

TAXONOMICAL STUDIES OF MELMUDI HILLS, COIMBATORE, TAMIL NADU

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Abstract: Melmudi hills, is a dry tropical and dry deciduous forests located in the Northern side of Coimbatore District. The hills belong to the Southern side of Western Ghats which is 1615m in height, 11°7'38"N 76°51'38"E coordinates and it is visible from every part of Coimbatore district. In Melmudi hills, there are huge floristic diversity and high vegetations. Apart from medicinal plants, there are some Rare, Endangered & Threatened (RET) species are also distributed. In the present investigation, 56 plant species were enumerated with botanical names, family, habit and local names. All the collected plants were preserved in the form of herbarium.

Index terms: Melmudi hills, Floristic diversity, Rare, Endangered and Threatened (RET species), Herbarium

I. INTRODUCTION:

In India, plant taxonomy regained its importance only after the convention on Biological Diversity (CBD-1993) Pushpangadan *et al* 2001⁽¹⁾, 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 18,000 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.

The main phytogeographical zones in India are Western Himalaya, Eastern Himalayas, Assam, Indus plain, Ganges plain, Western Ghats, the Deccan, Malabar and the Andaman Islands. Many plant species are becoming extinct, endangered, threatened or vulnerable due to various reasons including overexploitation in their natural habitats. 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 (Karthikeyan *et al* 2009)⁽²⁾. It is noted that wild species of plants are arbitrarily harvested and traded within the country for its various medicinal, aromatic and aesthetic uses. With this broad perspective, in the present investigation the Melmudi hills flora will be surveyed. The main objectives are to identify rare, endemic, threatened, vulnerable, least concern and endangered plants in Melmudi hills, and also to document plant diversity of the hills.

The Angiosperm diversity of India includes 17,672 species. With 5,640 species, Tamil Nadu ranks 1st among all the States in the Country, and also nearly 1/3rd of the total flora of India. This includes 533 endemic species, 230 red-listed species, 1,559 species of medicinal plants and 260 species of wild relatives of cultivated plant. The Gymnosperm diversity of the country is 64 species of which Tamil Nadu has 4 species indigenous Gymnosperms and about 60 introduced species. The Pteridophytes diversity of India includes 1022 species of which Tamil Nadu has about 184 species. Tamil Nadu wild plant diversity also includes vast number of Bryophytes, Lichens, Fungi, Algae and Bacteria.

II. MATERIALS AND METHODOLOGY:

2.1 Study area

The study area Melmudi hills (Figure 2.1) located nearly 20 km away from the Periyanaickenpalayam Northern side of the Coimbatore district. The hills located at 11°7'38" North latitude & 76°51'38" East longitude. Melmudi hills is a dry tropical and deciduous forest which is 1615m in height and one of the highest hills in Coimbatore district. The hill has variety of floristic diversity. Rare, Endangered and Threatened (RET) species and few medicinal plants are collected. As some plants are in Red list, extra care was taken during the collection. There is a temple situated at the top of the hill and it named as "Melmudi Ranganathar Kovil" which indicates the crown of Lord Ranganathar, the main deity.



Figure 2.1 : Melmudi hills

2.2 Field Study

The present study was processed between the period from May 2018 to August 2018. During the field visit, the few plants were identified on the spot. More information was collected by conducting interview with the tribal and the herbal healers. A periodic collection was made once in a two days to the field of study. The collected plants were identified based on standard Flora like The Flora of Presidency Madras⁽³⁾, Flora of Coimbatore⁽⁴⁾, An Excursion Flora of Central Tamil Nadu⁽⁵⁾, India and also with the Taxonomy experts.

2.3 Methodology

Healthy plants were collected with flowers and fruits. Plant details were noted in field note such as specimen number, species name, evanescent features, date of collection and location. They were pressed, dried, poisoned with 2% of mercuric chloride and formalin for further study. After poisoning, the plant specimens were mounted on the herbarium sheets by applying glue and stitched using twine.

III. RESULT AND DISCUSSION:

Melmudi hills is the home of Rare, Endemic, Endangered plants and because of the good vegetation and different categories of plants. Among the floristic wealth of Melmudi hills 56 species were identified and has been reported which includes, 52 genera of 35 families. The identified plants were listed out with binomial, Family, Habit, Common and Vernacular names (Table 3.1). Ecological status of the plants were referred from the IUCN main website. Families having maximum number of Species present in the Study area were listed and tabulated (Figure 3.2).

