

Research Article

Predominant Flora of Udayagiri Hills - Eastern Ghats, Andhra Pradesh, India.

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Abstract: During the survey and documentation of Plant wealth of Udayagiri Hills, Southern most part of Eastern Ghats, Nellore District, Andhra Pradesh, India, it was recorded that among Dicotyledons, the predominant family was Fabaceae comprising of 72 plant species with 22 genera. Ethnomedicinal values of the flora also discussed.

Keywords: Udayagiri, Flora of Udayagiri hills, Biodiversity, Ethnobotany, Traditional medicine, Fabaceae, Mimosoideae, Caesalpinioideae, Faboideae, Eastern Ghats, Nellore District, Andhra Pradesh .

INTRODUCTION

From time immemorial people have accumulated knowledge about plants and their uses, especially as food and medicine. This knowledge gathered gets transmitted orally and even textually through generations. Many modern medicines have their origin in traditional medical knowledge. There has been an increasing interest in the scientific study of man – plant interaction in the natural environment which is clearly visible among various indigenous people. Medicinal plants continue to play a central role in the healthcare system of large proportions of the world's population. This is particularly true in developing countries where herbal medicine has a long uninterrupted history of use. Currently researches in plant science are focusing mainly on ethnobotanical and ethnomedicinal investigation to fulfill the increasing demand of herbal product.

The World Health Organization estimated that 80% of the population of developing countries still rely on traditional medicine, mostly plant drugs, form their primary healthcare needs. Demands of medicinal plants are increasing in both developing and developed countries due to growing recognition of the fact that natural products are non toxic, show no side effects and are easily available at affordable prices. The medicinal plant sector has traditionally occupied an important position in the socio – cultural, spiritual and medicinal area of rural and tribal families. India, a land of physical, cultural, social and linguistic diversity, is also endowed with ecosystems of tremendous biodiversity, genetic as well as of species. It is a land

of immense biological treasure in which two out of 18 hotspots of the world are located. It is also one among the 12 mega biodiversity countries in the world. The medicinal plants of the area have stood the test of time for their safety, efficacy, cultural acceptability and lesser side effects. India officially recognizes over 3000 plants for their medicinal value. It is generally estimated that over 6000 plants in India are used in traditional, folk and herbal medicine, representing about 75% of the medicinal needs of the third world countries [1]. About 85% of the rural population of India utilizes wild plants for the treatments of various ailments. Therefore it is an appropriate time to document systematically the plant wealth for conservation. A perusal of Literature reveals that there was absolutely no published record on survey and documentation of Udayagiri hill flora till date. Hence the present study was undertaken.

AIM & OBJECTIVES

1. To survey, collect, identify and document the flora for future studies.
2. To collect plant specimens, prepare Herbarium and preserve the voucher specimens for establishing the correct identity and document the details of plants with photographs.
3. To collect ethnobotanical uses and local traditional plant names, personal interviews were held with the resource persons such as owners of cattle, goat and sheep, besides local inhabitants.

STUDY AREA

Udayagiri is a Taluk in Nellore District of Andhra Pradesh. On the southern part of Udayagiri town, the Udayagiri hill (Sanjeevini hill) is situated. It is the southernmost part of the Eastern Ghats. It comprises of dry deciduous forest and located at 14.8667°N 79.3167°E. It has an average elevation of 3261 feet above the sea level. Duragampalli, Durgampalli Road, Loddi vaagu (Loddi river), Salwapet, Kona canal, Kona, Tapka, Chinna Masjid (small mosque) Pedda Masjid (big mosque) and Fort are the main places of the hills.

METHODOLOGY

The study was carried out during July 2011-March 2014. Plant specimens were collected and identified after studying all characters with the help of standard local flora [2-10] and the relevant literature available on the internet (www. Google.com). The indigenous knowledge of local traditional plant names were collected through personal interviews held with the resource persons such as owners of cattle, goat and sheep, besides local inhabitants. Herbarium was prepared by following the standard methods [11] and was deposited to the Post Graduate & Research Department of Plant Biology & Plant Biotechnology, Ramakrishna Mission Vivekananda College, Mylapore, Chennai. The findings on ethnobotanical uses are based on local interviews and published literature. Field photographs of all the plant species were preserved digitally.

RESULTS

The flora of the family Fabaceae is provided with the Botanical names, Vernacular names (both in Telugu and Tamil), Habit, Flowering & Fruiting, Locality and Ethnobotanical uses (Table-1). As per APG III (2009) system, the family Fabaceae is placed in the order Fabales comprising of 3 sub families Mimosoideae, Caesalpinioideae and Faboideae.

