informants	Medicinal uses with number of usage reports (Each disease)	Literature reported on the medicinal uses of plants in Pachamalai region	Other applications
1.	<i>Abutilon indicum</i> (L.) Sweet.PHC 1303	Malvaceae	Thuthi	Leaves	CSCD:1ONC:1DID:1GIA:1	Leaves are used to treat piles, abscess, wounds and constipation.	Leprosy, ulcers, headache, gonorrhoea, and bladder infection	Forage
2.	<i>Acalypha indica</i> L. PHC1336	Euphorbiaceae	Kuppaimeni	Leaves	PB:1DID:1RSD:2GIA:3	Leaf extract is applied on poisonous bites and for skin diseases. Leaf juice is used for cold, intestinal worms and constipation.	Skin diseases, - rheumatoid arthritis, scabies, bed sores and infected wounds.	

3.	<i>Achyranthes aspera</i> L.PHC1361	<i>Amaranthaceae</i>	Nayuruvi	Seed, whole plant	RSD:12GUA: 5GH:4PB: 6DID:5	Powdered seeds are used to treat cough. Whole plant is used to cure vesicalcalculi, asthenia, poisonous bites, wounds and cuts.	Vomiting, bronchitis, heart diseases, piles, itching, abdominal pains, ascites, dyspepsia, dysentery and blood diseases	-
4.	<i>Acorus calamus</i> L.PHC1304	<i>Araceae</i>	Vasambu	Rhizome	PB:2 ENT:3DID: 2GIA:6CSCD: 12DC:4RSD: 2GUA:7	Rhizomes are used to cure poisonous bite, sore throat, wounds, dyspepsia, blood pressure, foul odor, cough and liver diseases.	Throat infection	Edible
5.	<i>Adhatoda vasica</i> *Nees.PHC1305	<i>Acanthaceae</i>	Adathodai	Leaves	ED:2 RSD:5FVR:3	Leaf juice is used for diabetes, cold, cough and fever.	Diarrhea and dysentery (7)	Livestock
6.	<i>Alliu cepa</i> L. PHC1306 Endangered species.	<i>Liliaceae</i>	Vengayam	Bulb	ED:2	Onion is used to control diabetes.	Not reported	Edible
7.	<i>Allium sativum</i> L.PHC1337	<i>Liliaceae</i>	Vellaipoondur	Leaves	ED:3 GIA:4	Juice of the leaves is used to control diabetes, gastric complaints and indigestion.	Lowering of blood pressure, Inhibition of platelet aggregation, Enhancement of fibrinolytic activity and lowering of cholesterol and triglyceride levels	Edible
8.	<i>Aloe vera</i> L. PHC1362	<i>Liliaceae</i>	Sothukkathalai	Leaves	ED:3 GIA:1HEM: 4FVR:2DID:1	Leaf gel is used to control diabetic complaints. Gel is also used for abdominal cramps, piles, fever and burns.	Not reported	-
9.	<i>Ananas comosus</i> (L.) Merr.PHC1307	<i>Bromeliaceae</i>	Annachi	Fruits	GUA:3	Fruit of <i>Ananas comosus</i> is used for abortion. Also used for venereal diseases.	Not reported	Edible
10.	<i>Andrographis paniculata</i> (Bur m.f)Wall.PHC1309	<i>Acanthaceae</i>	Nilavembu	Leaves	ED:1 GIA:1FVR: 2SMSD:1	Leaf decoction is used to control diabetes, abdominal cramps, fever and dizziness	Fever, wounds, ulcers -kind is eases and diabetes.	-

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11.	<i>Areca catechu</i> L. PHC1363	<i>Arecaceae</i>	Kottaipaakku	Fruits	CA:3 DID:2	Seed is used for reducing body temperature. Also applied to cure skinburns.	Not reported	
12.	<i>Aristolochia bracteolata</i> *Lam. PHC1338	<i>Aristolochiaceae</i>	Aaduthinnappalai	Leaves	ED:4	Leaf extract is used to control diabetes.	Not reported	Livestock
13.	<i>Azadirachta indica</i> A.Juss.PHC1384	<i>Meliaceae</i>	Vaembu	Stem, bark, leaves	SMSD:6DID:11FVR:3ED:3	Stem and bark decoction is used for rheumatism, scabies, wounds, smallpox and scarlet fever. Leaf powder is used to control diabetes.	Chicken pox	Animal feed/ Livestock
14.	<i>Bambusa arundinacea</i> (Retz.)willd.PH C136 4	<i>Poaceae</i>	Moongil	Seed	SMSD:5	Seeds of <i>Bambusa arundinacea</i> are used for rheumatism.	Nervous disorders	Animal feed
Recorded literature uses: Anushaand Lalit; Johnson, et al.; Johnson, et al.; Karthikeyan, et al.								
15.	<i>Benincasa hispida</i> Thunb. PHC1308	<i>Cucurbitaceae</i>	Venpoosani	Fruit	GUA:17	Fruit is used for strangury, gonorrhoea and venereal diseases.	Respiratory trouble and internal hemorrhages.	Edible
16.	<i>Boerhaavia diffusa</i> L. PHC130 1	<i>Nyctaginaceae</i>	Mukurattai	Leaves	DID:19	Leaves are used to cure itching, scabies and skin irritation.	Control cholesterol levels	Animal feed
17.	<i>Canna indica</i> L. PHC1310	<i>Cannaceae</i>	Kalvazhai	Rhizome	GUA:9	Rhizome powder is used for curing venereal diseases.	Not reported	
18.	<i>Cardiospermum halicacabum</i> L.	<i>Sapindaceae</i>	Mudakkathan	Leaves	SMSD:4GIA:1 FVR:2ENT:1	Leaves are used to cure rheumatism, gastric complaints, and arthritis. easy delivery, viral fever and ophthalmitis	Rheumatism	
19.	<i>Carum capticumcapticum</i> Benth. and Hook PHC1311Hook and Hook	<i>Umbelliferae</i>	Omam	Leaves		Fresh leaves are used for indigestion andcancer	Not reported	
20.	<i>Cassia auriculata</i> L. PHC1385	<i>Caesalpiniaceae</i>	Aavaaram	Flower	ED:7	Powdered flower is used	Notreported	