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

S.No	Botanical Name	Family	Habit	Ecological status	Common Name/Vernacular Name
1.	<i>Aeschynomene aspera</i> L.,	Fabaceae	Herb	LC	Sola pith plant/Netti
2.	<i>Alysicarpus monolifera</i> L.,	Fabaceae	Herb	NE	Necklace-Pod Alyce Clover/ Kacukkotti
3.	<i>Anisomeles malabarica</i> L.,	Lamiaceae	Shrub	NE	Malabar Catmint/ Peymaruti
4.	<i>Barleria acuminata</i> Wight ex Nees	Acanthaceae	Shrub	NE	Long-flower Blue Barleria/Vellaikurinji
5.	<i>Barleria buxifolia</i> L.,	Acanthaceae	Shrub	NE	Box-Leaved Barleria/Mullipoondu
6.	<i>Barleria prionitis</i> L.,	Acanthaceae	Shrub	NE	Porcupine Flower/Cemmulli
7.	<i>Boerhavia diffusa</i> L.,	Nyctaginaceae	Herb	NE	Red hogweed/Mookkarattikodi
8.	<i>Bulbostylis barbata</i> (Roth) C.B. Clarke	Cyperaceae	Herb	NE	Water grass/ Mukkorraikkorai
9.	<i>Calophyllum inophyllum</i> L.,	Clusiaceae	Tree	LC	Alexdranin Laurel/Punnai
10.	<i>Cardiospermum halicacabum</i> L.,	Sapindaceae	Climber	NE	Ballon vine/ Mudackotran
11.	<i>Cassia occidentalis</i> L.,	Caesalpiniaceae	Shrub	NE	Coffee Senna/Nattamtakarai
12.	<i>Catharanthus pusillus</i> (Murray) G. Don,	Apocynaceae	Herb	NE	Tiny Periwinkle/ Paalaich
13.	<i>Celastrus paniculatus</i> Willd.,	Celastraceae	Climber	NE	Black oil plant/Kuvarikuntal
14.	<i>Chromolaena odorata</i> (L.) R. M. King & H. Rob.	Asteraceae	Shrub	NE	Siam weed/ Perumutti

