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Documentation Of Tree Species And Its Indigenous Uses In S. T. Hindu College Campus, Nagercoil, Kanyakumari District, Tamil Nadu.

A. Vengadeswari[1], Rashida Banu A. M[2], R. Uma[1]*, R. Asha[1], S. Brabha[1], B. Ponmalar[1] and S. Ranjitha[1] and R. Mahesh[1]

[1] Department of Botany, S. T. Hindu College, Nagercoil – 629 002, Tamil Nadu, India.

[2] Department of Botany, Hajee Karutha Rowther Howdia College, Uthamapalayam, Theni – 625 533, Tamil Nadu, India.

***Corresponding author:** umasthc@gmail.com

ABSTRACT

Biodiversity reflects variety and variability with and among living organisms, their associations and habitat – oriented ecological complexes. Trees outside the forest are an important resource and play a key role in sustainable development. The main objective of the present study is to document the diversity of tree species and its indigenous usages in S. T. Hindu College, Nagercoil, Tamil Nadu. Totally 53 species are collected from the study area. The 53 species distributed in 51 genera which are belonging to 29 families. Leguminosae is the first dominant family with 13 species. It is followed by Moraceae which is represented by 4 species. The families like Annonaceae, Arecaceae, Myrtaceae and Bignoniaceae are the third dominant families which are comprise about 3 species each. Other families like Sapotaceae and Phyllanthaceae which are having 2 species each. The remaining 20 families are monogeneric family. Tree species are distributed in different areas of the campus. The present study revealed that the tree species have many indigenous uses. They have been used for many purposes mainly for medicine, timber, edible, ornamental, fuel, folder, oil etc., Of these 53 species, 49 species are used as medicine, 19 species are used as edible, 12 species are used as timber, 9 species are growing as ornamental, 7 plants are used as fuel wood, 3 plants are growing as sacred plants. From the results of present study, it is concluded that proper management and conservative measures need to be implemented for conservation of tree species in the study area.

Key words: Diversity, Tree species, Leguminosae, Indigenous uses, S.T. Hindu College campus.

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INTRODUCTION

Trees are the largest and most useful group in plant kingdom. It is an important source of wood and non-wood products and environmental services, such trees include plantings on the roadside, scattered form of trees in the landscape, trees in the fields and orchards. Trees also play an important role in carbon sequestration, biodiversity conservation, hydrological functions and erosion control. Trees are not only the chief components of the forest and a significant of our ecosystem, they also provide shelter to lower organisms and wild life, act as a protective environment, it reduces pollutant level in the atmosphere and provide many useful products such as firewood, timber, edible fruits, oil, avenue, bio diesel, religious values and medicines etc. Trees are also helpful for sustainable biodiversity management. Herbal medicines are very important as primary healthcare system of individuals and communities in many developing countries as the herbal medicines are comparatively safer than the allopathic and synthetic medicines (**Sheldon** *et al*., 1997). Plant – based traditional knowledge has become a recognized tool in search of new drugs.

All types of flora and fauna are elements of biodiversity and influenced by various climatic conditions such as temperature, moisture availability in the form of humidity and precipitation and variation in physiographical conditions such as soil, altitude, slope etc., (**Ghildiyal** and **Juyal**, 2012; **Arul** *et al*., 2013; **Ben** *et al*., 2013; **Suba** *et al*., 2014; **Sukumaran** and **Parthipan**, 2014). Thus, conservation of biodiversity is very much essential for proper functioning of the ecosystem. Considering the importance of enumeration of plants, particularly in a typical municipal area such as Nagercoil, we made a qualitative tree species survey and prepared a checklist of the tree species of S.T. Hindu College campus, Nagercoil. Similar type of works was carried out by **Singh and Beenakumari**, 2018; **Parthipan** *et al*., 2016; **Neelamegam** *et al*., 2016; **Sarvalingam** *et al*., 2012; **Gaikwad and Malin**, 2012; **Gunasekaran and Balasubramanian**, 2012; **Survase and Raut**, 2011; **Rashida** *et al*., 2021.

