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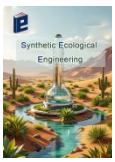

Research Articles

Community Structure, Species Diversity and Ethnobotanical aspects in flora of Karattumedu Hillock, Tamil Nadu

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KEYWORDS

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ABSTRACT

Karattumedu hillock is a dry tropical and dry deciduous forests located in the Southern side of Western Ghats at Coimbatore district, Tamil Nadu. The altitude ranges from 372m above msl with 11.0937° N, 77.0107° E geo-coordinates. In Karattumedu hillock consists of different floristic vegetation according to the seasonal variations. Various kinds of medicinal plants are identified and collected. Some Rare Endanger and Threatened (RET) species are founded. About 56 plant species belonging to the different families were collected. Plants were enumerated with botanical names, family, habit, Common names, flowering & fruiting period and Medicinal uses. All the plants which are collected are preserved by the herbarium techniques.

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1. Introduction

Taxonomy is scientific term which refers to the naming and classification system of biodiversity to accommodate new knowledge. In India total diversity of Angiosperm contains 17672 species in these Tamil Nadu ranks 1st in all over the country with 5640 species. Tamil Nadu accounts for nearly 1/3 of the total flora of India. Species and Generic diversity of flora of Tamil Nadu is comparatively richer than the neighborhood states. The state of Tamil Nadu harbours a total of 5547 taxa that includes 5239 species, 72 subspecies and 548 varieties distributed in 231 families under 1668 genera. Dicots constitute a major part of the flora that account for 78 per

cent comprising 1944 taxa of Polypetalae, 1720 taxa of Gamopetalae and 642 taxa of Monochlamydeae. Number of Monocots in Tamil Nadu includes 1241 taxa [8].

Diversity (CBD-1993) [9], has explained taxonomic studies as the sovereign right of the country. The floral richness in India is due to the wide range of climate, topology and habitat. India is the home of more than 50,000 species of plants, which includes 18000 flowering plants and variety of endemics. The use of plants as a source of medicines has been an integral part of life in India from the time immemorial. Around 3000 plants has officially documented for the medicinal efficacy.

Botanical Survey of India, report reveals that about 45 species are critically endangered, 113 species are endangered, 89 species vulnerable and 7 species are extinct [7]. It is noted that wild species of plants are arbitrarily harvested and traded within the country for its various medicinal, aromatic and aesthetic uses.

Herbal medicines are assumed to be of great importance in the primary health care of individual and communities in many developing countries [2] considering the current rate of deforestation with the Concurrent loss of biodiversity. About 80% of the population in the developing countries depend plant products for their primary healthcare (Francis Xavier.,T., Freeda Rose and Dhivyaa. M (2011). Traditionally, indigenous communities posses knowledge about usage of plants and other natural resources. With this broad prospect, the floristic studies were carried out to explore the floristic wealth of the Karattumedu hillock, a part of Southern Western Ghats of Coimbatore District, Tamil Nadu, India. Due to the presence of good floral wealth as well as significant aboriginal knowledge. The study area is a temple such that the area is affected anthropogenic activities. However, the main objectives are to identify rare, endemic, threatened, vulnerable, least concern and endangered plants in Karattumedu hillock, to document plant diversity in Karattumedu hillock and together knowledge on medicinal plants from local tribal's to collect some highly useful medicinal plants.

2. Materials and Methodology

2.1. Study Area

The study area is Karattumedu hillock located nearly 3 km away from the Periyanaicken palayam. Karattumedu hillock is a dry tropical and dry deciduous forests located in the northern side of Coimbatore District.. The altitude ranges from 372m above msl with 11.0937° N, 77.0107° E geo-coordinates. In Karattumedu hillock consists of different floristic vegetation according to the seasonal variations. There are some Rare, Endanger and Threatened (RET) species are found here and along with them many medicinal plants is collected. This Karattumedu hillock is a temple for Lord Murugan locally temple is known as Karattumedu Rathinagiri Maruthasalakadavul Temple.

2.2. Field Study

The present study was processed between the periods from March 2021 to May 2021. During the field visit, the some plants are identified on the spot. More information was collected by conducting interview with the tribal's and the herbal healers. Once in two days visited the field and collected the plant details. The collected plants are identified based on standard Flora like The Flora of Presidency Madras [5], Flora of Coimbatore, An Excursion Flora of Central Tamil Nadu , India, and also with the Taxonomy experts.

2.3. Methodology

The plants are collected with healthy flowers and fruits. Plant details were noted in field note such as specimen number, species name, evanescent features, date of collection and location and they are pressed, dried and poisoned

with 2% of mercuric chloride and formalin. After poisoning, the plant specimens is mounted on the herbarium sheets separately by applying glue and stitched with herbarium.

