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Inventory and ethnomedicinal plants used by rural people of Eastern Ghats of Tamil Nadu, India

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ABSTRACT

The present study is aimed at documenting the phytodiversity and indigenous knowledge of the tribal people in the regions of Eastern Ghats. Sivanmalai, the pride of Eastern Ghats, the gem of Tamil Nadu, otherwise known as Sivachalam, Sivathri is a diversity rich region. Documentation of the richness and distribution of species diversity are helpful in developing a better plans for management and conservation of tropical forest. A total of 107 plant species were collected, which includes 46 medicinal species belonging to 41 genus of 24 families. Some of the plants are used to cure various ailments, namely, cancer, leprosy, etc., and the frequently used medicinal plants includes *Acacia leucopholea* (Roxb.) Willd. *Andrographis echioides* Nees, etc., the predominant mode of medicinal preparation used in the study area is grinding the plant part into paste. The global clamor for highly potential medicinal plants creates opportunities for the local and rural people to export medicinal species of the Eastern Ghats. The conclusion of the study invocates the importance of transdisciplinary researches which helps in the conservation of phytodiversity and the invaluable traditional knowledge.

KEY WORDS: Appraisal, curative plants, Eastern Ghats, India, Shivanmalai hills

INTRODUCTION

India is a biodiversity rich country with 12 mega diversity centers. However, large constrain exists on the ways for conservation and sustainable utilization of the resources. The conservation of biodiversity initially needs numerous field studies to collect and document the plant taxonomically. Thus, floristic study of smaller geographical areas such as distict, protected areas paves easy way for documenting the flora of such a big country like India. About 10% of the world flora, i.e., 48,000 plant species are found in our country. The country is also a motherland of 167 cultivated plant species and 320 wild relatives.

Our knowledge about the diversity and distribution of plant species is very poor and inadequate that we still do not know exactly how many species exist on our earth. Floristic explorations and taxonomic studies can provide efficient and convenient information about the nomenclature, distribution, ecology, utility of various plant species, and thus, about an ecosystem and biodiversity. Plants fulfill various life supporting needs mainly it provides food and plays a vital role in the survival of living oraganisms and maintains the environment.

Vegetation is an invaluable gift provided by the nature as all the living oraganisms depends on it invariably for various basic needs (Gairola *et al.*, 2010). Knowledge of vegetation and flora of any region is essential for the study of its biodiversity and environment. Indeed, a comprehensive and up-to-date flora is essential for proper utilization of plants resources of any area and for planning a long-term strategy for the welfare of human population. Besides preparation of the floras of smaller areas such as districts, protected areas, unexplored areas, etc., after extensive surveys, are a pre-requisite for the revision of the flora of a vast country like India.

Previously many ethnobotanical studies have been carried out in the parts of Eastern Ghats of India to document the disappearing indigenous knowledge (Ramarao and Henry, 1996; Rao and Reddy, 1996; Jeevan and Raju, 2001; Ratnam and Raju, 2005; Ratnam and Raju, 2008; Reddy

et al., 2008; Rao and Pulliah, 2007; Reddy, 2008; Dash *et al*., 2009; Reddy *et al*., 2009). In the field of medicine, abundant information on the popular use of plants is available and studies continue to appear showing the high number of wild plants with medicinal use in Indian tribals. When compare it with the Northern Eastern Ghats, there has been only limited studies recorded in the Southern Eastern Ghats.

Detailed information on species composition, species distribution, and forest stand structure in the requesting dry tropical forests on temporal scale is lacking. Therefore, survey and documentation of biodiversity and other structural characters of the disturbed as well as regenerating forests at different stages of development are necessary for understanding the ecosystem function and its conservation. However, till now not any comprehensive floristic work seems to have been done, particularly in Sivanmalai hills of Tiruppur District, Tamil Nadu. Hence, it was thought worthwhile to undertake the present study.

METHODS

Study Area

The study was conducted in Sivanmalai, which is found in Eastern Ghats of Tamil Nadu. The study area is located at 5 km away from Kangeyam, Tiruppur district. Sivanmalai hills – the pride of Kangeyam and the gem of Tamil Nadu, otherwise known as Sivachalam, Sivathri and Shakthi Sivanmalai. The presiding deity in the Sivanmalai is Lord Murugan, Valli, and Deivanai. The temple is located in a hill top which can be reached by 2 km by hill road. It lies between 11°2′ 8′′ N latitude and 77°32′ 15′′ E longitude in Tiruppur district of Tamil Nadu (Plate I). The altitude ranges from 299 m from the above mean sea level.