DISCUSSION

The present study is the first of its kind to survey and document the flora of Udayagiri hills. The climatic condition is semi arid with mixed type of vegetation consisting of semi evergreen, dry deciduous and scrub forests. With regard to Angiosperms, approximately, a total of 450 plant species belonging to 97 families and 310 genera were documented. Among 97 Angiosperm families, Fabaceae proved to be predominant family comprising of 72 plant species (16%) with 34 genera (10.97%). According to Habit-wise classification, 26 herbs (36%), 19 shrubs (26.38%), 3 under shrubs (4.16%) and 24 trees (33.3%) were recorded.

The predominance of Fabaceae was observed by many researchers such as Mathur & Sundaramoorthy [12] while assessing the medicinal plant of Indian Thar recorded 136 plant species belonging to 49 families dominated by Fabaceae with 10 species followed by Euphorbiaceae and Solanaceae with 7 species each. Thakur & Khare [13] in their study of floristics of Sagar

district, Central India reported a total of 73 tree species belonging to 32 families of Angiosperms. Based on species contribution Fabaceae (Papilionaceae), Rubiaceae, Mimosaceae and Combretaceae were found as dominant Families. Mandar & Lakshminarasimhan [14] documented 719 flowering plant species belonging to 122 families, 490 genera in Bhagwan Mahaveer National Park, Goa. Leguminosae in dicotyledones and Orchidaceae in Monocotyledones were the most dominant families with regards to endemic species.

The studies of Thakur [15] of Darlaghat wildlife sanctuary, Solan (H.P) revealed that 60 tree species were used for various purposes. The predominant family was Fabaceae with 11 species (8 genera). Amit-Kumar *et al.* [16] documented 45 important climbers including 7 lianas in different forest habitat of 5 districts of Jharkhand viz; Ranchi, East – Singhbhum, Hazaribagh, Chatra and Latehar. Fabaceae represented dominant group followed by Cucurbitaceae, Dioscoraceae and Liliaceae. Sujana & Anil Kumar [17] in their study on taxonomy, Ecology and Ethnobotany of woody climbers in forests of Wayanad, Kerala recorded 150 taxa belonging to 89 genera under 41 families. In terms of species richness, the top 5 best represented families were Fabaceae (28 species), Apocynaceae (17 species), Celastraceae (13 species), Oleaceae (12 species) and Rhamnaceae (7 species). Thus, various floristic studies revealed the predominance of Family Fabaceae.

Further in the present study, Malvaceae was the second largest contributor with 29 species belonging to 14 genera. The third largest contributor was Euphorbiaceae with 27 species belonging to 15 genera. Apocynaceae was the fourth largest contributor with 23 species belonging to 21 genera. Other dominant families were Rubiaceae 18 species with 11 genera; Poaceae 17 species with 16 genera; Acanthaceae 16 species with 13 genera; Lamiaceae 15 species with 8 genera Cyperaceae 15 species 6 genera; Convolvulaceae 12 species with 7 genera; Amaranthaceae 11 species with 7 genera. The remaining families were represented by species ranging from 1 to 10. But majorly 34 families were represented by only one species.

The largest number of plant species enumerated in the present study are in use to treat diseases like Fever, Ulcers, Urinary disorders, Liver disorders, Stomach disorders, Cough, Cold, Arthritis, Rheumatism, Diabetes, Bone fractures, Eye infections, Skin disorders etc. The plant parts used for different purposes are Bark, Leaves, Flowers, Fruits, Roots, Seeds, Wood and in some cases Whole plant. Some plant species are used as tonic, astringent, antidote and appetite stimulant.

Table-1: Botanical and vernacular names, habit, phenology and ethnobotanical uses of plants recorded in study area.

Fabaceae - Mimosoideae

Sl. No.	Botanical Name	Vernacular	Name	Habit	Flowering & Fruiting	Locality	Ethnobotanical uses
		Telugu	Tamil				
01	<i>Acacia eburnea</i> , Willd.	Chilodai		Tree	November - April	Durgam palli Road	Leaves form fodder for sheep and goats.
02	<i>Acacia intsia</i> , W&A.	Yerra cheeki	Kari cheekkai	Shrub	October - December	Kona canal	Stem bark Lice killer.
03	<i>Acacia latronum</i> , Willd.	Pariki tumma	Kaarodai	Tree	July – January	Durgam palli Road	Fodder for goats. Used for fencing.
04	<i>Acacia leucophloea</i> , Willd.	Tella tumma	Velvelam	Tree	Most of the year	Durgam palli Road	Leaves and pods eaten by goats and sheep. Stem bark in bronchitis, Rheumatic fever, arthritis and diabetes. Stem bark yields fibre for ropes. Wood as fuel and in agriculture implements.
05	<i>Acacia nilotica</i> , Willd.	Nalla tumma	Karu vellam	Tree	Most of the year	Durgam palli Road	Leaves and pods eaten by sheep and goats. Bark in wounds, dental disorders and skin diseases. Bark in tanning. Fruits in cough, dysentery and piles. Wood in agricultural implements. Young twigs used as natural tooth brushes.
06	<i>Albizzia amara</i> , (Roxb.) Boiv.	Konda sigara	Usilai	Tree	April - February	Durgam palli Road, Kona	Dried leaf powder for head bath to avoid dandruff and skin diseases. Seeds in gonorrhoea, diarrhoea and piles. Fodder for milking cows.
07	<i>Albizzia lebbeck</i> , (L.) Willd.	Dirisena	Vagai	Tree	Most of the year	Kona canal	Leaf decoction against snake bites and scorpion sting. Bark and seeds to heal piles and to arrest diarrhoea. Leaf decoction to treat night-blindness
08	<i>Albizzia odoratissima</i> , (L. f.) Benth	Bandi sigara	Karu Vagai	Tree	April – June	Kona canal	Fresh stem bark boiled in water yields black red dye to dye cotton.
09	<i>Dichrostachys cinerea</i> , W&A.	Veluturu	Vedatalla	Tree	Most of the year	Durgam palli Road, Kona	Root used in rheumatism, urinary calculi and renal troubles. Leaves eaten with raagi pancake and jaggery in leucorrhoea. Wood as fuel