15.	<i>Clausenadentate</i> Willd,	Rutaceae	Tree	NE	Black current grape lime/ Kattu-veppilai
16.	<i>Cleome viscosa</i> L,	Cappardiaceae	Herb	NE	Asian spider flower/ Naikkaduku
17.	<i>Combretumovalifolium</i> Roxb	Combretaceae	Climber	NE	Oval leaved wheel creeper/Veragai
18.	<i>Commelinalongifolia</i> Lam,	Commelinaceae	Herb	NE	Long leaved Dayflower/Kanangkozai
19.	<i>Corchorustridens</i> L,	Tiliaceae	Herb	NE	Horn-fruited jute
20.	<i>Croton bonplandianum</i> Baill,	Euphorbiaceae	Herb	NE	Ban tulsi Rail poondu
21.	<i>Cucumis dipsaceus</i> Ehreb. Ex Spach	Cucurbitaceae	Climber	NE	Hedgehog cucumber/Mullelivellarikai
22.	<i>Dendrophthoefalcata</i> L,	Loranthaceae	Shrub	NE	Honey Suckle Mistletoe/Pulloori
23.	<i>Dichrostachyscinerea</i> White & Arn	Mimosaceae	Tree	LC	Sickle bush/Veduttalam
24.	<i>Ficus racemosa</i> L,	Moraceae	Tree	NE	Cluster fig/ Atti
25.	<i>Gmelina arborea</i> Roxb. Ex Sm	Verbenaceae	Tree	NE	Gamhar/ Kumalaamaram
26.	<i>Hibiscus micranthus</i> L,	Malvaceae	Shrub	NE	Tiny Flower Hibiscus/ Sitraamutti
27.	<i>Hyptissuaveolens</i> L,	Lamiaceae	Herb	NE	American mint
28.	<i>Indigofera viscosa</i> Sensu J.B. Gillett,	Fabaceae	Herb	NE	Sticky indigo/ Naavembu
29.	<i>Ionidium suffruticosum</i> L,	Violaceae	Herb	NE	Spade Flower/ Orithalthamarai
30.	<i>Jasminum multiflorum</i> Kund,	Oleaceae	Shrub	NE	Indian Jasmine/ Kattumalli
31.	<i>Merremiatridentata</i> L,	Convolvulaceae	Herb	NE	Arrow leaf morning glory/ Tirippanpul
32.	<i>Mollugopentaphylla</i> L,	Molluginaceae	Herb	NE	Mollugo/ Kuttutiray
33.	<i>Oldenlandia umbellata</i> L,	Rubiaceae	Herb	NE	Indian Madder/Chayam
34.	<i>Parkinsonia aculeata</i> L,	Fabaceae	Tree	NE	Jerusalem Thorn/ Siniatumana
35.	<i>Pavonia odorata</i> Wild,	Malvaceae	Herb	NE	Fragrant Pavonia/ Peramutti
36.	<i>Pedaliu murex</i> L,	Pedaliaceae	Herb	NE	Large Caltrops/ Yanainerunji
37.	<i>Rauwolfia tetraphylla</i> L,	Apocynaceae	Tree	NE	Devil pepper/ Pampukaalaachchedi
38.	<i>Rhynchosia minima</i> L,	Fabaceae	Herb	NE	Rhynchosia/Kaliyantavarai
39.	<i>Ruellia tuberosa</i> L,	Acanthaceae	Herb	NE	Waterkanon/ Pattaskai
40.	<i>Santalum album</i> L,	Santalaceae	Tree	VU	Sandal wood/ Chandhanam
41.	<i>Sapindus emarginatus</i> Vahl,	Sapindaceae	Tree	NE	Notched Leaf Soap nut/Ponnankottai
42.	<i>Sarcostemma brunonianum</i> Wight & Arn	Apocynaceae	Shrub	NE	Caustic bushes
43.	<i>Scoparia dulcis</i> L,	Scrophulariaceae	Herb	NE	Sweet broom weed/Sarakkotthini
44.	<i>Sesamum indicum</i> L,	Pedaliaceae	Herb	NE	Sesame/ Cirrel
45.	<i>Sida acuta</i> N.Burman,	Malvaceae	Shrub	NE	Common wired plant/Palambasi
46.	<i>Sida cordata</i> Burm.F,	Malvaceae	Shrub	NE	Long-stak Sida/ Mayirmanikam
47.	<i>Sida rhombifolia</i> Roxb,	Malvaceae	Shrub	NE	Cuban jute/ Kurundotti
48.	<i>Stachytarpheta jamaicensis</i> L	Verbenaceae	Shrub	NE	Blue porterweed/ Seemainayuruvi
49.	<i>Syzygium cumini</i> L,	Myrtaceae	Tree	NE	Java plum/ Nagai
50.	<i>Talinum portulacifolium</i> (Forssk)Aschens, & Schweinf,	Talinaceae	Herb	LC	Flame flower/
51.	<i>Tarenna asiatica</i> L,	Rubiaceae	Tree	NE	Asiatic tarenna/ Tharani
52.	<i>Tephrosia purpurea</i> L,	Fabaceae	Shrub	EN	Common Tephrosia/ Kavali
53.	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Tree	NE	Arjun/ Maruthu
54.	<i>Trichodesma indicum</i> L,	Boraginaceae	Herb	NE	Indian Borage/ Kailutaitumapi
55.	<i>Turnera subulata</i> J.E.Smith,	Passifloraceae	Herb	NE	White Alder
56.	<i>Vitex negundo</i> L,	Verbenaceae	Tree	NE	Chaste Tree/ Notchi