The climate of the area is generally hot throughout the year except during Northeast Monsoon season (September-December). The mean maximum temperature varies from 30°C to 38°C, while the minimum temperature varies from 19°C to 26°C. The mean annual rainfall is only 650 mm received in 37.5 days. It receives the maximum amount of rain during the Northeast Monsoon season followed by Southwest Monsoon season (June-September). One of the distinguishing features in this area is the high wind speed from June-August.

Methodology

The present study is an attempt made to explore the floristic diversity of Sivanmalai Hills, Tiruppur district, Tamil Nadu. Several extensive and intensive floristic surveys were carried out during November 2014 to February 2015. Information on the morphology, locality of collection, altitude, phenology, etc., were also recorded. The collected plant species were verified for authentication at the Madras Herbarium of Botanical Survey of India Southern Circle, Coimbatore, Tamil Nadu. A standard method of herbarium preparation was followed (Jain and Rao, 1976) and the identified voucher specimens were deposited in Bharati, the Department Herbarium of Botany, Bharathiar University, Coimbatore, Tamil Nadu.

RESULTS

Floristic Inventory

A total of 107 plant species were enumerated in the present study. About 107 species belonging to 93 genera with 36 families were recorded. Out of 107 species, 106 species are angiosperms and a single species of pteridophyte (*Actiniopteris radiate* Link.). Taxonomically dicotyledonous plants were the most species rich and contribute 94 taxa belonging to 80 genera under 30 families and monocotyledonous plants contribute 12 taxa with 5 families (Table 1). Informations of all the enumerated wild and naturalized plant species, such as botanical name, family and habit are provided (Table 2).

The most diverse families include *Asteraceae, Amaranthaceae*, and *Poaceae* with 8 species are the largest family followed by *Malvaceae*, *Fabaceae*, *Acanthaceae*, *Lamiaceae*, and *Euphorbiaceae* with 7 species. *Tiliaceae*, *Mimosaceae*, and *Solanaceae* are the third largest family represented in the study area with 4 species each. Among the rest of the families *Rubiaceae*, *Apocynaceae*, *Asclepiadaceae*, and *Convolvulaceae* has 3 each species, *Caesalpiniaceae*, *Cucurbitaceae*, and *Pedaliaceae* were collected by two species each, while remaining families were monospecific. To infer the total life forms of flora of Sivanmalai Hills area reveals that, herbs are more dominant form in which 68 species (64%) followed by shrubs 25 species (23%) trees 7 species and climbers each 7 species (7%) species each (Figure 1).

Ethno Botanical Studies

Table 1: Data on floristic analysis of the study area

Floristic analysis	Families		Genera		Species	
Angiosperms						
Dicotyledons						
Polypetalae	14	30	27	80	34	94
Gamopetalae	12		40		43	
Monochlamydeae	4		13		17	
Monocotyledons	5		12		12	
Pteridophyte	1		1		1	
Total	36		93		107	