10	<i>Leucaena leucocephala</i> , (Lam.) de Wit.	Subabulu	Naatu cavindaal	Tree	Most of the year	Salwapet	Good fodder and also green manure
11	<i>Mimosa pudica</i> , Linn.	Attipatti	Tottalvadi	Under Shrub	October-May	Durgam palli Road,	Leaves in piles and sinus. Roots in wounds, snake poison and urinary disorders.
12	<i>Mimosa rubicaulis</i> , Lam.	Uddra kampa	Kaattu seekkai	Shrub	October - May	Kona canal	Leaves in piles and sinus. Roots in diabetes, wound healing, snakebite and urinary disorders.
13	<i>Prosopis juliflora</i> , (Sw.)DC.	Kampa kara	Vaelik karuvai	Tree	Most of the year	Durgam palli Road,	Wood a source of fuel and also used in agricultural implements.
14	<i>Prosopis spicigera</i> , Linn.	Jammi chettu	Perumbe	Tree	October - July	Salwapet	Stem bark in diarrhoea, dysentery, piles, skin diseases and cough. Wood as fuel. Hindus worship the plant.

Fabaceae - Caesalpinioideae

Sl. No.	Botanical Name	Vernacular Name		Habit	Flowering & Fruiting	Locality	Ethnobotanical uses
		Telugu	Tamil				
15	<i>Bauhinia purpurea</i> , Linn	Kancha-nam	Mandari	Tree	Through out the year	Salwapet	Wood dark brown used for implements. Often cultivated in gardens
16	<i>Bauhinia racemosa</i> , Lamk.	Aari chettu	Aathi	Shrub	March - June	Chinna Masjid	Bark in chronic dysentery and diarrhoea. Leaf in malarial fever and diarrhoea. Inner bark for ropes
17	<i>Bauhinia tomentosa</i> , Linn	Kanchini chettu	Kanchini	Shrub	January - February	Salwapet	Young buds and bark decoction to treat Dysentery. Root bark recommended for inflammation of Liver. Leaves, flowers and fruits administered in diarrhoea, digestive disorders, cough and leucorrhoea.
18	<i>Caesalpinia pulcherrima</i> , (L.) Swartz	Pydi tangedu	Mayil konnai	Shrub	Through out the year	Durgam palli	Grown as ornamental plant. Stem bark –abortifacient. Leaf purgative. Flowers in fever.
18	<i>Caesalpinia sappan</i> , Linn.	Gacha	Kazharachikkai	Tree	January - February	Chinna Masjid	Stem bark and heartwood gives red dye to dye silk and silk cotton.
19	<i>Cassia absus</i> , Linn.	Chanu paala vittulu	Karunk kollu	Herb	November - January	Chinna Masjid	Leaves are used in cough, constipation, ulcers, and bone fracture retention of urine. Seeds in skin and eye problems.
20	<i>Cassia auriculata</i> , Linn.	Tangedu	Aavaaram	Shrub	Through out the year	Durgampalli Road, Kona canal	Bark in Tanning. Dried leaf and flower powder for head bath. Flower paste for skin diseases. The paste made from fruits and Seeds along with <i>Scoparia dulcis</i> given orally in diabetes.