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

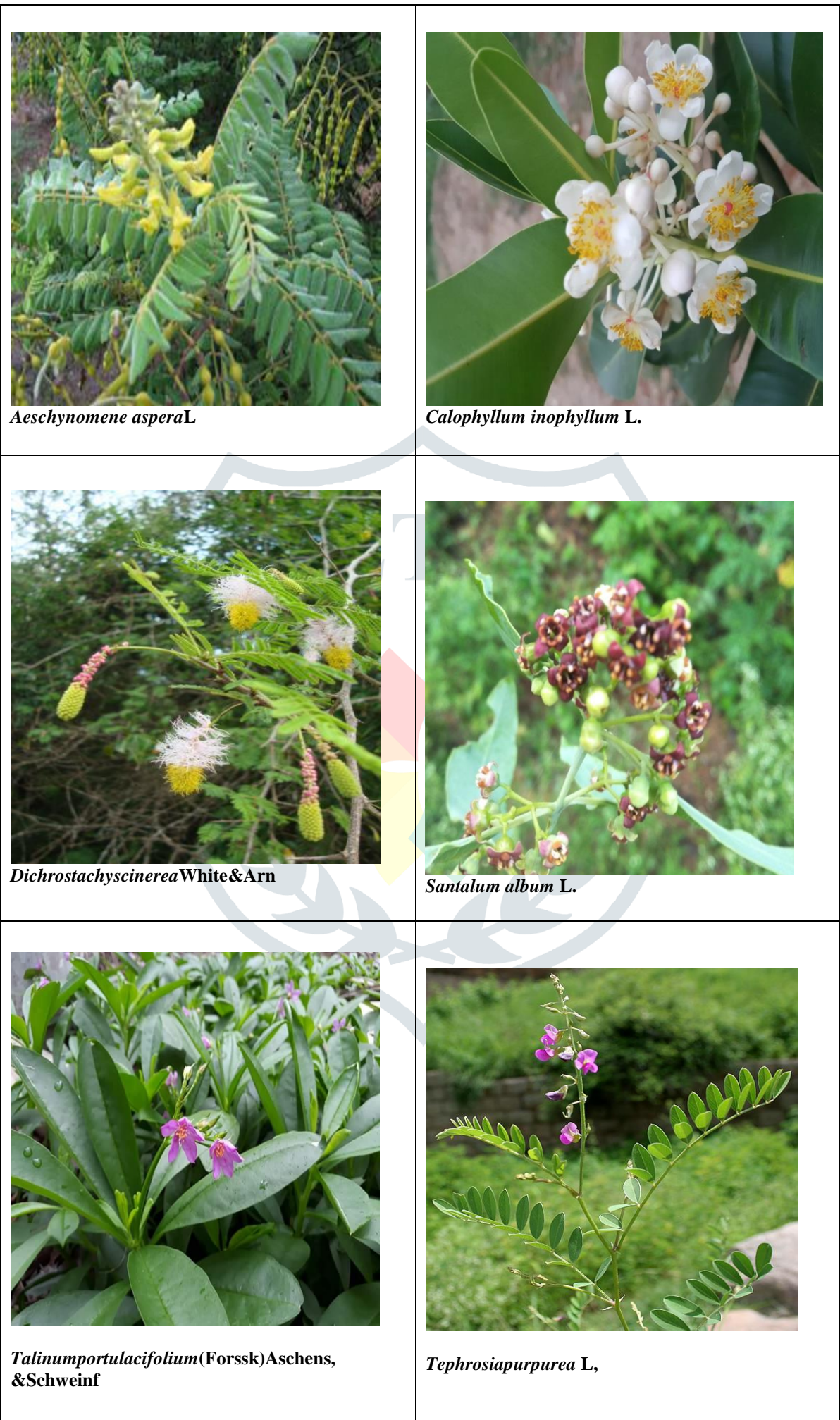


Fig. 3.2: Plants Collected from Melmudi hills

The families such as Acanthaceae, Fabaceae&Malvaceae are having 5 genera which is considered to be the dominant in the present study. The other following families namely Apocynaceae, Verbenaceae,Lamiaceae, Pedaliaceae, Rubiaceae, Scrophulariaceae are having 3 and 2 species respectively. A total of 35 families was reported in which 9 families has a hand full of species and remaining 26 are with single genera reported during the study. All most all the plants have high amount of medicinal properties which needs further investigation. This research also reveals that the hill has a good resource which had to be conserved. According the literature survey this was a good attempt in reporting the plant species in the unexplored areas.

This enquiry also adds a note on the habit of plant species. This 56 plant species, were distributed as 24 Herbs (42.67 %), 16 Shrubs (28.59%), 3 Climbers (5.36%) and 13 Trees (23.27%) in the Figure 3. From this one can understand the herbs are dominating and it a good indicator of climatic factors.