3. Results

Karattumedu hillock is the home of Rare, Endemic, Endangered plants and because of the good vegetation and different categories of plants. Among the floristic wealth of Karattumedu hillock 56 species were identified and has been reported which includes 49 genus and 28 families. The identified plants are listed out (Table 1). Plants were enumerated with botanical names with author citation, Family, Habit, Common names and Ecological status of the plants were referred from the IUCN main website (Table 1). Selectively the ethno botanical values of 20 plants listed in (Table 1) is listed along with their flowering and fruiting season of them in (Table 2). Families having maximum number of Species present in the Study area were listed and tabulated (Table 3).

Table 1. List of Plants present in the study area.

S.No	Botanical Name	Family	Habit	RET	Common Name
1.	Abrus precatorius L.	Fabaceae	Climber	NE	Bead vine
2.	Acanthospermum hispidum DC.	Asteraceae	Herb	NE	Horn spine
3.	Agrostis capillaris L.	Poaceae	Herb	LC	Lace love grass
4.	Aleurites moluccana (L.) Wild.	Euphorbiaceae	Tree	LC	Candle nut
5.	Alternanthera sessilis (L.) R.Br.ex DC.	Amaranthaceae	Herb	LC	Sessile joy weed
6.	Argemone mexicana L.	Papaveraceae	Shrub	NE	Yellow Mexican poppy
7.	Asclepias curassavica L.	Asclepiadaceae	Shrub	NE	Curassavian
8.	Asparagus racemosus Wild.	Asparagaceae	Climber	NE	Indian asparagus
9.	Benkara malabarica (Lam.) Tirveng	Rubiaceae	Tree	NE	Benkara
10.	Brassica nigra (L.)W.D.J. Koch	Brassicaceae	Herb	NE	Black mustard
11.	Capparis divaricata Lam.	Capparaceae	Shrub	NE	Spreading capper
12.	Cardiospermum canescens Wall.	Sapindaceae	Herb	NE	Small Balloon vine
13.	Cassia auriculata L.	Caesalpinaceae	Shrub	NE	Tanner's Cassia
14.	Celosia argentea L.	Amaranthaceae	Herb	NE	Slive cocks comb
15.	Chloris barbata Sw.	Poaceae	Herb	NE	Indian periwinkle
16.	Cissampelos pareira L.	Menispermaceae	Climber	NE	Velvet leaf
17.	Cleome gynandra L.	Capparaceae	Herb	NE	Spider flower
18.	Clitoria ternatea L.	Fabaceae	Climber	NE	Butterfly bean
19.	Crotalaria prostrate Wild.	Fabaceae	Herb	NE	Prostrate Rattle pod
20.	Crotalaria verrucosa L.	Fabaceae	Shrub	NE	Blue flowered Rattle pod
21.	Diplocyclos palmatus (L.)Wight.&Arn.	Cucurbitaceae	Climber	NE	Lollipop climber
22.	Dolichos trilobus L.	Fabaceae	Climber	NE	Sickle Bean
23.	Grewia asiatica L.	Malvaceae	Shrub	NE	Phalsa
24.	Grewia damine Gaertn.	Malvaceae	Shrub	NE	Salvia leaved Crossberry
25.	Helicteres isora L.	Malvaceae	Shrub	NE	East-Indian Screw Tree
26.	Hibiscus micranthus L.f	Malvaceae	Herb	NE	Tiny flower hibiscus