						to control diabetes.		
21.	<i>Cinnamomum verum</i> J.Presl.PHC13 40	Lauraceae	Lavangam	Bark	PB:17ENT:11 GIA:12GH:6	Stembark is applied on snake and insectbites to escape toxicity. Leaf decoction Used for sorethroat vomiting and dysentery. Used for weightloss.	Reduce weight loss/blood cholesterol	
22.	<i>Caryota urens</i> L. PHC1312	Arecaceae	Thippili	Root, Seeds	RSD:5 FVR: 4GIA:1NEU:2	Root and dried seeds of <i>Caryota urens</i> are used for cough, cold, fever, gastritis and nervous disorders.	Not reported	Edible
23.	<i>Centella asiatica</i> (L.) Urban.PHC13 66	Mackinlayaceae	Vallarai	Leaves	CSCD:12	Leaf juice is used for detoxification and Reducing blood clot	Strengthen heart muscle	Edible
24.	<i>Cissus quadrangularis</i> L. PHC1341	Vitaceae	Pirandai	Stem	GIA:4	Stem is used for curing dyspepsia, Appetite and bloodydiarrhea .	Bone setters	Edible
25.	<i>Citrus aurantifolia</i> *(Christm.S wingle.PHC13 86	Rutaceae	Elumitchai	Leaves	FVR:2SMSD:2	Leaf paste is used for curing fever. It al sore lives headache and cold.	Reduce blood cholesterol	Edible
26.	<i>Clitoria ternatea</i> L. PHC1367	Fabaceae	Sangupoo	Leaves	RSD:2 GIA:11	Leaf extract is used for dysentery.	Weight loss Cathartic and diuretic	-
27.	<i>Coccinia indica</i> Wight and Arn.PHC1313	Cucurbitaceae	Kovai	Fruits	ED:9	Fruit is consumed to control diabetes.	General health	Edible
29.	<i>Commelina benghalensis</i> PHC1400	Commelinaceae	Thengachedi	Leaves	DID:7	Leaf paste is applied on wounds.	Not reported	Edible
30.	<i>Commelina clavata</i> * PHC1342	Commelinaceae	Thanneervittan	Flower	ENT:10	Water accumulated at the base of the bracts is collected and administered for conjunctivitis.	Not reported	Edible
31.	<i>Cuminum cyminum</i> PHC1314		Seeragam	Seed	SMSD:5 ENT:9	Powdered seeds are used for curing bile allure, ophthalmitis and eyediseases.	Not reported	Edible

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32.	<i>Curculigo orchoides</i> Gaertn.PHC1387	<i>Hypoxidaceae</i>	Nilappanai	Root	GH:4	Root juice is used for asthenia and	Not reported	
33.	<i>Curcuma</i>	<i>Zingiberaceae</i>	Kasturi-manjal	Rhizome	DID:17	Root paste is applied to wounds, scabies	Not reported	
34.	<i>Cynodon dactylon</i> (L.) Pers.PHC1388	<i>Poaceae</i>	Arugampul	Leaves	SMSD:2 GH:2	Leaf extract is used for detoxification. It also increases immunity. Bleeding piles and heat		
35.	<i>Cyperus rotundus</i> L. PHC1343	<i>Cyperaceae</i>	Koraikizhangu	Rhizome	GUA:3DID:3	Rhizome is used for the treatment of diuretics and skin irritation.	Not reported	
36.	<i>Cymbopogon citratus</i> Stapf.PHC1369	<i>Poaceae</i>	Vetiver	Root	FVR:1ENT:3	Root decoction is used for fever, eyedisease, jaundice and brain disorders.	Not reported	Hair color
37.	<i>Delonia elata</i> L. PHC1315	<i>Caesalpiniaceae</i>	Oomathai	Leaves	ENT:1PB:1	Leaf extract is used for ear infection and dog bites.	Not reported	
38.	<i>Eclipta prostrata</i> L. PHC1389	<i>Asteraceae</i>	Manjal karisalankanni	Leaves	GIA:4	Leaf juice is taken for curing jaundice and anemia. Leaf paste is applied on the scalp to assist hair growth.	Not reported	Hair color
39.	<i>Emblica officinalis</i> Gaertn.PHC1344	<i>Euphorbiaceae</i>	Nelli	Leaves and Fruits	ED:2RSD:2DID:2	Leaves and fruits are used to control diabetes. It is also consumed for curing cold, cough and allergic reactions.	Not reported	Edible/Hair color
40.	<i>Ervatamia divaricata</i> L. PHC1316	<i>Aboceae</i>	Nandhiyavattai	Flower	DID:9	Flowers paste is applied on the skin to protect from skin diseases.	Not reported	
41.	<i>Euphorbia hirta</i> L. PHC1390	<i>Euphorbiaceae</i>	Amman Pacharisi	Leaves	DID:1GUA:1ED:1	Leaf paste is applied to itchy skin. It is also used for curing gonorrhoea and to control diabetes.	Not reported	
42.	<i>Ficus benghalensis</i> L. PHC1370	<i>Moraceae</i>	Alamaram	Whole plant	GUA:1DC:1DID:2	Fruits are used to increase sperm production. Young twig is used as brush to strengthen	Infected wounds	

						the teeth. Leaf ash (burn) is applied on the surface of wounds and to heel cracks.		
43.	<i>Ficus racemosa</i> L. PHC1401	<i>Moraceae</i>	Aththi	Stem, bark, fruit	DID:12SMSD:3PB:5ED:7GUA:3CSCD:4GIA:3	Bark paste is used for skin diseases, lesions, odor, rheumatism and poison bites. Fruit juice is consumed for controlling diabetes, gonorrhoea, blood flow and mucous diarrhea.	Urinary troubles	Rennet for cheese
44.	<i>Ficus religiosa</i> L. PHC1317	<i>Moraceae</i>	Arasa maram	Root, bark	DID:4,GUA:3	Root and bark decoction is used for stomatitis and vulvar diseases. Bark paste is used for curing scabies and wounds.	Ulcers and mouth ulcers	
45.	<i>Glycyrrhiza glabra</i> L. PHC1371	<i>Fabaceae</i>	Athimadhuram	Root, Leaves	GH:8 CA:12 RSD:4 ENT:3	Root and leaves are used to relieve myalgia, body temperature, cough and throat pain.	Not reported	
46.	<i>Gymnem sylvestre</i> R.Br.PHC1345	<i>Asclepiadaceae</i>	Sakkarakkolli	Leaves, root	ED:3PB:2 GIA:4	Roots are used to control diabetes, leaves are used to control jaundice complications. Root decoction is consumed to reduce the toxicity of poisonous bites.	Diabetes	
47.	<i>Hemidesmus indicus</i> R.Br.PHC1318	<i>Asclepiadaceae</i>	Nannari	Whole plant	GH:3GUA:1	Decoction of whole plant is consumed for asthenia, reduce body temperature and as diuretic.	Rheumatism, gravel and other urinary diseases and for skin troubles.	
48.	<i>Hibiscus rosasinensis</i> L. PHC 1372	<i>Malvaceae</i>	Semparuthi	Leaves, flower	HC:2SMSD:1 GH:2GUA:2	Paste of leaf and flower is used to improve hair growth. The flowers immersed water are consumed to increase the strength of the cardiovascular system,	Diuretics, cough and hair	