Table 2: List of plant species documented in the study area

Botanical name	Family name	Habit	Vernacular name
Abutilon crispum L.	*Malvaceae*	Shrub	-
Abutilon indicum L.	*Malvaceae*	Shrub	Paniyarathutti
Acacia ferrunginea DC.	*Mimosaceae*	Tree	Velvelam
Acacia leucophloea Roxb.	*Mimosaceae*	Tree	Velamaram
Acalypha alnifolia L.	*Euphorbiaceae*	Shrub	-
Acalypha indica L.	*Euphorbiaceae*	Herb	Kuppaimeni
Acalypha racemosa L.	*Euphorbiaceae*	Herb	-
Achyranthus aspera L.	*Amaranthaceae*	Herb	Nai-uruvi
Actiniopteris radiata Link.	*Actiniopteridaceae*	Fern	-
Aerva lanata L.	*Amaranthaceae*	Herb	Sirukkan – poolai
Aerva persica L.	*Amaranthaceae*	Shrub	Perumbulai
Ageratum conyzoides L.	*Asteraceae*	Herb	Pumppillu
Albizia amara Durazz	*Mimosaceae*	Tree	Unjal
Aloe vera L.	*Xanthorrhoeaceae*	Herb	Sothu kathalai
Alternanthera pungens Forsskal.	*Amaranthaceae*	Herb	Mul-ponanganni
Alysicarpus monilifer Neck *ex* Desv.	*Fabaceae*	Herb	-
Amaranthus caudatus L.	*Amaranthaceae*	Herb	-
Anana comosus Miller	*Bromeliaceae*	Herb	Annasi pazham
Andrographis enchioides Wall.	*Acanthaceae*	Shrub	-
Argemone Mexicana L.	*Papaveraceae*	Herb	Naikadugu
Artemisia parviflora L.	*Asteraceae*	Shrub	-
Barleria cuspidate Heyne *ex* Nees	*Acanthaceae*	Shrub	-
Blepharis maderaspatensis A.L.Juss	*Acanthaceae*	Herb	-
Brassica juncea L.	*Brassicaceae*	Herb	-
Calotropis gigantean L.	*Asclepiadaceae*	Shrub	Erukku
Cardiospermum halicacabum L.	*Sapindaceae*	Climber	Mudakathan
Cassia absus L.	*Caesalpiniaceae*	Shrub	Mulaipalyirai
Catharanthus roseus L.	*Apocyanaceae*	Herb	Nithyakalyani
Celosia cristata L.	*Amaranthaceae*	Herb	Kozhi kondai
Chenopodium album L.	*Chenopodiaceae*	Shrub	Chakaravarthy keerai
Cleome monophylla L.	*Capparaceae*	Herb	-
Coccinia grandis Wight & Arn.	*Cucurbitaceae*	Climber	Kovai
Commelina diffusa Burm.	*Commelinaceae*	Herb	-
Corchorus aestuans L.	*Tiliaceae*	Shrub	-
Corchorus trilocularis L.	*Tiliaceae*	Herb	Talakkai poondu
Corchorus urticifolius W. & A.	*Tiliaceae*	Shrub	-
Crossandra infundibuliformis Salisb.	*Acanthaceae*	Herb	Kanagamaram
Crotalaria ovalifolia L.	*Fabaceae*	Herb	-
Croton bonplandianum Bail.	*Euphorbiaceae*	Herb	Reilpoondu
Cucumis melo L.	*Cucurbitaceae*	Climber	Thumattikai
Cynodon dactylon L.	*Poaceae*	Herb	Arugampillu
Cyphostemma setosum Alson.	*Vitaceae*	Climber	-
Dactyloctenium aegyptium L.	*Poaceae*	Herb	-
Datura metel L.	*Solanaceae*	Herb	Umathai
Digera muricata L.	*Amaranthaceae*	Herb	Thoiya-keerai
Echinochloa colona L.	*Poaceae*	Herb	Karum pullu
Eclipta prostrate L.	*Asteraceae*	Herb	Karisalankanni
Elytrasia acaulis Michaux	*Acanthaceae*	Herb	-
Eragrostiella bifaria Bor.	*Poaceae*	Herb	Oothu pul
Eragrostis unioloides L.	*Poaceae*	Herb	Poopul
Erigeron sublyratus Roxb.	*Asteraceae*	Herb	-
Euphorbia hirta L.	*Euphorbiaceae*	Herb	Ammanpatchaiarisi
Evolvulus alsinoides L.	*Convolvulaceae*	Herb	Vishnukaranthai
Ficus religiosa L.	*Moraceae*	Tree	Arasu
Gomphrena celosoides L.	*Amaranthaceae*	Herb	-
Grewia rhamnifolia L.	*Tiliaceae*	Shrub	-
Hedyotis puberula G.Don	*Rubiaceae*	Herb	Chiruver
Helianthus tuberosus L.	*Asteraceae*	Shrub	-
Heteropogon contortus L.	*Poaceae*	Herb	Oosipullu
Hybanthus enneaspermus L.	*Violaceae*	Herb	Orilaithamarai
Hydrophylax maritiama L. f.	*Rubiaceae*	Herb	-
Hyptis suaveolens Jacq.	*Lamiaceae*	Shrub	Kattu thumbai
Indigofera linnaei L.	*Fabaceae*	Herb	Sheppunerungi
Ipomea pes-tigridis L.	*Convolvulaceae*	Climber	Punnaikkirai
Justicia tranquebariensis L.	*Acanthaceae*	Shrub	Thavasi murungai
Leucas aspera Willd.	*Lamiaceae*	Herb	Thumbai

(*Contd*…)

Table 2: (*Continued*)

