

Research Article



Medicinal plants of sree Sankaracharya University campus, Kalady, Kerala

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Abstract

The present investigation is regarding the diversity of medicinal plants in the campus of Sree Sankaracharya University of Sanskrit, Kalady, Ernakulam district, Kerala. The studies of biodiversity have greater significance as ecologists try desperately to document global biodiversity. Biodiversity studies are intrinsically valuable as a means of improving our understanding of the structure and functioning of ecological communities. The campus flora of Sree Sankaracharya University of Sanskrit, Kalady, is not yet documented and the present paper is a document of the medicinal plants. The present investigation explored and identified 109 species of medicinal plants. Of these six threatened plant species are present in the campus namely, *Petrocarpus marsupium* Roxb. (Fabaceae), *Borassus flabellifer* L. (Arecaceae), *Vateria indica* L. (Dipterocarpaceae), *Swietenia mahagoni* (L.) Jacq. (Meliaceae), *Gloriosa superba* L. (Lilliaceae) and *Saraca asoca* (Roxb.) Wilde (Caesalpinaceae).

Keywords: Medicinal plants, Sree Sankaracharya University of Sanskrit, Kalady, Flora, Diversity

1. Introduction

It is estimated that there exist 5-30 million species of living forms in our earth. Of these, only 1.8 million have been identified. India is very rich in biodiversity with 7% of world's flora and has been included as one of the 12 megadiversity centers. The varied eco-climatic conditions coupled with unique geological and cultural features have contributed to an amazing diversity of habitats, which harbour and sustain immense biological diversity at all levels (Agrawal 2000). There are 4,679 taxa of flowering plants in Kerala. They belong to 1,360 genera in 212 families (Sasidharan 2004). Various forest and campus floral diversity studies were conducted to explore the whole diversity of plants in the geological area. The floral studies from the campus of Kerala Forest Research Institute at Peechi, Nilambur and Velupadam having 565 taxa of angiosperms and 3 species of gymnosperms (Nair et al.,

1997). Mathews et al. (2012) studied the plants having the medico-potentiality of 35 plants belonging to 26 families and 34 genera collected from the Mar Thoma College Campus, Chungathara, Malappuram District. The herbaceous medicinal flora from the campus of Regional Institute of Education, Bhubaneswar, Odisha was studied by Kumar and Satapathy (2011) and recorded 72 plant species, many of which are herbs and shrubs, with few climbers, belonging to class Diocotyledons.

The Sree Sankaracharya University of Sanskrit, Kalady, Kerala was established in the year 1993 in the name of the sage and illustrious Indian philosopher Jag ad Guru Adi Shankara in his place of birth Kalady. There are no previous studies conducted on floral diversity of the University campus. Documentation of biodiversity is an urgent requirement as latest statistics and data on floral biodiversity of India has not been compiled and documented. The knowledge about the ecosystem structure, composition and diversity of species helps to improve the protection of endemic species.

2. Materials and methods

2.1. Study area and identification of plants

The present floral study was conducted at the Sree Sankaracharya University Campus and is located at Kalady in Ernakulam district, Kerala and is located on the banks of the river Periyar (Fig. 1 and 2). The geographic location of the study area is latitude 10°10'13"N and longitude 76°26'19"E. The total study area covers 81.553 acres. Artificial forest and ponds in the campus are included in the study area.

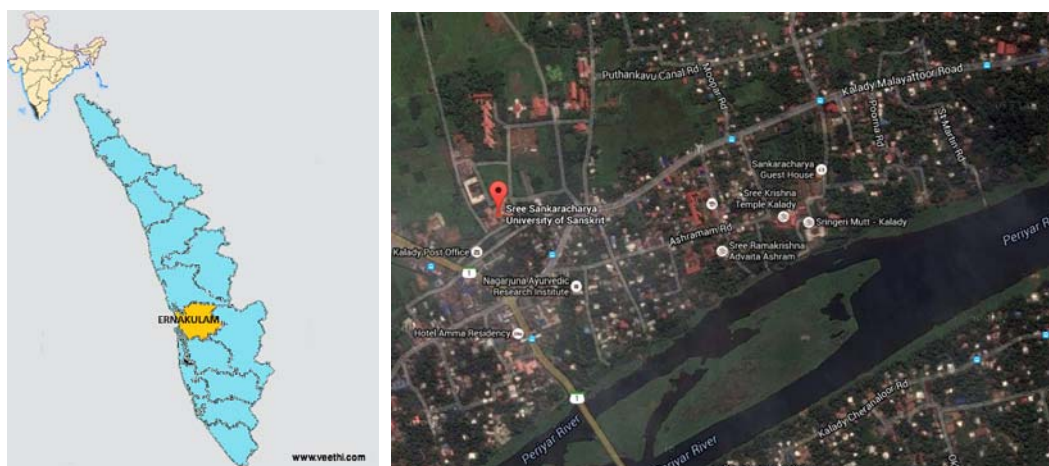


Fig. 1. Map showing Sree Sankaracharya University, Kalady.