S.No	Botanical Name	Family	Habit	RET	Common Name
27.	Hibiscus vitifolius L.	Malvaceae	Shrub	NE	Graped leaved mallow
28.	Homonia riparia Lour.	Oleaceae	Shrub	NE	Indian Jasmine
29.	Ipomoea hederacea (Linn) Jacq.	Convolvulaceae	Climber	NE	Ivy leaf morning glory
30.	Ipomoea staphylina Roem.& Schult	Convolvulaceae	Climber	NE	Lessery glory
31.	Ipomoea pes tigridis L.	Convolvulaceae	Climber	NE	Morning glory
32.	Justicia tranquebariensis Roxb.	Acanthaceae	Shrub	NE	Tarangambadi justicia
33.	Leonotis nepetifolia (L.)RBr	Lamiaceae	Shrub	NE	Lions ear
34.	Leucas biflora (Vahl) Sm.	Lamiaceae	Herb	NE	Two flowered leucas
35.	Leucas matricensis (Jacq).RBr.	Lamiaceae	Herb	NE	White wort
36.	Leucas urticifolia (Vahl) Sm.	Lamiaceae	Herb	NE	Leucas
37.	Merremia dissecta (Jacquin) Hall.fil	Convolvulaceae	Climber	NE	Almovine
38.	Mollugo nudicaulis Lam.	Aizoaceae	Herb	NE	Naked stem carpet weed
39.	Ocimum basilicum L.	Lamiaceae	Herb	NE	Basil
40.	Oxystelma esculentum (L.fil) R.Br	Asclepiadaceae	Climber	LC	Rosy Milk weed vine
41.	Panichum dichotomiflorum Michx.	Poaceae	Herb	NE	Little millet
42.	Passiflora foetida L.	Passifloraceae	Climber	NE	Foetid passion flower
43.	Pergularia daemia (Frosskal) chiov.	Asclepiadaceae	Climber	NE	Trellis vine
44.	Peristrophe bicalyculata (Retz) Nees	Acanthaceae	Herb	NE	Magent plant
45.	Phyllocephalum scarbidum (DC) K.Kirkman	Asteraceae	Herb	NE	Purple heads
46.	Premna tomentosa Wild.	Verbenaceae	Tree	NE	Wooly leaved Teak
47.	Rhynchosia densiflora (L.) Lam	Fabaceae	Climber	NE	Mouth vine
48.	Setaria viridis (L.) Beauv.	Poaceae	Herb	NE	Green Fox Tail
49.	Toddalia asiatica (L.) Lam.	Rutaceae	Shrub	NE	Lopez tree
50.	Trema cannabina Lour.	Cannabaceae	Tree	NE	Indian Charcoal tree
51.	Vitex altissima L.f	Verbenaceae	Tree	NE	Arjun
52.	Vernonia cinerea (L.)Less	Asteraceae	Herb	NE	Little iron weed
53.	Vicoa indica (L.)DC.	Asteraceae	Herb	NE	Golden daisy
54.	Waltheria indica L.	Sterculiaceae	Herb	NE	Boater bush
55.	Wrightia tinctoria R.Br.	Apocynaceae	Tree	LC	Milky wear Tree
56.	Ziziphus xylopyrus (Retz.) Wild	Rhamnaceae	Tree	NE	Jackal jujube

RET = Rare Endangered Threatened (NE = Not evaluated, DD = Data deficient, LC = Least concern, NT = nearly threatened, VU = Vulnerable, EN = Endangered, CR = Crictically endangered, EW = Extinct in the world, EX = Extinct.)

Table 2. List of Medicinal Plants and their uses.

S.No	Botanical Name	Flowering and Fruiting	Medicinal Uses
1.	Acanthospermum hispidum DC.	January to June	Used as Diuretic, Sudorific, Yellow fever, Tuberculosis, Stomach disorder, Cough, Purgative, Rheumatism.
2.	Argemone mexicana L.	Throughout the year	Used as Analgestic, antispasmodic, sedative, jaundice, Chronic skin disease, expectorant and Laxative.
3.	Benkara malabarica (Lam.) Tirveng	January to May	Used for Abdominal Pain, throat infections and as antimicrobial agent
4.	Cassia auriculata L.	Throughout the year	Used to treat Diabetes, Eye disease, Gonorrhoea and gout.
5.	Cissampelos pareira L.	August to November	Used to cure diarrhoea, dysentery, ulcers, colic, intestinal worms and Menstrual problems.
6.	Crotalaria verrucosa L.	August to November	Used to treat skin disease, fever and stomach pains and to purify blood emmenagogue.
7.	Diplocyclos palmatus (L.)Wight.&Arn.	November to January	Used as antivenom, expectorant, laxative and used to treat Stomach-ache.
8.	Dolichos trilobus L.	September to January	Used to treat Chicken pox.
9.	Helicteres isora L.	September to March	Used to cure Dysendry, stomach pain, diarrhoea. Used as expectorant, demulcent
10.	Homonia riparia Lour.	December to May	Used to treat skin disease, malaria, scabies and used as purgative.
11.	Ipomoea staphylina Roem.& Schult	January to April	Used to treat fits of insanity. Aphthae dysentery and used as Antibacterial agent.
12.	Leonotis nepetifolia (L.)RBr	November to March	Used against swellings, fever, gastro-intestinal troubles and as an aabortifacient.
13.	Leucas biflora (Vahl) Sm.	October to February	Used to treat bleeding nose and used as eye drop
14.	Merremia dissecta (Jacquin) Hall.fil	September to March	Used to cure burns and jaundice.
15.	Mollugo nudicaulis Lam.	May to September	Acts as an Antipyretic, Antiseptic, laxative, anticancer, antitoxic and diuretic agent.
16.	Ocimum basilicum L.	Throughout the Year	Used to treat acne, loss of smell, insect stings, snake bites and skin infections.
17.	Oxystelma esculentum (L.fil) R.Br	September to April	Acts as an Antipyretic, Antiseptic, Antiulcer, Ant periodic, and Antihelmenthic.