Botanical name	Family name	Habit	Vernacular name
Leucas stricta Benth.	*Lamiaceae*	Herb	-
Lycopersicon esculentum Miller	*Solanaceae*	Herb	Thakkali
Malva verticillata L.	*Malvaceae*	Herb	-
Merremia tridendata L.	*Convolvulaceae*	Herb	-
Mundulea sericea (DC.) Benth.	*Fabaceae*	Shrub	-
Nerium oleander Miller	*Apocyanaceae*	Shrub	Arali
Ocimum americanum L.	*Lamiaceae*	Herb	Nai thulasi
Ocimum basilicum L.	*Lamiaceae*	Shrub	Karpurathulasi
Ocimum tenuiflorum L.	*Lamiaceae*	Shrub	Thulasi
Passiflora foetida L.	*Passifloraceae*	Climber	Kurangu pazham
Pavonia zeylanica L.	*Malvaceae*	Shrub	Mammatti
Pedalium murex L.	*Pedaliaceae*	Herb	Peru Nerunji
Pergularia daemia L.	*Asclepiadaceae*	Climber	Seenthil Kodi
Peristrophe paniculata Nees	*Acanthaceae*	Herb	Nagananda
Perotis indica L.	*Poaceae*	Herb	Kuthiraivali pullu
Phyllanthus amarus Schum & Thonn.	*Euphorbiaceae*	Herb	Keezhanelli
Phyllanthus gardnerianus Wight	*Euphorbiaceae*	Herb	-
Physalis peruviana L.	*Solanaceae*	Shrub	Pottipalam
Plectranthus canius Roth.	*Lamiaceae*	Herb	-
Priva cordifolia Adans.	*Verbenaceae*	Herb	-
Prosophis glandulosa L.	*Mimosaceae*	Tree	Velikathan
Rothia trifoliate Pers.	*Fabaceae*	Herb	-
Sansevieria cylindrical Bojer *ex* Hook.	*Asparagaceae*	Herb	-
Sarcostemma brunonianum R.Br.	*Asclepidaceae*	Climber	Kodikkalli
Sesamum indicum L.	*Pedaliaceae*	Herb	Yellu
Setaria pumila Poir.	*Poaceae*	Herb	Korai pullu
Sida acuta Burm.	*Malvaceae*	Shrub	Aruva-mokukkirai
Sida cordifolia L.	*Malvaceae*	Herb	Nila-thuthi
Sida rhombifolia L.	*Malvaceae*	Shrub	Chitra mutti
Solanum nigrum Burm. f.	*Solanaceae*	Shrub	-
Spermacoce hispida L.	*Rubiaceae*	Herb	Nathai Choori
Tamarindus indicus L.	*Caesalpiniaceae*	Tree	Puli
Tecoma stans L.	*Bignoniaceae*	Tree	Sonapatti
Tephrosia pumila Lam.	*Fabaceae*	Herb	-
Tephrosia purpurea L.	*Fabaceae*	Herb	Kolinji
Tribulus terrestris L.	*Zygophyllaceae*	Herb	Nerunji
Tricodesma indicum R.Br.	*Boranginaceae*	Herb	Kavizh-thumbai
Tridax procumbens L.	*Asteraceae*	Herb	Vettukkayathalai
Verbesina encelioides L.	*Asteraceae*	Shrub	-
Vernonia cinerea L.	*Asteraceae*	Herb	Mukuttipundu
Wrighttia tinctoria R.Br.	*Apocyanaceae*	Tree	Nilapalai

General studies on the uses of plants were initiated by Ross (1862) and Brown (1868). The concept of ethnobotanical approach started from Palmer (1870) when he reported the Food Products of the North American Indians and exemplified the new trend by making inquiries about plant utilized by them (Power, 1874). He used the term "aboriginal botany" to include all the forms of vegetables world which the aboriginals used for various purposes. Modern ethnobotany is concerned with the "totality of the place of plants in a culture (Ford, 1978)." According to Martin (1995), ethnobotany is a part of ethnoecology which concerns plants.

Medicinal

The information was collected by group discussions and interviews with the local people of Shivanmalai hills in their local language (Tamil) through frequent field visits, along with the medicinal uses, availability of the plants, local name, useful part, mode of preparation and mode of administration, dosage, and ingredients added while preparing the medicine were documented in the field datasheets.

Among the 107 plant species collected, 46 species belonging to 41 genus of 24 families plays a vital role in meeting the medicinal needs of the tribal communities of Shivanmalai hills (Table 3). *Euphorbiaceae*, *Acanthaceae*, *Asteraceae*, and *Malvaceae* are the dominant medicinal families followed by *Asclepiadaceae*, *Convolvulaceae*, *Lamiaceae*, and *Solanaceae*. More dominant genus viz., Ocimum, Phyllanthus, and Sida were collected in the present study area. The rest of the plant families and genus are represented by 1 or 2 species.

Some of the medicinal plants were added different ingredients but around 61.29% of the plants were not adding any ingredient to treat human ailments. They are used as ethnomedicines for various severe diseases such