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						Reduce body temperature and to drive away gonorrheal complications.		
49.	<i>Hybanthus enneaspermus</i> (L.) [*] F.MuellPHC1391	<i>Violaceae</i>	Orithalthamarai	Whole plant	GH:2CSCD:3GUA:3	Whole plants are used as a promoter to increase physical energy, anemia and to stop over bleeding.	Not reported	
50.	<i>Ipomoea batatas</i> (L.)Lam. .PHC1373	<i>Convolvulaceae</i>	Sakkaravalli kilangu	Tuber	ED:3GH:2	It helps to control diabetes and increase body strength.	Not reported	
51.	<i>Lagenaria siceraria</i> (Mol.) Standley PHC1402	<i>Cucurbitaceae</i>	Suraikai	Unripened fruit	SMSD:2	It helps to reduce swelling in hands and legs.	Not reported	
52.	<i>Lawsonia inermis</i> L. PHC1346	<i>Lythraceae</i>	Maruthani	Leaves	HC:2DID:6	Leaf paste is applied to darken gray hair, heel cracks.	Paranoiac	
53.	<i>Leucas aspera</i> (Willd.) Link.PHC1319	<i>Lamiaceae</i>	Thumbai	Leaves	RSD:2SMSD:1GH:1	10 to 15 ml of leaf juice is consumed for cough, headache and also increases body strength.	Snake poison and pain	
54.	<i>Lippia nodiflora</i> Mich.PHC1392	<i>Verbanaceae</i>	Poduthalai	Leaves	DID:5 SMSD:1	Fresh leaf paste is used to eradicate dandruff, lice infestation and rheumatism.	Not reported	
55.	<i>Mangifera indica</i> L.PHC1374	<i>Anacardiaceae</i>	Mamaram	Leaves	ED:7	Leaf powder is used to control diabetes	Heel cracks	Edible
56.	<i>Manihot esculenta</i> Crantz.PHC1320	<i>Euphorbiaceae</i>	Maravallikizhan	Rhizome, Leaves	GH:9GIA:24	Boiled rhizome is consumed for improving body strength 20 ml of fresh leaf juice is consumed for relief from abdominal pain, dysentery and in digestion.	Not reported	Edible
57.	<i>Mentha piperita</i> L. PHC1347	<i>Lamiaceae</i>	Puthina	Leaves	GUA:1GIA:2	Leaf paste is used to relieve strangury, vomiting and liver diseases.	Not reported	
58.	<i>Momordica</i>	<i>Cucurbitaceae</i>	Paavakkaai	Fruits	ED:6	It controls diabetes and stomach ache.	Not reported	

59.	<i>Charantia</i> L. PHC1393				GIA:5		
60.	<i>Mimosa pudica</i> L. PHC1375	<i>Mimosaceae</i>	Thottasinungi	Leaves	DID:9	Leaf extraction is used on cuts and wounds.	Eye related diseases
61.	<i>Moringa oleifera</i> Lam. PHC1394	<i>Moringaceae</i>	Murungai	Leaves	SMSD:2ENT:1 1CSCD:1	Leaves are used for head diseases, brain disorders, eye disease, and to improve memory.	Fever, dysentery and heel cracks
62.	<i>Mucuna pruriens</i> (L.) *DC.PHC1321	<i>Fabaceae</i>	Poonaikali	Seed	GUA:17DID:12 GIA:7	Seed powder is used to increase sperm production. It also helps to control the complications of gonorrhoea, scabies and bloody diarrhea.	Snake bite
63.	<i>Mukia</i>	<i>Cucurbitaceae</i>	Musumusukai	Leaves	SMSD:5	Leaf paste is used to cure bilestones,	Not reported
64.	<i>Maderaspatana</i> L. M. Roemer				RSD:1 ENT:4	dizziness, cough, sneezing and nasal obstruction.	
65.	<i>Nigella sativa</i> L. PHC1404	<i>Ranunculaceae</i>	Karunjeeragam	Seed	DID:25SMSD:9 ENT:12 GIA:10 RSD:5	Seeds are used to treat cuts, wounds, scabies, brain disease, eye infections, viral gastroenteritis, abdominal pain, cough and jaundice.	Not reported
66.	<i>Nelumbo nucifera</i> Gaertn. PHC1377	<i>Nelumbonaceae</i>	Thaamarai	Leaves	SMSD:9	Leaf juice is used to improve cardiac strength.	Not reported
67.	<i>Nerium oleander</i> Sol. PHC1396	<i>Apocynaceae</i>	Arali	Stem, Bark	ENT:6	Stem bark extraction is used to cure ear infections.	Ear ache (7)
68.	<i>Ocimum basilicum</i> L. PHC1403	<i>Lamiaceae</i>	Inipputhulasi	Leaves	RSD:10	Leaves are used to cure pneumonia, cold and cough.	Relaxes the muscles of the small intestine
69.	<i>Ocimum sanctum</i> L. PHC1349	<i>Lamiaceae</i>	Thulasi	Leaves	ENT:1		Not reported
70.	<i>Odina wodier</i> Roxb. FLPHC1323	<i>Anacardiaceae</i>	Uthiyam	Leaves	GUA:3	Leaves are used to prevent the complications of venereal diseases.	Not reported