S.No	Botanical Name	Flowering and Fruiting	Medicinal Uses
18.	Peristrophe bicalyculata (Retz) Nees	November to March	Used to treat Bronchitis, tuberculosis, asthma and snakebite.
19.	Toddalia asiatica (L.) Lam.	July to February	Used to treat malaria, cough, indigestion, influenza, lung disease, rheumatism.
20.	Vitex altissima L.f	January to July	Used to treat conditions affecting woman's reproductive system.

Table 3. Families having maximum numbers of plant species.

S.No	Family	No of Species	S.No	Family	No of Species
1.	Acanthaceae	2	15.	Fabaceae	6
2.	Aizoaceae	1	16.	Lamiaceae	5
3.	Amaranthaceae	2	17.	Malvaceae	5
4.	Apocynaceae	1	18.	Menispermaceae	1
5.	Asclepiadaceae	3	19.	Oleaceae	1
6.	Asparagaceae	1	20.	Papaveraceae	1
7.	Asteraceae	4	21.	Passifloraceae	1
8.	Brassicaceae	1	22.	Poaceae	4
9.	Caesalpiniaceae	1	23.	Rhamnaceae	1
10.	Cannabaceae	1	24.	Rubiaceae	1
11.	Capparaceae	2	25.	Rutaceae	1
12.	Convolvulaceae	4	26.	Sapindaceae	1
13.	Cucurbitaceae	1	27.	Sterculiaceae	1
14.	Euphorbiaceae	1	28.	Verbenaceae	2

Among the all families Fabaceae consists of 6 species which is considered to be the dominant in the present study. Lamiaceae & Malvaceae are having 5 species. The other following families namely Convolvulaceae, Poaceae, Asteraceae are having 4 species respectively. This research also reveals that the hill has a good resource for economical importance which had to be conserved. According the literature survey this was a good attempt in reporting the plant species in the unexplored areas. The plants listed in the Table 1 were distributed as 22 Herb (39.28%), 13 Shrub (23.21%), 14 Climbers (25%), 7 Trees (12.5%) in (Table 4).

Table 4. Percentage of Distribution of plant species in the study area.

S.No	Habit	Number of plants	Percentage
1.	Herb	22	39.28
2.	Shrub	13	23.21
3.	Climber	14	25
4.	Tree	7	12.5

4. Discusion

Vijayashalini, P. conducted the survey in Vanavasi hill area; it has documented a total of 74 angiospermic plants and 2 pteridophytes with medicinal value. In the study, provide safety and efficacy information to encourage, the preservation of culture, conservation and sustainable utilization of plant wealth occurring in the target area. The ethno-botanical information reveals that plant species are widely used throughout the world for different purposes. However, the most important concern is that most plant species due anthropogenic influences plants like Valeriana jatamansi, Acorus calamus, Podophyllum hexandrum and Poeonia emodi are threatened due to their unwise collection by the residents for medicinal purposes reported by Farhana Ijaz et al., 2017. Aishwarya and Arunprasath in 2018 reported that the that the sacred groves are virgin forests and acts as site for conservation of bio-resources The work was carried out in Sree Andalur Sacred Grove, Kannur district, Kerala. Geographically the place lies between 11˚47′40.797″ N latitude and 75˚28′37.9842″ E longitudes. About 101 plant species belonging to 40 families were collected from here. Plants were enumerated with botanical names, family, habit and local names. It includes 15 Trees, 37 Shrubs, 40 Herbs and 9 Climbers.

Balaji Ragunathan and Prabhakaran Raju., 2017 were focused on the taxonomic and vegetative analysis of Angiospermic plants in Palamalai area. There are 72 species identified and belongs to 59 genera and 34 families. Based on this study the taxonomic and vegetative wealth of Palamalai hill was recognized and reported. According to the survey reported by the Mathankumar et al., 2016 the studies revealed that the medicinal plants were pre dominantly found in this hill. The climbing most species pertaining to 18 sites and belongs to 34 families. The family Malvaceae with 28 species was by far the largest genera in this survey and other plants were well represented in medicinal plants survey of Krishnagiri District in Egalnatham. An ethno botanical survey was carried out by [11] among the Malayali tribal's in various villages of Kolli hills, Namakkal District, Tamil Nadu, India during July 2011 to June 2013. A total 250 species of ethno medicinal plants belonging to 198 genera and 81 families and 21 habitats, 228 dicotyledons, 22 monocotyledons were reported with the help of standardized 50 tribal informants between the ages of 40-75.

5. Conclusion

The Karattumedu hillock was chosen as Study area for taxonomical survey. The present investigation revealed that medicinal plants still play a vital role in the primary health care of the people. Local people must become aware of direct benefits of groves and they can learn more about the functions. The study revealed that Fabaceae was the dominant family present in the study area. The officials of the Karattumedu hillock temple and NGOs should take necessary actions to avoid the anthropogenic activities to increase the flora in and around the temple.

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