Table 3: List of plants used as medicines collected from the study area

Botanical name	Family	Vernacular name	Parts used	Method of usage
Abutilon indicum G.Don.	*Malvaceae*	Thuthi	Leaves	Leaf is cooked with onion and taken orally to treat piles. Leaf juice is given orally for ulcer, diarrhea and rheumatism. The root powder mixed with hot water is drink to cure leprosy
Acacia leucophloea (Roxb.) Willd.	*Mimosaceae*	Vellavelan	Bark	Paste of bark is applied topically on body to treat wounds and skin infections
Acalypha indica L.	*Euphorbiaceae*	Kuppaimeni	Whole plant	Plant paste ground with salt is applied externally to scabies. Leaves paste mixed with coconut oil is applied externally in snake bite, scabies, and bedsores
Aerva lanata L.	*Amaranthaceae*	Sirupoolai	Roots	Whole plant is mixed with sugar is taken orally to cure diabetes, diuretic, and cough. Root powder is taken with hot water orally twice a day in headache. Fresh leaf juice is given orally thrice a day for 1 week to treat diuretic and anthelmintic
Ageratum conyzoides L.	*Asteraceae*	Sethupunthalai	Leaves	Leaf paste mixed with common salt is applied on affected part in skin diseases, sores, and itches
Aloe vera (L.) Burm.f	*Liliaceae*	Sotthu katthalai	Leaf	The succulent leaves are crushed and mixed with turmeric and the paste is applied on the eruptions on the body. Leaf paste with garlic is given to increase digestion
Amaranthus spinosus L.	*Amaranthaceae*	Mullu keerai	Leaves	Leaf paste along with lemon juice is taken with food to treat stomach ulcer. Decoction of leaves is given to reduce the stomach pain
Andrographis echioides Nees	*Acanthaceae*	Gopuramthangi	Whole plant	Whole plant extract is given for the treatment of fever. Leaves paste applied externally in snake bite. Leaves decoction taken orally with hot water in fever and stomachache problems. The leaf paste is applied on cuts and wounds
Argemone mexicana L.	*Papaveraceae*	Naikadugu	Latex and seeds	Leaf juice 50 ml mixed with cow's milk used to malarial fever. Seed powder is taken with water orally twice a day in jaundice, leprosy, and alterative. Latex is used to cure scorpion bite
Barleria cuspidata Heyne *ex* Nees	*Acanthaceae*	-	Roots and leaves	The juice obtained from roots and leaves are used to cure stomachache
Blepharis maderaspatensis A.L. Juss.	*Acanthaceae*	Vettukkaya pachilai	Leaves	Paste of leaves along with lime juice is applied externally in cuts
Calotropis gigantea L.	*Asclepiadaceae*	Erukku	Flower, leaf latex and root	Leaf latex is applied externally to treat dog bite, scorpion bite, and snake bite. Root paste used for toothache. The flower powder mixed with black pepper (*Piper nigrum*) and drink to treat snake bite
Cardiospermum halicacabum L.	*Sapindaceae*	Mudakkatthan	Whole plant	Plant decoction along with *Zingeber officinale* dried rhizome and *Cuminum cyminum* seeds is taken internally to treat rheumatism
Cassia absus L.	*Caesalpiniaceae*	Avarum	Leaves	Leaf powder is mixed with honey and given to treat digestive problem
Catharanthus roseus G. Don	*Apocynaceae*	Nithyakalyani	Roots	Root powder mixed with hot water to drink which cure high blood pressure and cancer. The dried plant powder mixed with honey is used as an anticancer agent
Coccinia indica Wight and Arn.	*Cucurbitaceae*	Kovai	Whole plant	Plant extract mixed with milk controls vomiting sensation, leaf juice is mixed with sugar given orally to treat diabetes
Cynodon dactylon L.	*Poaceae*	Arugampullu	Whole plant	100 ml of whole plant extract is given for the treatment of diuretic
Datura metel L.	*Solanaceae*	Umathai	Leaves	Leaves soaked in boiling water are bandaged over the affected part to get relief from rheumatism. The leaf juice mixed with black pepper and drink to cure cough, asthma, and chronic ulcers
Eclipta prostrata L.	*Asteraceae*	Karisalankanni	Leaves and stem	Plant leaf juice and *Phyllanthus emblica* fruits boiled with coconut oil is applied to prevent falling of hair. Leaf decoction is mixed with cow's milk and given once a day for 7 days for jaundice. Stem and leaves boiled in coconut oil is applied on head for an hour before bath to reduce body heat
Euphorbia hirta L.	*Euphobiaceae*	Ammanpacharisi	Leaves	Leaf paste along with buttermilk is taken orally for worms, bowel complaints, asthma, cough, and gonorrhea
Evolvulus alsinoides L.	*Convlovulaceae*	Vishnukranti	Whole plant	Powder of whole plant is taken internally to increase memory power. Decoction of whole plant is taken internally to cure fever, diarrhoea and nervous debility. Leaves paste is applied to burn injuries

(*Contd*…)

Table 3: (*Continued*)