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71.	<i>Opuntia dillenii</i> (Ker-Gawl.Haw. PH C1378	<i>Cactaceae</i>	Sappathikkalli	Stem	DID:3ED:4	Stempasteisus edtocureburns andtocontrol diabetes.	Inflammation (4)	
72.	<i>Pergularia daemia</i> (Forsk.) Chiov. PHC1397	<i>Asclepiadoideae</i>	Veliparuthi	Leaves	SMSD:4	Used to relieve headache.	Cold and joint pain (4)	
73.	<i>Polyalthia longifolia</i> (Son n.) PHC1324 Thwaites	<i>Annonaceae</i>	Netilingam	Stem, Bark	GIA:2	Bark juice is used to treat digestion and dysentary.	Not reported	Air freshener
74.	<i>Pongamia glabra</i> Vent.PHC1350	<i>Fabaceae</i>	Pungan	Bark	DID:8	Bark paste is applied to scabies and wounds.	Wounds, and ring worm infections (7)	
75.	<i>Portulaca oleracea</i> L. PHC1398	<i>Portulacaceae</i>	Pasali	Leaves	NEU:11	It is used to control neurasthenia.	Not reported	Edible
76.	<i>Prosopis juliflora*</i> (Sw.)DC.PHC 1379	<i>Fabaceae</i>	Karuvelam	Stem	DC:10	Young twig is used to relieve from tooth ache and gingivitis.	Not reported	Fuel
77.	<i>Piper nigrum</i> L. PHC1325	<i>Piperceae</i>	Milagu	Seed	RSD:3 GIA:1SMSD:4 PB:1	Seeds of <i>Piper nigrum</i> are used to cure cold, gastric complaints, rheumatism, pains and poison bites.	Reduce blood cholesterol control (5)	Edible
78.	<i>Phyllanthus amarus</i> Schum. and Thonn.PHC1351	<i>Euphorbiaceae</i>	Keezhanelli	Leaves	ED:8SMSD:12GIA:9	Leaf juice is used to cure Jaundice and control of diabetes, medicine for bile, giddiness and vomiting.	Jaundice (4)	-
79.	<i>Psidium guajava</i> L. PHC1326	<i>Myrtaceae</i>	Koyya	Leaves	DC:5	Leaves are used for deworming and killing germs in gums and teeth.	Dysentery and laxative	Edible
80.	<i>Punica granatum</i> L. PHC1352	<i>Puniaceae</i>	Maadhulai	Shoot, Fruits	ENT:2	Shoots and fruits are used to cure anemia, nauseaand vomiting.	Dysentery	Edible/Dyeing yarns
81.	<i>Ricinus communis</i> L. PHC1327	<i>Euphorbiaceae</i>	Amanakku	Seed	GIA:2GUA:2PB:2	Seed oil is used to cure abdominal pain, constipation, increase production of breast milk and reduce the poisonous effects of scorpion stings.	Not reported	-
82.	<i>Rosa canina</i> L. PHC1399	<i>Rosaceae</i>	Rose	Flower	GH:1 GIA:1 CSCD:1	Flowers of Rosacanina	Not reported	Air freshener

						are used to lower body temperatures, constipation and proliferation of blood.		
83.	<i>Santalum album</i> L. PHC1328	<i>Santalaceae</i>	Santanam	Stem	GH:13RSD:9GUA:8 ENT:6DID:9	Decoction of stem is used as body coolant, to foster physical energy, asthma, gonorrhea and cure throat infections. Leaf paste is used to cure itching.	Colds, bronchitis, skin disorders, heart ailments, general weakness, fever, Infection of the urinary tract, inflammation of the mouth and pharynx, liver and gallbladder complaints ,	Air freshener
84.	<i>Sesamum indicum</i> L. PHC1353	<i>Pedaliaceae</i>	Ellu	Seed	GH:2 GIA:2	Seed oil is used as body coolant and relieves abdominal pain.	Wounds	Edible
85.	<i>Solanum nigrum</i> L. PHC1380	<i>Solanaceae</i>	Manathakkali	Leaves	GIA:7ENT:3	Leaf juice is used to cure stomach ulcer and dry throat.	Stomach ache	Edible
86.	<i>Solanum torvum</i> Sw.PHC1329	<i>Solanaceae</i>	Sundakkai	Seed	PB:12GIA:12	Seed paste is applied on poisonous bites.It also helps to relieve dysentery.	Not reported	Edible
87.	<i>Solanum trilobatum</i> L. PHC1354	<i>Solanaceae</i>	Thuthuvalai	Leaves	RSD:8	Leaf extract is used to cure cold and cough.	Asthma	Edible
88.	<i>Solanum surattense</i> Bur m.f.P HC1330	<i>Solanaceae</i>	Kandankathiri	Fruits	RSD:9	Fresh or dried fruits are used to cure cough and asthma.	Leprosy	
89.	<i>Strobilanthes kunthiana</i> * (Nees)T. AndersonPHC 1355	<i>Acanthaceae</i>	Sirukurinjaan	Fruits	ED:3GH:2	Fruits are consumed to control diabetesand reduce the body temperatures.	Not reported	
90.	<i>Syzygium cumini</i> (L.) Skeels.P HC1381	<i>Myrtaceae</i>	Naaval	Fruits	ED:4CSCD:2 GIA:5	Fruits are used to control diabetes, bloodflow and peptic ulcers.	Fever, diabetic	Edible
91.	<i>Tamarindus indica</i> L. PHC1331	<i>Caesalpinaceae</i>	Puliyam	Fruits	ENT:2GUA:3 DID:3	Fruits are used to cure eye irritation, abortion, wounds, skin irritations and arthritis.	Heal burn wounds	Edible
92.	<i>Tectona grandis</i> L. PHC1382	<i>Verbanaceae</i>	Theakku	Seed	SMSD:2	Seed powder is used to	Anemia, skin	

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					DID:2	control dandruff.		
93.	<i>Tephrosia purpurea</i> (L.)Pers.PHC1 3 56	<i>Fabaceae</i>	Kolinji	Root	GIA:3	Root paste is used to cure fever and vomiting.	Skin eruptions	Forage
94.	<i>Solanum surattense</i> Burm.f.PHC1330	<i>Solanaceae</i>	Kandankathiri	Fruits	RSD:9	Fresh or dried fruits are used to cure Cough and asthma.	Leprosy	
95.	<i>Strobilanthes unthiana</i> *(Nees) T.	<i>Acanthaceae</i>	Sirukurinjaan	Fruits	ED:3GH:2	Fruits are consumed to control diabetes and reduce the body temperatures.	Not reported	
96.	<i>Syzygium cumini</i> (L.)Skeels.P HC1381	<i>Myrtaceae</i>	Naaval	Fruits	ED:4CSCD:2 GIA:5	Fruits are used to control diabetes, blood flow and peptic ulcers.	Fever, diabetic	
Maruthamuthu and Ramanathan; Sisubalan, et al.; Vaidyanathan, et al.; Vivekraj and Anandgideon								
97.	<i>Withania somnifera</i> * Dunal. (L.) PHC1358	<i>Solanaceae</i>	Amkurangkizhangu	Rhizome	NEU:1GH:1	Rhizomes are used to cure neurasthenia and improve body strength.	Not reported	Edible
98.	<i>Zingiber officinale</i> Roscoe.PHC1 335	<i>Zingiberaceae</i>	Sukku	Rhizome	GIA:22 SMSD: 11 RSD:9	Rhizome is used to cure gastric complaints, loss of appetite, indigestion cold and bile diseases.	Not reported	Edible