Fig. 2. Views of flora of Sree Sankaracharya University Campus.

The study was conducted for a period of 6 months from February to July, 2015. Weekly observations were carried out for identifying the different species. Photographs of the plants were taken by a 12.1 megapixel digital camera. The twigs of plants collected with flowers and fruits were used for identifying the plant species. The habit, morphology and floristic characters are recorded during the time of collection. The plants collected were identified with the help of floras (Gamble and Fischer 1915-1936; Manilal and Sivarajan 1982; Sreekumar and Nair 1991; Sasidharan 2004; Sasidharan and Sivarajan 1996). The identified plants were recorded with the family, genus and species names and are arranged based on Bentham and Hooker's classification.

3. Results and discussion

The human life on this planet very much depending upon the existing floral and faunal diversity. The factors contributing to the habitat destruction and consequent loss of biodiversity are increasing population, environmental pollution, habitat loss, climatic change and introduction of exotic species. The natural vegetation of the study area has been considerably modified and altered by human activities.

The present investigation identified 226 species of plants belonging to 201 genera under 78 families. Out of 226 species, 176 species are dicotyledons, 46 species are monocotyledons and 4 species are Gymnosperms. The flora represented 59 families of Dicotyledons and 15 families of Monocotyledons (Table 1). The flora of the Sree Sankaracharya University Campus has 107 species of herbs, 46 species of shrubs and 70 species of trees. There are 15 species of climbers and 59 species of weeds in the study area. 109 species of medicinal plants (Nambiar et al., 1985; Warriar et al., 1996; Sivarajan and Balachandran 1998) are found in the campus (Table 2).

Six threatened species of plants present in the Sree Sankaracharya University Campus namely,

1. *Petrocarpum marsupium* Roxb., Family: Fabaceae (Vulnerable)
2. *Borassus flabellifer* L. Family: Arecaceae (Endangered)
3. *Vateria indica* (L.) Family: Dipterocarpaceae (Critically Endangered)
4. *Swietenia mahagoni* (L.) Jacq. Family: Meliaceae (Endangered)
5. *Gloriosa superba* L. Family: Lilliaceae (Endangered)
6. *Saraca asoca* (Roxb.) Wilde Family: Caesalpiniaceae (Endangered)

The medicinal plants, like other plant parts in commercial demand, premature exploitation is another factor, which is additionally responsible for rapid destruction of wild stock. Whenever a plant is in high demand, premature exploitation is expected to threaten next season's propagation and regeneration of the species (Chaudhuri 2007). Commercial enterprises and local dwellers are regularly exploiting natural heritage of these medicinal plants.

Table 1. Flora of Sree Sankaracharya University Campus, Kalady.

	Family	Genera	Species
Dicotyledons	59	153	176
Monocotyledons	15	44	46
Gymnosperms	4	4	4
Total	78	201	226

Table 2. List of medicinal plants in the Sree Sankaracharya University Campus, Kalady.