Botanical name	Family	Vernacular name	Parts used	Method of usage
Grewia rhamnifolia L.	*Tiliaceae*	Unu	Root bark	Root bark paste is applied externally thrice a day for 1 week over swellings
Hybanthus enneaspermus (L.) F.Muell.	*Violaceae*	Orilaithamarai	Whole plant and root	Whole plant extract is taken orally to cure diuretic. Root juice is given orally to treat urinary problems
Ipomea pes-tigridis L.	*Convolvulaceae*		Leaves	Powered leaves are taken orally as an antidote to dog bites and boils
Justicia tranquebariensis L.	*Acanthaceae*	Sivanarvembu	Leaves	Decoction of leaves is used to cure eye complaints and jaundice. Leaf juice is given internally to cure jaundice. Leaf paste is applied over affected area to cure skin ailments
Leucas aspera (Willd.)	*Lamiaceae*	Thumbai	Leaves	Leaf juice is given with honey to treat bronchitis in children. The leaf juice is used in the treatment of cooling medicine for scabies. Leaf paste is applied on skin diseases and painful swellings
Merremia tridentata L.	*Convolvulaceae*		Leaves and root	Leaf paste is applied daily in the morning before bath for 2-3 weeks to improve the growth of the hair. Decoction of root is taken orally once a day for 30-45 days to cure diabetes
Ocimum basilicum L.	*Lamiaceae*	Thiruneetru pachilai	Leaves	Leaf juice is used for earache, cold and urinary troubles
Ocimum sanctum L.	*Lamiaceae*	Tulasi	Leaves	Leaf juice is used for fever and cold. Leaf juice mixed with black pepper (*Piper nigrum*) powder is taken orally to treat cough. Leaf paste is taken with black pepper to get relieve from cough, fever, cold and ear pain
Passiflora foetida L.	*Passifloraceae*	Siruppunaillalli	Leaves	Leaf past is applied topically on the forehead to cure headache
Pavonia odorata Willd.	*Malvaceae*	"Peraamutti"	Root	Root decoction is used for dysentery
Pedalium murex L.	*Pedaliaceae*	Perunerunji	Leaves	Leaf juice is given orally to treat urinary troubles and also used for gonorrhea
Pergularia daemia (Forssk) Chior.	*Asclepiadaceae*	Veliparuthi	Leaves	Leaf paste is applied externally on forehead during intense headache. Fresh leaves are boiled with water and the vapor is inhaled to get relief from headache. Leaf juice is taken orally to cure asthma
Phyllanthus amarus Schult and Thorn	*Euphorbiaceae*	Keezhanelli	Whole plant	50 ml of plant juice is given internally in empty stomach to treat jaundice
Physalis peruviana L.	*Solanaceae*		Leaves and dried seeds	Jaundice and glaucoma
Pyllanthus emblica L.			Fruit	The pericarp of the fruit is often used in decoctions along with other ingredients and also applied externally on boils with cow ghee to promote suppuration
Sarcostemma brunonianum R.Br.	*Asclepidaceae*		Roots	Dried stems emetic. Infusion of roots given to persons bitten by rapid dogs
Sida cordifolia L.	*Malvaceae*	Valvaluppaichadi	Leaf	Leaf juice is used for body cooling and general health
Sida rhombifolia L.	*Malvaceae*	Kurunthotti	Whole plant	Plant crushed, boiled and is applied externally on the head to treat headache and inflammation in eyes
Solanum nigrum L.	*Solanaceae*	Manathakkali	Leaves	Juice of leaves is taken orally to treat stomach ulcer
Tephrosia purpurea (L.) Pers.	*Fabaceae*	Kolinji	Roots	Root paste made with water and ginger is given with honey to cure fever and vomiting
Tribulus terrestris L.	*Zygophyllaceae*	Nerunjii	Fruits and leaves	Fruit juice is taken orally to cure urinary troubles. Leaf paste is applied externally on wounds
Tricodesma indicum R.Br.	*Boranginaceae*	Kavu thumbai	Leaves	Paste of leaves along with garlic and rhizome of *Acorus calamus* is applied to heal wounds
Tridax procumbens L.	*Asteraceae*	Vettukaya poondu	Leaves	Leaf paste is applied externally on cuts and wounds
Vernonia cinerea (L) Less.	*Asteraceae*	Mookuthi Poondu	Flowers and roots	The flower juice is mixed with black pepper (*Piper nigrum*) powder and pinch of common salt is given internally to treat anthelmintic, fever and skin disease. Decoction of roots is taken orally to cure cough, stomachache and diarrhoea
Wrightia tinctoria R.Br.	*Apocynaceae*	Nilapalai	Leaves	Crushed leaves and latex are applied externally to cure blisters

as jaundice, cancer, anti-inflammations, asthma, arthritis, blood pressure, blood bleeding, tooth ache, and wound healing are cured using of various plants found in the tribal healers and local peoples. The plant material is employing the preparations in the form of decoctions, extracts, pastes, juice, and powder, sometimes in combination with