METHODOLOGY

Study area

The present study was carried out in S.T. Hindu College campus, Nagercoil in Agastheeswaram Taluk of Kanyakumari District. This college is located near Chettikulam junction of Nagercoil municipal limit. Beach road is located on the East side of the college. Total land area of the college is 21.95 acres, of which total built area of this college is 19,095.07 sq.m. The remaining area of this college is occupied by playground, teak plantations, coconut grooves, garden etc.

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Data collection

Frequent field visits were made to the study area during August 2019 to March 2020. At the time of visits fresh plant specimens were collected and the collected plants were tagged and brought to laboratory for examining their binomial and indigenous uses. Plants were made into herbarium according to the field herbarium techniques. The indigenous uses of the collected plant specimens were gathered from traditional healers, elderly people and medicinal plant collectors from the Nagercoil and surrounding area.

Figure 1. Indigenous uses of Tree species collected from S.T. Hindu College Campus.

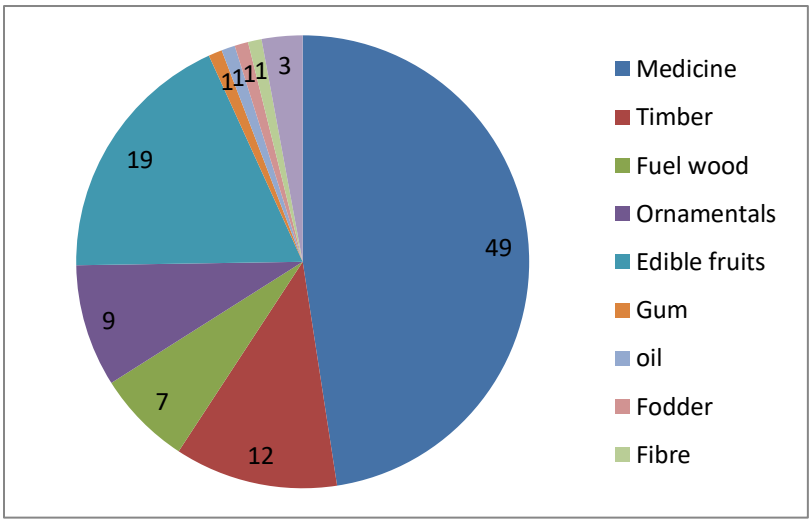

Table1. List of medicinal plants, its uses, mode of administration and form of medicine preparation

S. No.	Plant Name	Local Name/Family	Useful part	Medicinal uses	Mode of administration /Form of Medicine	Other uses
1.	*Acacia mangium* willd.	Mangium/ Leguminosae	Root bark	Head ache	External/ Paste	Timber
2.	*Adenanthera pavonina* L.	Kunni muthu/ Leguminosae	Leaves	Cough, Cold	Internal/ Decoction	Timber
			Leaves oil	Pain, Swelling	External/ Extract	
			Seed	Hair oil	External/	

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					Powder	
3.	*Albizia lebbeck* (L.) Benth	Vaagai/ Leguminosae	Root bark	Piles	Internal/ Powder	Timber
				Fever	Internal/ Decoction	
				Mouth ulcer	Internal/ Decoction	
			Flower	Pain	External/Paste	
4.	*Annona muricata* L.	Malai Panchi/ Annonaceae	Leaves	Kidney trouble	Internal/Powder	Fruits Edible
5.	*Annona squamosa* L.	Seetha/ Annonaceae	Fruit	Constipation	Internal/Raw Fruit	Fruits Edible Fuel wood
			Seed	Hair fall	External/Paste	
			Leaves	Wounds	External/Paste	
6.	*Artocarpus heterophyllus* Lam.	Pala/ Moraceae	Leaves	Wounds	External/Paste	Fruits Edible Timber
			Root	Rashes	External/Paste	
7.	*Azadirachta indica* A. Juss.	Vembu/ Meliaceae	Leaves	Blood purifier	Internal/Paste	Sacred plant
			Tender leaves	Pox	Internal/Paste	
8.	*Bombax ceiba* L.	Elavam/ Bombacaceae	Gum	Diarrhoea, wounds, dysentery	Internal/Paste	
			Stem bark	Wound healing	External/Paste	
9.	*Butea monosperma* (Lam.)Taub	Palasham/ Leguminosae	Root bark	Piles, tumour	Internal/Powder	
			Gum	diarrhea	Internal/Extract	
10.	*Callistemon citrinus* (Curtis)Skeels	Bottle brush/ Myrtaceae	Leaves	Cold, cough	Internal/Powder	
11.	*Calophyllum inophyullum* L.	Pinnakai/ Calophyllaceae	Seed	Arthritis	External/ Powder	
			Leaces	Eye inflammation	External/Extract	
12.	*Carica papaya* L.	Pappali/	Latex	Worm	Internal/Paste	Fruits