Sl. No:	Name of plant species	Family	Habit
1	<i>Abelmoschus moschatus</i> Medik.	Malvaceae	S
2	<i>Adathoda vasica</i> Nees	Acanthaceae	S
3	<i>Adenanthera pavonina</i> L.	Mimosaceae	T
4	<i>Aerva lanata</i> (L.) Juss. ex Schult.	Amaranthaceae	H
5	<i>Ageratum conyzoides</i> L.	Asteraceae	H
6	<i>Aloe vera</i> (L.) Burm.f.	Liliaceae	H
7	<i>Alstonia scholaris</i> R. Br.	Apocynaceae	T
8	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Amaranthaceae	H
9	<i>Alysicarpus vaginalis</i> (L.) DC.	Fabaceae	H
10	<i>Anacardium occidentale</i> L.	Anacardiaceae	T
11	<i>Annona reticulata</i> L.	Annonaceae	T
12	<i>Artocarpus hirsutus</i> Lam.	Moraceae	T
13	<i>Asparagus racemosus</i> Willd.	Liliaceae	C
14	<i>Averrhoa bilimbi</i> L.	Oxalidaceae	T
15	<i>Averrhoa carambola</i> L.	oxalidaceae	T
16	<i>Azadirachata indica</i> A. Juss.	Meliaceae	T
17	<i>Bambusa bambos</i> (L.) Voss	Bambusaceae	S
18	<i>Biophytum reinwardtii</i> (Zucc.) Klotzsch	Oxalidaceae	H
19	<i>Boerhaavia diffusa</i> L.	Nyctaginaceae	H
20	<i>Borassus flabellifer</i> L.	Arecaceae	T
21	<i>Bridelia retusa</i> (L.) A.Juss.	Euphorbiaceae	T
22	<i>Calotropis gigantea</i> (L.) R. Br.	Apocynaceae	S
23	<i>Capsicum frutescens</i> L.	Solanaceae	H
24	<i>Carica papaya</i> L.	Caricaceae	T
25	<i>Caryota urens</i> L.	Arecaceae	T
26	<i>Casia fistula</i> L.	Cesalpiniaceae	T
27	<i>Catharanthus roseus</i> (L.) G. Don.	Apocynaceae	H
28	<i>Catunaregam spinosa</i> Thunb. Tirveng	Rubiaceae	S
29	<i>Centella asiatica</i> (L.) Urban	Apiaceae	H
30	<i>Chrysanthemum indicum</i> L.	Asteraceae	H
31	<i>Cinnamom camphora</i> L.	Lauraceae	T

32	<i>Cinnamon tamala</i> Nees. L.	Laruaceae	T
33	<i>Citharexylum spinosa</i> L.	Verbenaceae	T
34	<i>Cleome viscosa</i> L.	Capparaceae	H
35	<i>Clerodendrum infortunatum</i> L.	Lamiaceae	S
36	<i>Cocos nucifera</i> L.	Arecaceae	T
37	<i>Coix lacryma - jobi</i> L.	Poaceae	H
38	<i>Commelina benghalensis</i> L.	Commelinaceae	H
39	<i>Costus speciosus</i> (J.Konig) C.Specht	Costaceae	H
40	<i>Couropita guianensis</i> Aublet.	Lecythidaceae	T
41	<i>Crotalaria striata</i> (L.) DC	Fabaceae	S
42	<i>Croton tiglium</i> L.	Euphorbiaceae	T
43	<i>Cyclea peltata</i> (Lam.) Hook.F. Thomas	Menispermaceae	C
44	<i>Dendrophthoe falcata</i> L. f.	Loranthaceae	P
45	<i>Desmodium gangeticum</i> (L.) DC.	Fabaceae	H
46	<i>Desmodium triflorum</i> (L.) DC.	Fabaceae	H
47	<i>Diospyrus ebanum</i> Koenig.	Ebanaceae	T
48	<i>Eleusine indica</i> (L.) Gaertn.	Poaceae	H
49	<i>Emblica officianalis</i> L.	Euphorbiaceae	T
50	<i>Emilia sonchifolia</i> (L.) DC.	Asteraceae	H
51	<i>Euphorbia hirta</i> L.	Euphorbiaceae	H
52	<i>Excoecaria bicolor</i> (Willd) Muell. Arg	Euphorbiaceae	S
53	<i>Ficus hispida</i> L.f.	Moraceae	T
54	<i>Ficus microcarpa</i> L.	Moraceae	T
55	<i>Ficus racemosa</i> L.	Moraceae	T
56	<i>Ficus religiosa</i> L.	Moraceae	T
57	<i>Garcinia mangostana</i> L.	Clusiaceae	T
58	<i>Gloriosa superba</i> L.	Lilliaceae	H
59	<i>Gmelina arborea</i> Roxb.	Lamiaceae	T
60	<i>Hibiscus hispidissimus</i> Griff.	Malvaceae	S
61	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	S
62	<i>Hyptis suaveolens</i> (Linn) Poit.	Lamiaceae	H
63	<i>Ipomoea pes-caprae</i> (L.) R. Br.	Convolvulaceae	H
64	<i>Ixora coccinea</i> L.	Rubiaceae	S