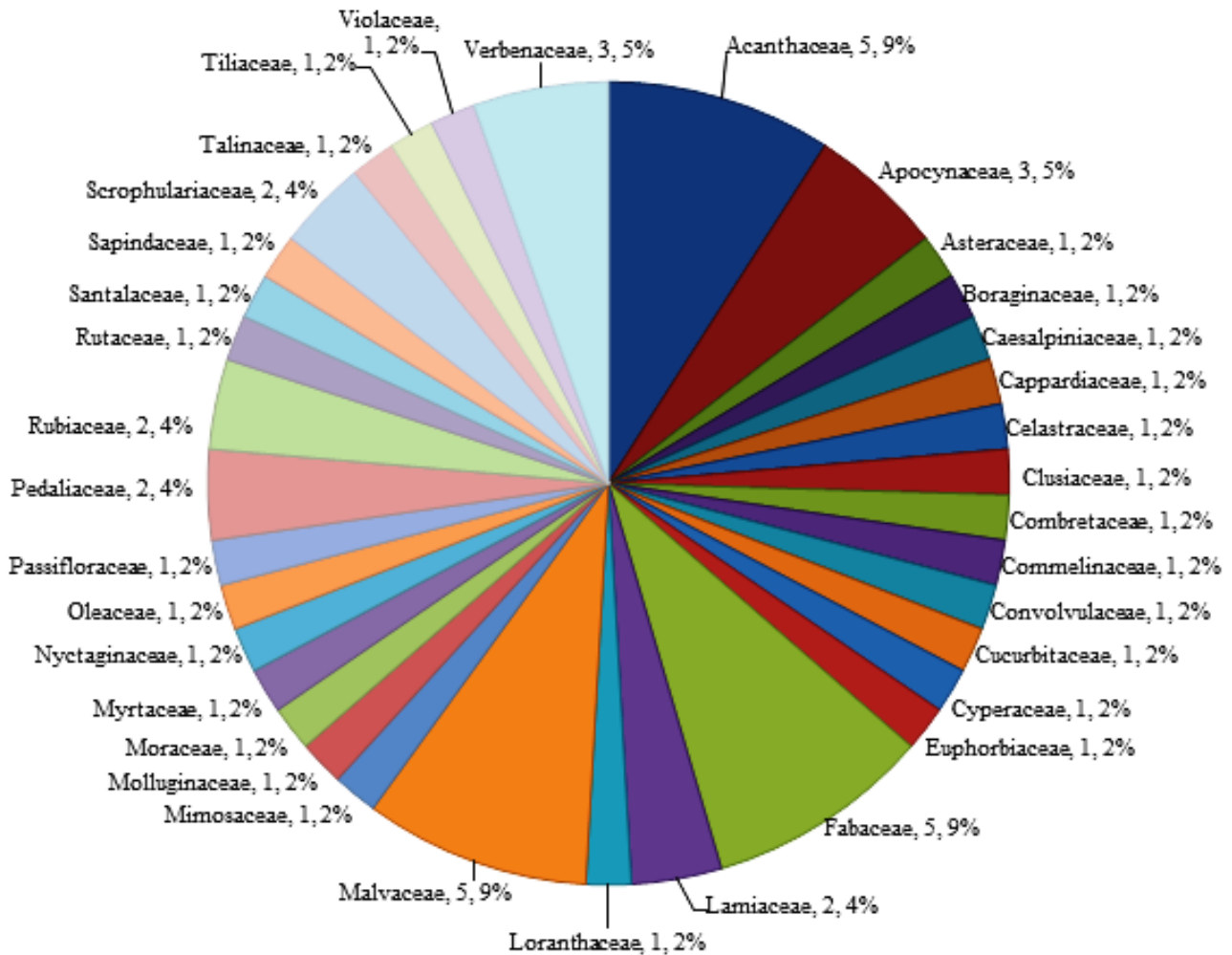


Figure 3.2: Families having maximum numbers of plant species

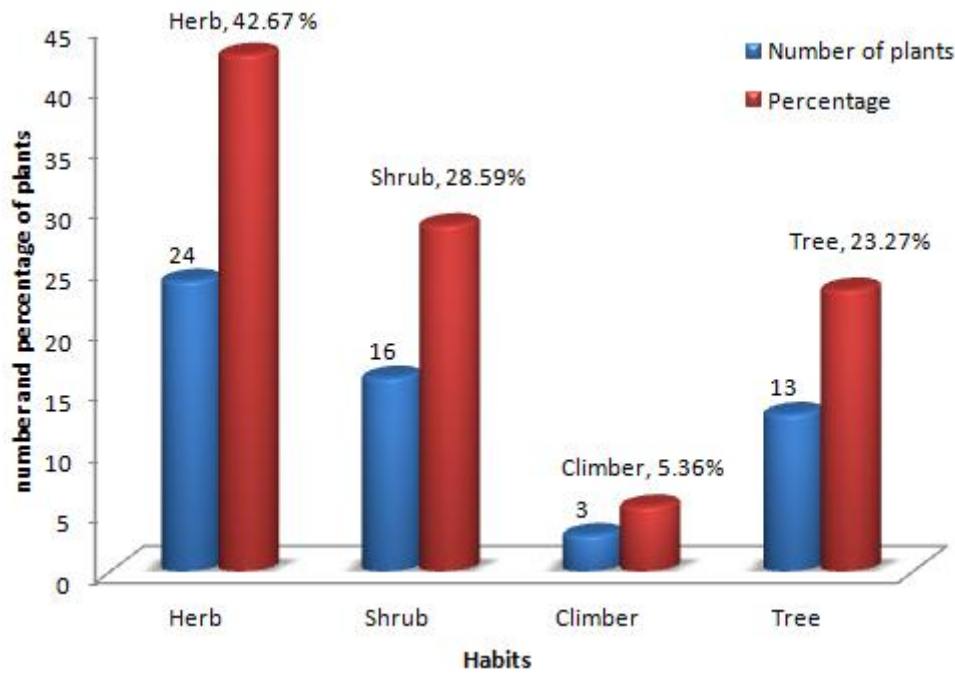


Figure 3.3: Percentage of Distribution of plant species in the study area

In this attempt, the preliminary survey of the medicinal plants and plants belong to red-listed category were documented. This study also provides a path way for proper utilization and conservation of this wonderful gift of nature. About 56 plants were reported in the study. In this, 50 sps are at the level of Not evaluated (NE) which means it is not categorized or listed in the IUCN red list data. The NE (Not evaluated) group includes all type of habit like herbs, shrubs, climbers and trees. Hence the study area shows a lush greenly look throughout the study period. The plant species fall under this category has equal importance in their medicinal property too. These plants are administrated as single or as group along with other medicinal plants by the healers. There are few interesting plant species namely *Celastruspaniculatus* of Celastraceae, *Dendrophthoefalcata* (parasitic plant) of Loranthaceae, *Gmelinaarborea* of Verbenaceae, *Ionidium suffruticosum* of Violaceae, *Rauvolfia tetraphylla* & *Sarcostemma bruonianum* of Apocynaceae and *Trichodesma indicum* of Boraginaceae were reported. In the current exploration, there are 4 species to be precise, *Aeschynomene aspera* of Fabaceae, *Calophyllum minophyllum* of Clusiaceae, *Dichrostachys scinera* of Mimosaceae and *Talinum portu lacifolium* of Talinaceae are coming under the Least Concern (LC). A least concern (LC) species is one which has been categorized by the IUCN as evaluated but not qualified for any other category like threatened or rare and so on (IUCN, 2014).