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		Caricaceae		repellant		Edible
13.	*Caryota urens* L.	Koonthal panai/ Arecaceae	Leaves	Elephantiasis	Internal/Raw fruit	Fibre used for making brushes, baskets, brooms
14.	*Cassia fistula* L.	Sarakonnai/ Leguminosae	Leaves	Inflammation	External/Paste	Ornamental
15.	*Cassuarina equisetifolia* L.	Savukku/ Casuarinaceae	Root bark	Dysentery	Internal/ Decoction	Timber
16.	*Cocos nucifera* L.	Thennai/ Arecaceae	Stem bark	Dysentry	Internal/Extract	Timber, Fruits Edible
			Leaves	Dysentry	Internal/Decoction	
			Tender Coconut	Coolant	Internal/Coconut water	
17.	*Couropita quianensis* Aubl.	Nagalinga maram/ Lecythidaceae	Flower	Menorrhagia	Internal/Powder	Sacred plant
18.	*Crescentia cujete* L.	Thiruvodu/ Bignoniaceae	Fruit	Asthma	Internal/Powder	Ornamental
19.	*Delonix regia* (Hook.)Raf.	Chemmayirkontai/ Leguminosae	Flower	Head ache, ear acne	Internal/Paste	Ornamental, Fuel wood
20.	*Dypsis lutescens* (H.wendl.)Beentje &J. Dransf.	Manchal Panni/ Arecaceae	Seed	Arthritis, Constipation	Internal/Powder	Ornamental plant
21.	*Enterolobium saman* (Jacq.)Prain	Thoongumoonchi/ Leguminosae	Fruits, wood, leaves			Edible, Fuel wood, Timber
22.	*Ficus benjamina* L.	Azhugai athi/ Moraceae	Leaves	Nutrient	Internal/Powder	
23.	*Ficus elastic* Roxb.ex Honem	Seemai arasu/ Moraceae	Leaves	Ulcer	Internal/ Decoction	Ornamental
24.	*Ficus religiosa* L.	Arasu/ Moraceae	Stem bark	Ulcer	Internal/ Decoction	Sacred plant
25.	*Jacaranda*	Vagai maram/	Stem	Ulcer	Internal/Powder	Ornamental

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	momosifolia D.Don	Bignoniaceae	bark			
26.	*Jatropha curcas* L.	Amanakku/ Euphorbiaceae	Flower	Venereal disease	Internal/ Decoction	
27.	*Lawsonia inermis* L.	Maruthani/ Lythraceae	Leaves	Hair growth	External/oil	
28.	*Leucaena leucocephala* (Lam.)	Subapul/ Leguminosae	wood			Fodder
29.	*Mangifera indica* L.	Maa/ Anacardiaceae	Leaves	Nutrition	Internal/Powder	Edible fruits Timber
30.	*Manilkara zapota* (L.)P. Royen	Sapota/ Sapotaceae	Seed	Dysentery	Internal/Powder	Fruits Edible, Gum
31.	*Millingtonia hortensis* L.f.	Maramalli/ Bignoniaceae	Flowers, leaves	Asthma	Internal/Paste	Ornamental
32.	*Mimusops elengi* L.	Makhizham/ Sapotaceae	Fruits	Loose stool with blood	Internal/Extract	Cosmetics
33.	*Morinda pubescens* J.E. Smith	Manjanathi/ Rubiaceae	Leaves, stem bark	Wounds	External/ Powder	Timber
				Edema	Internal/Powder	
34.	*Moringa oleifera* Lam.	Murungai/ Moringaceae	Leaves	Increase haemoglobin level in the blood	Internal/ Decoction	Fruits and leaves are edible
35.	*Muntingia calabura* L.	Kizhimaram/ Muntingiaceae				Fruits edible Fuel wood
36.	*Murraya koenigii* (L.) Spreng.	Karuveppilai/ Rutaceae	Leaves	Hair growth	External/Oil	leaves edible
37.	*Peltophorum pterocarpum* (DC) K. Heyne	Perumkontai/ Leguminosae				Timber, Fodder, Ornamental
38.	*Phyllanthus acidus* (L.)Skeels	Cheema nelli/ Phyllanthaceae	Fruits	Vitamin C	Internal/Raw fruit	Edible
39.	*Phyllanthus emblica* L.	Kattu nelli/ Phyllanthaceae	Fruits	Vitamin C	Internal/Raw fruit	Edible