TABLE 3
Families of medicinal plants used in the study area

No.	Number of families	Number of species	Percentage of families
1	<i>Fabaceae</i>	8	8.73%
2	<i>Solanaceae</i>	6	5.82%
3	<i>Euphorbiaceae</i>	6	5.82%
4	<i>Cucurbitaceae</i>	5	4.85%
5	<i>Lamiaceae</i>	5	4.85%
6	<i>Acanthaceae</i>	3	2.91%
7	<i>Liliaceae</i>	3	2.91%
8	<i>Poaceae</i>	3	2.91%
9	<i>Moraceae</i>	3	2.91%

10	<i>Asclepiadaceae</i>	3	2.91%
11	<i>Malvaceae</i>	3	2.91%
12	<i>Caesalpiniaceae</i>	2	1.94%
13	<i>Areaceae</i>	2	1.94%
14	<i>Commelinaceae</i>	2	1.94%
15	<i>Zingiberaceae</i>	2	1.94%
16	<i>Asteraceae</i>	2	1.94%
17	<i>Verbenaceae</i>	2	1.94%
18	<i>Anacardiaceae</i>	2	1.94%
19	<i>Myrtaceae</i>	2	1.94%
20	Others	38	36.90%

Leafy plants were used 41% of the time to prepare cures, followed by fruit (12%), seeds (11%), bark (6%) and rhizome and root (each 7%), flower and rhizome (each 4%), whole plant (3%), branch, tuber, bulb and latex (each with 1%). Because the leaves are much easier to gather than other plant parts, tribal groups all over the world use them to prepare herbal medicine [11]. Scientific explanation is that leaves typically have higher levels of photosynthetic activity and secondary metabolite production than other portions of the plant.

User report and use categories

The current study included 1055 use reports in total, which were divided into sixteen distinct ailment categories. The majority of records (19.24%) were for gastrointestinal disorders. According to a number of earlier ethnobotanical surveys, the most common plant usage was recorded in relation to gastrointestinal illnesses. This illness category is one of the most prevalent in the current study location, as well as in other parts of the world, because of unsanitary eating settings and contaminated drinking water. The greatest herb for treating stomachaches, according to residents of Pallangudi and Thenparanadu, is lavanagam (*Cinnamomum verum* L.) [12].

Additional conditions in the study area that were commonly treated with medicinal plants by Malayaliethnic people were burns, smallpox, scabies and lesion odor. The use of medicinal plants to treat dermatological infections was shown to be quite prevalent in a related study carried out in Kerala, India [13]. Disease outbreaks in the Pammalai hills are caused by the area's semi-arid climate, insufficient moisture content and water shortage. Hence, the locals of Kerala's Pachamalai hills believed that plants were a useful source for treating a variety of illnesses, particularly skin infections and digestive disorders.

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relation to gastrointestinal illnesses. This illness category is one of the most prevalent in the current study location, as well as in other parts of the world, because of unsanitary eating settings and contaminated drinking water. The greatest herb for treating stomachaches, according to residents of Pallangudi and Thenparanadu, is lavanagam (*Cinnamomum verum* L.).

Statistical analysis

In this study, *Nigella sativa* had the highest number of usage reports (61UR), followed by *Santalum album* and *Cinnamomum verum*, with 46 and 41 use reports, respectively. These plants also exhibited high CI and RFC indices [14]. This indicates that these species were the most well-known plant species in the area and were brought up by all informants. Compared to *Nigella sativa*, *Ficus racemosa*, *Santalum album* and *Cinnamomum verum* had higher RFC and CI indexes, but their use reports were lower.

Based on the damaged area of the human body, sixteen disease categories were identified in this ethnobotanical inquiry.

The taxamedicinal usage reports for the various disease categories were computed using the informant consensus factor. In previous published publications, the informant's consensus factor was abbreviated as FIC and ICF, respectively. The Informant's Consensus Factor (Fic) values for each category of illness are displayed in Table 4. The majority of disease categories exhibited high levels of informant agreement (mean Fic=0.78), with metabolic disorder obtaining the highest level of consensus (Fic=1.00). Similarly, Upreti, et al., found comparable findings to this study from an ethnobotanical survey conducted in Rasuwa district in Central Nepal, wherein informants had the highest level of agreement for most of the illness categories with (mean Fic=0.82). Numerous ethnobotanical studies demonstrate how locals in various regions of India continue to use traditional medicinal herbs [15].

TABLE 4
Informant agreement factor for different use categories

No.	Ailment category	Number of use-reports (Nur)	Number of taxa (Nt)	Informant consensus factor (Fic)
1	Circulatory System/ Cardiovascular Diseases (CSCD)	43	12	0.74
2	Cooling Agents (CA)	15	3	0.86
3	Dental Care (DC)	19	3	0.89
4	Dermatological Infections/ Diseases (DID)	170	25	0.86

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5	Ear, Nose, Throat problems (ENT)	81	17	0.8
6	Endocrine Disorders (ED)	80	21	0.75
7	Fever (FVR)	26	11	0.6
8	Gastro-Intestinal Ailments (GIA)	203	41	0.79
9	General Health (GH)	58	16	0.74
10	Genito-Urinary Ailments (GUA)	102	22	0.79
11	Haircare (HC)	12	5	0.64
12	Poisonous Bites (PB)	49	10	0.81
13	Respiratory System Diseases (RSD)	66	16	0.77
14	Skeleto-Muscular System Disorders (SMSD)	94	23	0.76
15	Oncology (ONC)	9	3	0.75
16	Neurology (NEU)	28	5	0.85

The current study's findings showed that even though the locals had access to government-run healthcare facilities, they continued to treat a variety of ailments with medicinal plants. Furthermore, in the hunt for bioactive chemicals, high Ficvalues can be utilized to identify promising species. Cakilcioglu and Turkoglu state that understanding a species' use value might help determine the pharmacological characteristics, dependability and utility of a related plant.