This assessment also reports a Vulnerable (VU) plant, *Santalum album* of Santalaceae. This is a remarkable species as it an obligate root parasite, it is evident in their roots parts consists of small nodules as they are the haustoria for sucking the nutrients. This plant is highly used for curing many ailments. The Ethnopharmacological uses of the oil extracted from this plant are anti-allergic agent, anti-hyperglycemic and antioxidant potentials. The tribal people use this plant for various purposes like common colds, bronchitis, skin disorders, heart ailments, general weakness, fever, infection of the urinary tract, inflammation of the mouth and pharynx, liver and gallbladder complaints.

According to IUCN, *Tephrosia purpurea* of Fabaceae is considered as an Endangered species (EN). This plant is commonly referred as common tephrosia, it is a shrub which can stunt its growth in nutrient poor areas. But in the present study it shows a shrubby appearance and hence it shows that this area is rich in nutrients and sufficient amount of water. The native people and medical practitioners use this plant as anthelmintic, alexiteric, restorative, antileprotic and antipyretic.

IV. Conclusion

In the current scenario, the global warming is increasing and there is a depletion of many plant species due to various reasons. In most of the cases this exhaustion is directly expressed in the plants. One of the main reasons to study this area is to create awareness that many indigenous species are to be conserved. From this attempt, it is clearly understood that these unexplored areas have rich floristic and the tribal are very responsible in maintaining these area without any anthropogenic activities. This investigation will be a good data for the upcoming years of study. This documentation of medicinal and plants of Red list can help to restoration of other places which are unfit for conservation. Furthermore, this study also reveals that the plants in this area are not on the red list and this hill is an ideal place for the plants to grow.

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