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				Diabetes	Internal/Extract	
40.	*Pithecellobium dulce* (Roxb).Benth.	Kodukka puli/ Leguminosae	Fruit	Nutrient	Internal/Raw fruit	Edible
41.	*Polyalthia longifolia* (Sonn.)Thwaites	Nettilingam/ Annonaceae	Root bark	Dysentery	Internal/Decoction	Ornamental
42.	*Pongamia pinnata* (L.)Pierre	Pungam/ Leguminosae	Root, stem and bark	Chronic ulcer	Internal/Decoction	
				Ringworms, rashes	External/oil	
43.	*Prosopis juliflora* (Sw.)DC.	Udai/ Leguminosae	Bark	Scorpion sting, Rheumatism	External/Paste	Fuel wood
44.	*Psidium guajava* L.	Koyya/ Myrtaceae	Leaves	Diarrhoea, Diabetes	Internal/ Decoction	Fruits edible
45.	*Santalum album* L.	Santhanam/ Santalaceae	Wood	Stomach disorder, maintaining the normal level of heartbeat	Internal/ Decoction	Timber
				Skin disease	External/Paste	
46.	*Simarouba glauca* DC.	Lakshmi maram/ Simaroubaceae	Seed	Diabetes	Internal/Paste	Ornamental plant
47.	*Syzygium cumini* (L.)Skeels	Naaval/ Myrtaceae	Seed	Diabetes	Internal/Powder or decoction	Fruits edible
48.	*Tamarindus indicus* L.	Puli/ Leguminosae	Leaves	Swelling	External/Paste	Fruits edible, Fuel wood
49.	*Tectona grandis* L.f.	Thekku/ Verbenaceae	Wood	Head ache	External/Paste	Timber
			Stem bark	Ringworms, Skin diseases	External/Extract	
50.	*Terminalia catappa* L.	Valankottai/ Combretaceae	Leaves	Rheumatism, Swelling joints	External/Paste	Fruits edible, Fuel wood

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51.	*Thespesia populnea* (L.)Sol.ex Correa	Poovarasu/ Malvaceae	Flower, bark, stem	Skin diseases	External/oil	Timber
52.	*Vitex negundo* L.	Nochi/ Lamiaceae	Leaves, roots	Muscular pains	External/Paste	
				Rheumatism, fever	Internal/Powder	
53.	*Zizipus jujuba* Mill.	Elanthai/ Rhamnaceae	Leaves	Wound	External/ Powder	Fruits edible
				Chronic ulcer	Internal/Powder	

RESULTS AND DISCUSSION

The present study on tree species of S.T. Hindu College campus, Nagercoil has brought out a detailed survey, collection and documentation yielded 53 trees. The plants are tabulated with their correct botanical names followed by local name, family, useful part, medicinal uses, mode of administration, form of medicine and other uses (Table 1). The 53 species include 51 genera are belonging to 29 families. In order to infer the dominant families, an analysis was made and found that out of 29 families, Leguminosae is the first dominant family with 13 species. It is followed by Moraceae which is represented by 4 species. The families like Annonaceae, Arecaceae, Myrtaceae and Bignoniaceae are the third dominant families which are comprise about 3 species each. Other families like Sapotaceae and Phyllanthaceae which are having 2 species each. The remaining 20 families are monogeneric family. Tree species are distributed in different areas of the campus.

Based on the number, 53 species *Cocos nucifera* is the dominant tree which belongs to the family Arecaceae, it is followed by *Azadirachta indica*, it comes under the family Melikaceae. These 2 species are represented in more numbers. *Tectona grandis* and *Polyalthia longifolia* are also represented by more number, but it is lesser when compared the former 2 species.