Comparing the quantitative indices of ethno botanical studies can aid in providing a deeper comprehension of the customary knowledge of plants utilized by a certain ethnic group within a given region [16]. Table 4 illustrates that of the species examined, 15.24% (or around 26 species) had

a relative frequency of citation of one (RFC=1). This indicates that the majority of respondents in the research area agreed that these species were the most widely used therapeutic plants. The lowest number of citations for *Hibiscus rosasinensis*, *Embllica officinalis*, *Ricinius communis*, *Cardiospermum halicacabum*, *Ocimum sanctum*, *Odina wodier* and *Tectona grandis* indicated that only a small number of informants were using these plants (Table 5).

TABLE 5
Comparison of important plants by indices and use ranking based on each index

Scientific name	FC	UR	NU	RFC	CI	RFC ranking	CI ranking
<i>Abutilon indicum</i> (L.) sweet	4	4	4	0.333	1	9	29
<i>Acalypha indica</i> L.	9	9	6	0.75	1	4	29
<i>Achyranthes aspera</i> L.	12	32	6	1	2.666	1	12
<i>Acorus calamus</i> L.	12	38	7	1	3.166	1	8
<i>Adhatoda vasica</i> Nees.	3	10	4	0.25	3.333	10	7
<i>Alliumceba</i> L.	6	2	1	0.5	0.333	7	42
<i>Allium sativum</i> L.	3	7	3	0.25	2.333	10	17
<i>Aloe vera</i> L.	3	8	5	0.25	2.6	10	13
<i>Andrographis paniculata</i> (Burm. f) Wall.	2	5	4	0.166	2.5	11	14
<i>Areca catechu</i> L.	3	5	2	0.25	1.666	10	24
<i>Aristolochia bracteolata</i> Lam.	7	4	1	0.583	0.571	6	37
<i>Bambusa arundinaceae</i> (Retz.) Willd.	5	5	1	0.416	1	8	29
<i>Benincasa hispida</i> . Thunb.	7	17	3	0.583	2.428	6	15

<i>Boerhaavia diffusa</i> L.	12	19	3	1	1.583	1	26
<i>Canna indica</i> L.	12	9	1	1	0.75	1	34
<i>Cardiospermum halicacabum</i> L.	2	5	3	0.166	2.5	11	14
<i>Carica papaya</i> L.	7	12	4	0.583	1.714	6	23
<i>Carum capticum</i> Benth and Hook.	5	10	2	0.416	2	8	19
<i>Caryota urens</i> L.	4	12	5	0.333	3	9	9
<i>Cassia auriculata</i> L.	7	7	1	0.583	1	6	29
<i>Centella asiatica</i> (L.) Urban	6	12	2	0.5	2	7	19
<i>Cinnamomum verum</i> Presl.	12	46	6	1	3.833	1	4
<i>Cissus quadrangularis</i> L.	6	4	3	0.5	0.666	7	35
<i>Citrus aurantifolia</i> (L.) Sw.	6	6	3	0.5	1	7	29
<i>Clitori aternatea</i> L.	12	11	1	1	0.916	1	30
<i>Coccini aindica</i> Wight and Arn.	5	6	1	0.416	1.2	8	28
<i>Commelina clavata</i> Roxb.	10	10	1	0.833	1	3	29
<i>Commelina benghalensis</i> L.	7	7	1	0.583	1	6	29
<i>Cuminum cyminum</i> L.	5	14	3	0.416	2.8	8	11
<i>Curculigo orchoides</i> Gaertn.	4	7	2	0.333	1.75	9	22
<i>Curcuma aromaticum</i> Sal.	8	23	4	0.666	2.875	5	10
<i>Cymbopogon cintratus</i> L.	3	7	4	0.25	2.333	10	17
<i>Cynodon dactylon</i> (L.) Pers.	5	4	2	0.416	0.8	8	32
<i>Cyperus rotundus</i> L.	3	6	2	0.25	2	10	19
<i>Delonia elata</i> L.	7	2	2	0.583	0.285	6	44
<i>Eclipta prostrata</i> L.	12	10	3	1	0.833	1	31
<i>Emblica officinalis</i> Gaertn.	2	6	4	0.166	3	11	9
<i>Ervatamia burkill divaricate</i> (L.)	12	9	1	1	0.75	1	34
<i>Euphorbia hirta</i> L.	9	3	3	0.75	0.333	4	42
<i>Ficus benghalensis</i> L.	12	4	4	1	0.333	1	42
<i>Ficus racemosa</i> L.	12	37	8	1	4.625	1	2
<i>Ficus religiosa</i> L.	3	7	4	0.25	2.333	10	17
<i>Glycyrrhiza glabra</i> L.	12	27	4	1	2.25	1	18

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<i>Gymnema sylvestre</i> R Br.	4	9	3	0.333	2.25	9	18
<i>Hemidesmus indicus</i> (L.)R Br Muell.	12	4	3	1	0.333	1	42
<i>Hibiscusrosa sinensis</i> L.	2	7	4	0.166	3.5	11	6
<i>Hybanthus enneaspermus</i> F Muell	12	8	3	1	0.666	1	35
<i>Ipomoea batatas</i> (L.) Lam.	3	5	2	0.25	1.666	10	24
<i>Lagenaria siceraria</i> (Mol.) Standley	4	2	2	0.333	0.5	9	39
<i>Lawsonia inermis</i> L.	4	8	3	0.333	2	9	19
<i>Leucas aspera</i> (Willd.) Link.	10	4	2	0.833	0.4	3	41
<i>Lippia nodiflora</i> Mich.	3	8	4	0.25	2.666	10	12
<i>Mangifera indica</i> L.	7	7	1	0.583	1	6	29
<i>Manihot esculenta</i> Crantz.	11	33	4	0.916	3	2	9
<i>Mentha piperita</i> L.	10	3	3	0.833	0.3	3	43
<i>Mimosa pudica</i> L.	5	9	2	0.416	1.8	8	21
<i>Momordica charantia</i> L.	6	11	2	0.5	1.833	7	20
<i>Moringa oleifera</i> Lam.	9	4	4	0.75	0.444	4	40
<i>Mucuna pruriens</i> (L.) DC.	12	36	4	1	3	1	9
<i>Mukia maderaspatana</i> (L.) M Roemer	3	10	5	0.25	3.333	10	7
<i>Murraya koenigii</i> (L.) Spreng.	3	5	3	0.25	1.666	10	24
<i>Musa paradisiaca</i> L.	7	7	1	0.583	1	6	29
<i>Myristica fragrans</i> Houtt.	8	8	1	0.666	1	5	29
<i>Nelumbo nucifera</i> Gaertn.	12	9	1	1	0.75	1	34
<i>Nerium oleander</i> Sol.	6	6	1	0.5	1	7	29
<i>Nigella sativa</i> L.	12	61	9	1	5.083	1	1
<i>Ocimum basilicum</i> L.	4	10	3	0.333	2.5	9	14
<i>Ocimum sanctum</i> L.	2	5	4	0.166	2.5	11	14
<i>Odinawodier</i> Roxb. FL	2	4	1	0.166	2	11	19
<i>Opuntia dillenii</i> L.	12	7	2	1	0.583	1	36