65	<i>Kyllinga nemoralis</i> (J.R.Forst. & G.Forst.)	Cyperaceae	H
66	<i>Lantana camara</i> L.	Verbenaceae	S
67	<i>Laportea interrupta</i> (L.) Chew.	Utricaceae	H
68	<i>Leucas aspera</i> L. (Willd) Spreng.	Lamiaceae	H
69	<i>Mangifera indica</i> L.	Anacardiaceae	T
70	<i>Manihot utilissima</i> Pohl	Euphorbiaceae	S
71	<i>Melastoma malabathricum</i> L.	Melastomataceae	H
72	<i>Mimosa pudica</i> L.	Mimosaceae	H
73	<i>Mimusops elengi</i> L.	Sapotaceae	T
74	<i>Murraya paniculata</i> (L.) Jack	Rutaceae	T
75	<i>Musa paradisiaca</i> L.	Musaceae	H
76	<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	H
77	<i>Neolamarkia cadamba</i> (Roxb) Bosser	Rubiaceae	T
78	<i>Ocimum sanctum</i> L.	Lamiaceae	H
79	<i>Oxalis corniculata</i> L.	Oxalidaceae	H
80	<i>Pandanus amarylifolius</i> Roxb.	Pandanaceae	S
81	<i>Phyllanthus amarus</i> Schumach&Thonn.	Euphorbiaceae	H
82	<i>Physalis minima</i> L.	Solanaceae	H
83	<i>Piper nigrum</i> L.	Piperaceae	C
84	<i>Pongamia pinnata</i> (L.) Pierre.	Fabaceae	T
85	<i>Psidium guajava</i> L.	Myrtaceae	T
86	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	T
87	<i>Pterygota alata</i> (Roxb.) Pierre.	Sterculiaceae	T
88	<i>Puthranjiva roxburgii</i> Wall.	Euphorbiaceae	T
89	<i>Quassia indica</i> (Gaertn.) Nooteboom	Simaroubaceae	T
90	<i>Ricinus communis</i> L.	Euphorbiaceae	S
91	<i>Ruellia tuberosa</i> L.	Acanthaceae	H
92	<i>Saccharum spontaneum</i> L.	Poaceae	H
93	<i>Saraca asoca</i> (Roxb.) Wilde	Caesalpiniaceae	T
94	<i>Sauropus quadrangularis</i> (Willd.) Müll.Arg.	Euphorbiaceae	S
95	<i>Scaevola taccada</i> (G.) Forst ex vahl.	Goodeniaceae	S
96	<i>Scoparia dulcis</i> L.	Scrophulariaceae	H
97	<i>Solanum torvum</i> SW.	Solanaceae	S

98	<i>Spilanthes acmela</i> L.	Asteraceae	H
99	<i>Spondias pinnata</i> (L.F.) Kurz.	Anacardiaceae	T
100	<i>Swietenia mahagoni</i> (L.) Jacq.	Meliaceae	T
101	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	T
102	<i>Tabernaemontana divericata</i> (L.) R. Br.	Apocynaceae	S
103	<i>Tamarindus indica</i> L.	Caesalpinaceae	T
104	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Combretaceae	T
105	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	T
106	<i>Terminalia cattapa</i> L.	Combretaceae	T
107	<i>Vateria indica</i> L.	Dipterocarpaceae	T
108	<i>Vetiveria zizanioides</i> L.	Poaceae	H
109	<i>Ziziphus oenoplea</i> (L.) Mill.	Rhamnaceae	S

H – Herb; S – Shrub; C – Climber; P – Parasite; T - Tree

4. Conclusion

The human life directly and indirectly depends on the environment, flora and fauna of the specific area. The survival and well being of the present day human population depends on several substances obtained from plants and animals. They have nutritive value, medicinal value; they act as a source for fuel, educational value, aesthetic value and preserving ecological balance. The vegetation significantly lowers in cities compared to villages. Industrial expansion, heavy traffic pollution, human interferences harmfully affect the flora of a region. Plant resources are renewable but depleting due to deforestation, over grazing by domestic animals are some reasons. Habitat destruction or fragmentation, improper agricultural practices have endangered many species of flowering plants. Instead of utilizing all the spaces for commercial purpose, steps should be taken for preserving biodiversity, through which we can conserve our planet. It should be protected for our future generations.

Conflict of interest statement

We declare that we have no conflict of interest.

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