The present study revealed that the tree species collected from the study area have many indigenous uses. They have been used for many purposes mainly for medicine, timber, edible, ornamental, fuel, folder, oil etc., Of these 53 species, 49 species are used as medicine, 19 species are used as edible, 12 species are used as timber, 9 species are growing as ornamental, 7 plants are used as fuel wood, 3 plants are growing as sacred plants and other uses such as fodder, gum and oil are used by only one species each (Figure 1).

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Most of the trees collected from the study area are used as medicine. These medicinally important plants are used to treat various diseases like cold, cough, pain, swelling, diabetes, dysentery, wound healing, stomach disorder, maintaining the heartbeat at normal level, rheumatism, fever, providing nutrition etc., The diseases such as skin diseases, inflammatory diseases, stomach disorders, diabetes, kidney diseases, cold and cough, fever are cured by 7,3,7,3,2,3, and 3 species respectively. *Prosopis juliflora* is used as an antidote for poisonous bites. This is constant with the other general observation which has been reported earlier about the medicinal plant studies by the Indian Traditional System of Medicine like Ayurvedha and Siddha (**Kiritikar and Basu**, 2001: **Gogte**, 2000; **Asolkar** *et al*., 1992).

Different parts of the medicinal trees such as leaves, stem, bark, fruit, seed and flower are being used for various medicinal purposes. Leaves of 26 species, bark of 14 species, root of 7 species, seeds of 9 species, fruits of 19 species, latex of 2 species, flower of 15 species, are used for the preparation of medicine. It is evident from the study that, the different parts of the trees are used as medicines, in which the leaves are most frequently used for the treatment of various ailments followed by stem, bark, seed, fruit, flower, root, etc.,

The medicines were prepared in different formulations which including decoction, juice, powder, paste, oil, plant extract, raw fruit and paste to treat various disease. Among the different forms of medicines decoction and paste form is predominantly used by the traditional healers. The present study perceived that mono medicinal tree is used for more than one disease. Some of the examples are *Adenanthera pavonina* used to treat cough, cold, pain, swelling), *Bombax ceiba* used to cure diarrhea, wounds, dysentery). The remedies are treated by oral consumption or external applications of the medicine. Most of the plants are used either mixed with other ingredients (polyherbal) or singly (monoherbal).

Drugs are prescribed either as a single or in a combination of more than one plant parts of same or different plants to the people suffering from various diseases. **Survase and Raut** (2011) also reported that combination of various plants or parts are preferred than the single plant or parts, as the combination are more effective to cure the disease and to enhance the immunity of patient suffering from various disorders.

A floristic study was carried out by **Parthipan** *et al*., (2016) in the campus of S.T. Hindu College, Nagercoil, it indicates the presence of 47 tree species. Our findings are slightly different from their result. In our findings, 53 tree species are reported in the study area. The variation of the result is due to the plantation of 6 more species in the study area after their documentation. The floras of the present study area have moderate floral diversity and the total number of taxa in S.T. Hindu College is less when compared to the same geographically positioned Scot Christian College, Nagercoil (**Sarasabai** *et al*., 2015). The main reason behind this was may be due to many anthropogenic activities made in the campus such as construction

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of new buildings and undisturbed area of the campus was converted into the new playground (**Parthipan** *et al*., 2016). **Neelamegam** *et al*., (2016) analyzed the woody species composition and diversity in S.T. Hindu College campus, Nageroil. In his word he reported that there is a need to carry out efforts to document the available plant species in the human habitats, which can be lost from the natural environment, otherwise it will lead to desertification due to human activities.

CONCLUSION

Plant diversity of an area is related to a variety of factors. Attempts for identifying the trends in geographical distribution of plant diversity is an important task. Nowadays, the efforts of biodiversity on ecosystem process have received much attention because of the growing concern that loss of biodiversity may cause ecosystem functioning. Some of the threatened factors like fast rate of biotic interference, destruction of natural habitat by human interference, cutting trees for construction purpose and unsustainable utilization of resources may adversely affect the existing diversity of trees of the study area. The saving and establishment of plant communities is an essential duty of human society for conservation of the biodiversity.

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