<i>Pergularia daemia</i> (Forssk.) Chiov.	7	4	1	0.583	0.571	6	37
<i>Phyllanthus amarus</i> Schum	12	29	5	1	2.416	1	16
<i>Thonn pipernigrum</i> L.	3	9	5	0.25	3	10	9
<i>Polyalthia longifolia</i> (Sonn.) Thwaites	3	2	2	0.25	0.666	10	35
<i>Pongamia glabra</i> Vent.	5	8	2	0.416	1.6	8	25
<i>Portulaca oleracea</i> L.	12	11	1	1	0.916	1	30
<i>Prosopis juliflora</i> (Sw.)DC.	6	10	2	0.5	1.6	7	25
<i>Psidium gujava</i> L.	3	4	1	0.25	1.333	10	27
<i>Punica granatum</i> L.	3	11	4	0.25	3.666	10	5
<i>Ricinus communis</i> L.	2	6	4	0.166	3	11	9
<i>Rosa canina</i> L.	12	3	3	1	0.25	1	45
<i>Santalum album</i> L.	12	41	6	1	3.413	1	3
<i>Sesamum indicum</i> L.	5	4	2	0.416	0.8	8	32
<i>Solanum nigrum</i> L.	12	7	1	1	0.583	1	36
<i>Solanum surattense</i> Burm.f.	6	9	2	0.5	2	7	19
<i>Solanum torvum</i> Sw.	12	24	2	1	2	1	19
<i>Solanum trilobatum</i> L.	5	8	2	0.416	1.6	8	25
<i>Strobilanthes kunthiana</i> (Nees.) T. Anderson	3	5	2	0.25	1.666	10	24
<i>Syzygium cumini</i> (L.)Skeels	12	11	3	1	0.916	1	30
<i>Tamarindus indica</i> L.	3	10	5	0.25	3.333	10	7
<i>Tectona grandis</i> L.	2	2	1	0.166	1	11	29
<i>Tephrosia purpurea</i> (L.)Pers.	12	3	2	1	0.25	1	45
<i>Terminalia chebula</i> Retz.	9	7	3	0.75	0.777	4	33
<i>Thespesia populnea</i> (L.)Sol.	12	9	1	1	1	1	29
<i>Tribulus terrestris</i> L.	7	4	3	0.583	0.571	6	37
<i>Trigonella foenum-graecum</i> L.	3	8	4	0.25	2.6	10	13
<i>Vernonia cinerea</i> Less.	6	6	1	0.5	1	7	29
<i>Vigna mungo</i> (L.) Hepper	4	10	4	0.333	2.5	9	14

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<i>Vitexneg undo</i> L.	12	11	3	1	0.916	1	30
<i>Withania somnifera</i> (L.) Dunal.	4	2	2	0.333	0.5	9	39
<i>Zingiber officinale</i> Roscoe.	12	32	5	1	2.666	1	12

Note: FC: Frequency Citation; UR: Use Reports; NU: Number of Uses; RFC: Relative Frequency Citation; CI: Cultural Index

Plants that are used in combination

The informants who were interviewed felt that some medicinal plants should be utilized in conjunction with other plant components to cure specific conditions to the best of their abilities (Table 5). For instance, diarrhoea can be effectively treated by combining the helpful plants *Aegle marmelos*, *Altonia scholaris*, *Justicea adhatoda*, *Mangifera indica* and *Mucuna pruriens*. Additionally, *Glycyrrhiza glabra* can effectively treat diabetes when combined with powdered leaves of *Gymnema sylvestre* and *Muraya koenigii*. Burns and neurological issues are treated with a mixture of *Caryotaurens* leaves and fumes produced from burning *Areca catechu* seeds. A combination of whole plants from *Commelina clavata*, *Hybanthus enneaspermus* and *Cuminum cyminum* is used to cure anemia [17].

"Kaya kalpas" (legiyam), a popular dish in the Pachamalai Hills, is made by combining the fruit and seed powder of sixteen different plants: *Prunusdulcis*, *Pistaciavera*, *Anacardiumoccidentale*, *Elettaria cardamom*, *Arachis hypogaea*, *Sesamum indicacum*, *Cuminumcyminum*, *Pipernigrum*, *Trigonellafoenum-graceum*, *Zeamaize*, *Coriandrumsativum*, *Fragariaaxananassa*, *Cymbopogoncintratus*, *Glycinemax*, *Lablabpurpureus* and *Viginaradiate*. The ethnic people think that this mixture will strengthen the body, purify the blood, raise intelligence and memory power and promote male fertility.

Other uses of medicinal plants: In addition to medical purposes, informants noted various uses for the plant species, such as food, fodder, fuel (wood for fire) and dye. Table 2 provides a list of edible plants.

Edible plants: Edible plants such as *Syzygium*. People pick them based on the growing season and sell them in local marketplaces. Edible plants serve as fresh veggies. *Solanum torvum* is used to prepare a variety of dishes and pickles. *Benincasa hispida* (Venpoosani) is used as a vegetable. *Nigella sativa* and *Muraya koenigii* (Karuveppilai) are cooked (Paani) and the unripe fruit of *Mangifera indica* (Maangai) is used to make pickles [18]. *Ficus racemosa* (Aththi) is utilized in cheese making (Table 2).