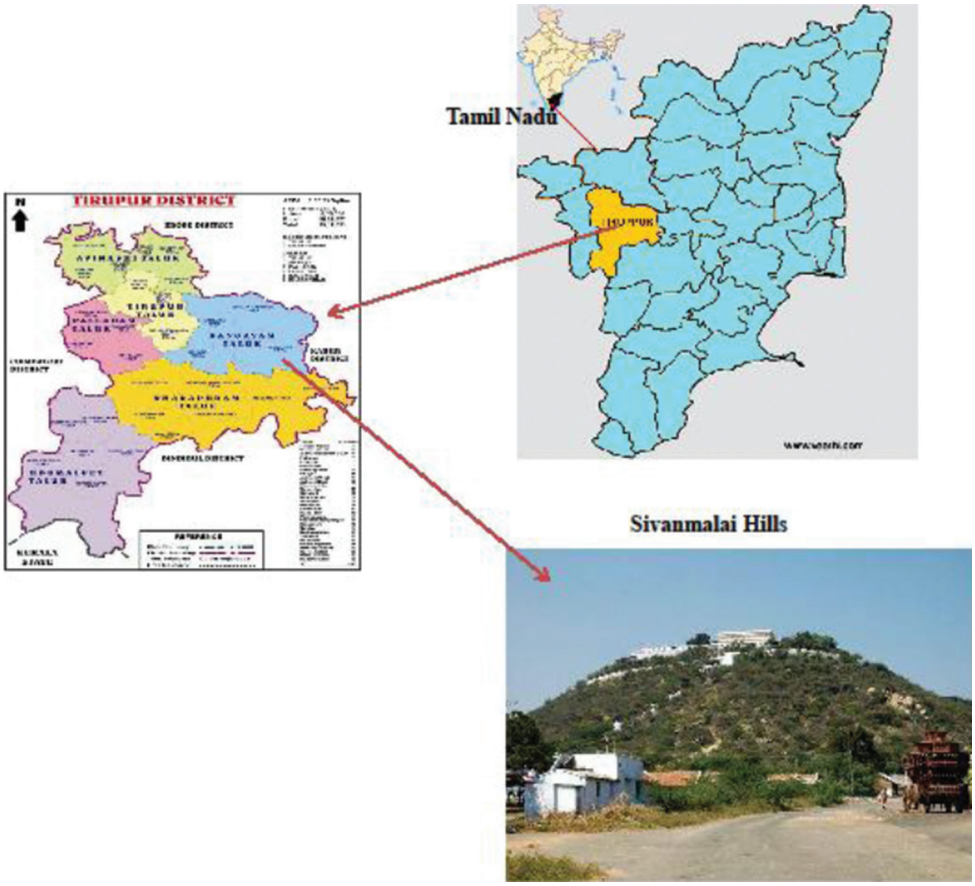

Plate 1: Location of Sivanmalai hills in Triupur District of Tamil Nadu, India

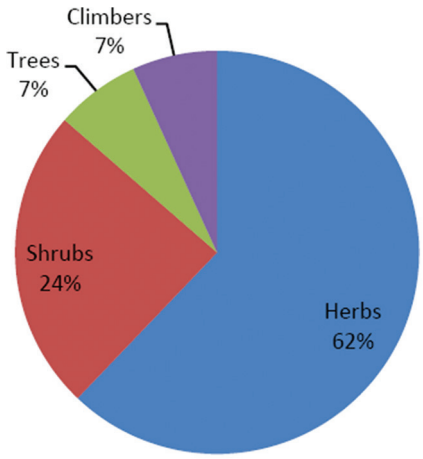

Figure 1: Life form analysis to the present study

other parts of same or different plants other substances, such as sugar candy, curd, honey, hair oil, milk, and turmeric powder, are also used in various preparations.

The data collected from local people pertaining to the treatment of various ailments by plant parts used for medicinal preparation were bark, roots, leaves, fruits, flowers, stem, and the whole plants. The most frequently utilized plant parts percentage were leaves (49%), followed by the roots (17%), whole plants (15 %), flowers (7%), stem, fruits, and seeds each (2%) (Figure 2). A majority of remedies are prepared in the form as a paste (36%), juice (29%), decoction (21%), powder (12%), and cooking methods (4%) (Figure 3). For few remedies, medicines are prepared after drying and the administration includes inhalation, use in treatment of 38 different oral administration, and most of the ailment such as the medicinal plants based on their use in treatment of 38 different diseases such as piles, ulcer, leprosy, wounds, skin disease, scabies, cancer, bedsores, blood pressure, memory loss, gonorrhea, diuretic, jaundice, asthma, diabetes, sexually transmitted diseases's, paralysis, snake bite, fever, and rheumatism.

The findings of the earlier research in relation to medicinal plant studies (Pattanaik *et al*., 2008; Everest and Ozturk, 2005; Ghorbani, 2005; Lev and Amar, 2000; Katewa *et al*., 2004; Udayakumar *et al*., 2005; Kirtikar and Basu, 2001; Gogte, 2000; Anonymous, 1992; Asolkar, 1992).

DISCUSSION

The study also showed that quite a number of plant parts from the 46 species, especially the leaves, roots, and stem

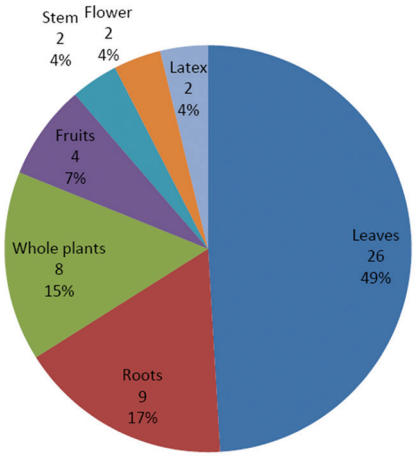

Figure 2: Analysis of the parts used

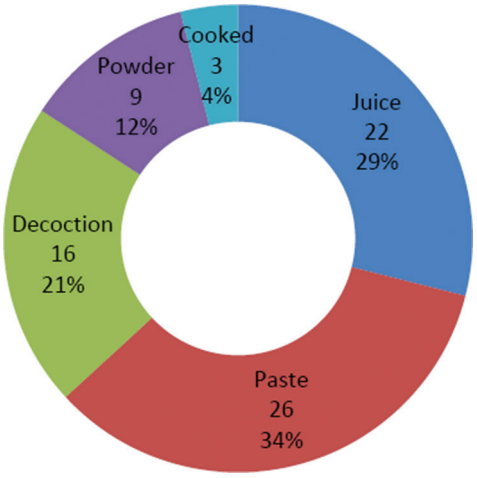

Figure 3: Modes of preparation

barks have been found to be efficient in the management of various diseases in inhabitants in the local area. Information gathered from respondents showed that increasing number of people is turning to herbal remedies for prevention and cure of various diseases. The 46 medicinal plants mentioned were represented by all plant forms. Trees were found to be the most used plants followed by shrubs, herbs, underground stem, grass, climber, creeper, and weed. The various plants parts mentioned include bulb, fruit, leaves, rhizome, root, seed, stem bark, and whole plants. The plant leaves are important ingredient in traditional treatment for various diseases as it features as a component in many herbal preparations.

Among the different plant parts used for the preparation of medicine the leaves were the most important and frequently used and majority of the remedies reported in the present study are by administering the leaves orally. They use medicinal plant species, namely, *Abutilon indicum* L., *Acalypha indica* L., *Aerva lanata* L., *Ageratum conyzoides* L., *Cassia absus* L., *Datura metal* L., *Evolvulus alsionoides* L., *Hybanthus enneaspermus* L., *Pergularia daemia* Forssk, *Pedalium murex* L., etc. It was observed that, most of the remedies consisted of single plant and more than one method of preparation. *Calotropis gigantea* L., *Barleria cuspidata* Heyne *ex* Nees, *Eclipta prostrata* L., *H. enneaspermus* (L.) F.Muell., *Merremia tridentata* L., *Physalis peruviana* L., *Tribulus terrestris* L., *Vernonia cinerea* (L) Less., *A. lanata* L.

Moreover, a single plant is used for more than one disease. For example, *A. indicum* G.Don., *A. indica* L., *Andrographis echioides* Nees, *Argemone mexicana* L., *Evolvulus alsinoides* L., *Justicia tranquebariensis* L., and *V. cinerea* (L) less. The study also includes some plants which are used for single ailments, namely, *Blepharis maderaspatensis* A.L. Juss., *C. absus* L., *Cynodon dactylon* L., *Grewia rhamnifolia* L., *Passiflora foetida* L., *Pavonia odorata* willd., *Solanum nigrum* L., etc.

The demand for traditional herbs is increasing very rapidly, mainly because of the harmful effects of synthetic chemical drugs. The global clamor for more herbal ingredients creates possibilities for the local cultivation of medicinal and aromatic crops as well as for the regulated and sustainable harvest of wild plants. Such endeavors could help raise rural employment in the developing countries, boost commerce around the world, and perhaps contribute to the health of millions of people is endowed with an enormous diversity of animals and plants, both domesticated and wild, and an impressive variety of habitats and ecosystems. This heritage sustains the food, medicine, clothing, shelter, spiritual, recreational, and other needs of her population.

CONCLUSION

The present study revealed that the folks of Shivanmalai hills harbor a noteworthy knowledge on the indigenous plants. Wild food plants plays an extensive role in overcoming the daily needs of local people and the medicinal plants play a vital role in meeting the medicinal needs and economic needs. The data enumerated from the study will also help in rural development in an area that faces economic problems. Thus, plants play a vital role in the development of a country in different ways, hence it is important to conserve and sustainably utilize the natural resources.

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