Economic plants: The locals use *Prosopis juliflora* as a valuable source of fuel (firewood). *Abutilon indicum*, *Tephrosia purpurea* and *Thespesia populenea* are cattle feed. Eleven (10.6%) of the 103 medicinal plant species described in this study are employed in technology and crafts. Indian women are famous for wearing silk saris. The yarns are dyed with natural colors made from many plant species, including *Curcuma aromaticum* (Kasthurimanjal), *Embilica officinalis* (Nellikai) and *Lawsonia inermis* (Maruthani) [19]. These traditional handicrafts are exported all over the world and provide significant money for weavers. Air fresheners are also made from *Pongamia glabra* (Pungam), *Rosa canina* (Rosapoo) and *Santalum album* (Santhanam) [20].

CONCLUSION

In the current study, 103 medicinal plant species split into 92 genera from 57 families were recorded with the assistance of Malayalee ethnic people in the Pachamalai Hills. Thesemi-arid climate of Pachamalai hills promotes the growth of rich vegetation with many medicinal and economically significant plants. The current study concluded that plants with high use reports, such as *Nigella sativa*, *Cinnamomum verum* and *Santalum album*, require additional exploration in terms of phytochemical and associated pharmacological studies. *Cinnamomum verum* and *Nigella sativa*, in particular, are vital sources of revenue for the Kerala inhabitants of the Pachamalai hills.

The study found that plants play a major role in various elements of life in the Pachamalai hills, such as in the local game (kitti-pul) utilizing willow branches or in children's games using the leaves of *Thespesia populnea* to

make toy whistles. A variety of tree species have historically been regarded sacred and revered by both Hindu and Buddhist religions throughout India. *Ficus benghalensis* is India's national tree and in the Pachamalai hills, this very old tree that has been passed down through more than five generations of Malayalis is said to be utilized for judgement. There is also folklore in this area about the tree *Syzygium cumini*, in which people believe there are ghosts and spirits. For this reason, they do not climb this tree at noon. Based on ethnic people's medical information; some plants should undergo deeper phytochemical and pharmacological studies.

ACKNOWLEDGEMENT

We thankful to the Chief Conservator of Forests, Trichy Division, The District Forest Officer, Tiruchirappalli, Tamilnadu Forest Department, Gove of Tamilnadu for Granted Permission to enter into the Permitted area. We also than the Management of Bishop Heber College, Tiruchirappalli for Support.

REFERENCES

1. Abdulla Naseef SA, Ajesh TP, Kumuthakalavalli R. Study on folklore medicinal practices of Paniya tribes for Gynaecological ailments. *Internat J Pha Bio Sci.* 2012;3(4):493-501.
2. Brock C, Whitehouse J, Tewfik I, et al. The use of *Scutellaria lateriflora*: A pilot survey amongst herbal medicine practitioners. *J Herb Medi.* 2012;2:34-41.
3. Canales M, Hernandez T, Caballero J, et al. Informant consensus factor and antibacterial activity of the medicinal plants used by the people of San Rafael Coxcatlan, Puebla, Mexico. *J Ethnopharmacol.* 2005;97:429-439.
4. Chintamunnee V, Mahomoodally MF. Herbal medicine commonly used against non-communicable diseases in the tropical island of Mauritius. *J Herb Medi.* 2012;2:113-125.
5. Iwu MW, Duncan AR, Okunji CO. New antimicrobials of plant origin. Perspectives on new crops and new uses. ASHS Press, Alexandria, VA. 1999;457:462.
6. Jain SK. The role of botanist in folklore research. *Folklore.* 1964;5(4):145-150.
7. Jeeva GM, Jeeva S, Kingston C. Traditional treatment of skin diseases in South Travancore, Southern peninsular India. *Ind J Tradi Knowl.* 2007; 6(3):498-501.
8. Johnson Gritto M, Aslam A, Nandagopalan V. Ethnomedicinal survey of threatened plants in Pachamalai hills, Tiruchirappalli district, Tamil Nadu, India. *Int J Res Ayu and Phar.* 2012; 3:844-846.
9. Matthew KM. Commelinaceae in-Flora Tamil Nadu Carnatic 3: 1659, The Rapinat Herbarium, St. Joseph's College, Triuchirapalli. 1983.
10. Rupa LM, Mohan K, Kumar NS. *Portulaca oleracea* inhibit vincristine induced peripheral neuropathy: involvement of ATP-sensitive K⁺ channels. 2014.
11. Yabesh JM, Prabhu S, Vijayakumar S. An ethnobotanical study of medicinal plants used by traditional healers in silent valley of Kerala, India. *J Ethnopharmacol.* 2014;154(3):774-789.
12. Mosaddegh M, Naghibi F, Moazzeni H, et al. Ethnobotanical survey of herbal remedies traditionally used in Kohghi luyehva Boyer Ahmad province of Iran. *J Ethnopharmacol.* 2012;141:80-95.

13. Mükemre M, Behcet L, Cakılcıoglu U. Ethnobotanical study on medicinal plants in villages of Çatak (Van-Turkey). *J Ethnopharmacol.* 2015;166:361-374.
14. Mutheeswaran S, Pandikumar P, Chellappandian M, et al. Documentation and quantitative analysis of the local knowledge on medicinal plants among traditional Siddha healers in Virudhunagar district of Tamil Nadu, India. *J Ethnopharmacol.* 2011;137:523-533.
15. Muthu C, Ayyanar M, Raja N, et al. Medicinal plants used by traditional healers in Kancheepuram District of Tamil Nadu, India. *J Ethnobiol and Ethnomed.* 2006;2:43.
16. Natarajan A, Leelavinodh KS, Jayavelu A, et al. A study on ethnomedicinal plants of Kalavai, Vellore District, Tamil Nadu, India. *J Appl Pharmace Sci.* 2013;3(01):099-102.
17. Pandiarajan G, Govindaraj R. A survey of medicinally important plants in around Srivilliputtur Taluk, Virudhunagar District, Tamil Nadu. *Inter J Pharma Res and Devel.* 2009; 3(2):77-86.
18. Polat R, Çakılcıoglu U, Satıl F. Traditional uses of medicinal plants in Solhan (Bingol-Turkey). *J Ethnopharmacol.* 2013;148:951-963.
19. Prabhu S, Vijayakumar S, MorvinYabesh JE, et al. Documentation and quantitative analysis of the local on medicinal plants in Kalrayan hills of Villupuram district, Tamil Nadu, India. *J Ethnopharmacol.* 2014;157:7-20.
20. Salai Senthilkumar MS, Vaidyanathan D, Sisubalan N, et al. Medicinal plants using traditional healers and Malayali tribes in Jawadhu hills of Eastern ghats, Tamil Nadu, India. *Adv Appl Sci Res.* 2014;5(2):292-304.