21	<i>Cassia fistula</i> , Linn	Kola ponna	Sara konnei	Shrub	March - August	Durgam palli,	Pulp with almond oil to relieve thoracic obstructions. Leaf paste application in itching. Flower buds in diabetes and hepato-protection
22	<i>Cassia siamea</i> , Lam.	Seema tangedu	Manja konnai	Tree	Through out the year	Durgam palli	Planted as avenue tree. Leaves toxic to grazing animals.
23	<i>Cassia occidentalis</i> , Roxb.	Kasinda	Kattuvuri	Shrub	Through out the year	Durgam palli	Leaf salad for stomach disorder. Roots in cough and scorpion sting. Seeds in skin diseases.
24	<i>Cassia tora</i> Linn.	Pedda kasida	Tagarai	Shrub	Through out the year	Durgam palli	Seeds yield blue dye. Leaf decoction in dysentery.
25	<i>Delonix elata</i> , (L.) Gamble	Sunkesula	Vaathamu dakki	Tree	January - March	Durgam palli	Leaves in flatulence, rheumatism and also as green manure. Grown as an avenue tree. Leaf paste in milk to treat itching. in sinus, wound healing and glandular swellings
26	<i>Delonix regia</i> , Raf.	Yerra Sunkesula	Mayeil konnai	Tree	April - January	Durgam palli	Planted as an avenue tree. Leaf paste in constipation, inflammation and arthritis. Flowers in dismenorrhoea. Stem bark along with Pepper in ephemeral fever of cattle.
27	<i>Hardwickia binata</i> , Roxb	Yepi	Acha	Tree	April - October	Salwapet	Leaves in green manure. branchlets yield fibre. Wood in gonorrhoea and also in agricultural work
28	<i>Pterolobium indicum</i> , A.Rich.	Pariki	Karu indu	Shrub	January - March	Salwapet	Leaves and fruits in diarrhoea and constipation. Seeds in piles
29	<i>Tamirindus indica</i> , Linn.	Chinta	Puli maram	Tree	April - February	Kona canal	Both fresh & dried leaves in chatney preparation. Pod pulp as pickle, Wood in agricultural and House- hold purpose. Decoction of seed coat to treat diarrhoea Fresh leaves in ulcers, hyperacidity, anaemia and leucorrhoea. Entire seed in diabetes.

Fabaceae - Faboideae

Sl. No.	Botanical Name	Vernacular Name		Habit	Flowering & Fruiting	Locality	Ethnobotanical uses
		Telugu	Tamil				
30	<i>Abrus precatorius</i> , Linn.	Gurivinda	Gundumani	Shrub (Twiner)	Throughout the year	Kona canal, Loddi vaagu	Leaf root decoction in cough and cold. Leaf paste on swellings. Seed paste in skin diseases. Seeds used in necklaces and other ornaments. Fresh leaves tied on the wounds in cattle for healing

31	<i>Alysicarpus rugosus</i> , (Willd)DC.			Herb	January – April	Kona canal, Chinna Masjid	Good fodder
32	<i>Alysicarpus monilifer</i> ,(L).DC.	Amera	Kasukkodi	Herb	Throughout the year	Kona canal	Fodder
33	<i>Alysicarpus vaginalis</i> , (L).DC.	Baramthal u chettu		Herb	November – February	Salwapet, Pedda Masjid	Good fodder
34	<i>Atylosia rugosa</i> ,W&A			Shrub	November – February	Chinna Masjid	Good fodder
35	<i>Atylosia scarabaeoides</i> ,Benth			Shrub	November – March	Pedda Masjid	Whole plant in swellings and pain in legs during pregnancy and also used in night fever , burns, wounds, smallpox, syphilis, diarrhoea, dysentery and snake bite
36	<i>Canavalia gladiata</i> , (Jacq).DC	Thaba kaya	Kattu thammttai	Shrub	August – March	Pedda Masjid	Pod as tonic and appetizer
37	<i>Crotalaria bifaria</i> , Linn.f			Herb	November – December	Chinna Masjid	Good fodder
38	<i>Crotalaria calycina</i> , Schr	Bikkina tharudu gida		Herb	September – December	Chinna Masjid	Good fodder
39	<i>Crotalaria hirta</i> , Willd			Herb	September – December	Pedda Masjid	Good fodder
40	<i>Crotalaria medicaginea var. neglecta</i> , Baker.			Herb	November – December	Kona canal	Leaf paste in wounds and boils. Palatable fodder
41	<i>Crotalaria verrucosa</i> ,Linn.	Glligicha	Salangai chedi	Herb	July – December	Pedda Masjid, Fort	Leaf paste in leg swelling and scabies. Whole plant in leucorrhoea. Root tied around the waist to keep away
42	<i>Dalbergia congesta</i> ,Grah.	Guggilam		Shrub	July – December	Salwapet	Timber
43	<i>Dalbergia candenatensis</i> ,Prain.			Shrub Climber	July – December	Salwapet	Timber
45	<i>Dalbergia lanceolaria</i> ,Linn.	Yerra pachari	Velangu	Tree	July – January	Salwapet	Whole plant in rheumatic pains and arthritis. Root bark in dyspepsia

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46	<i>Dalbergia paniculata</i> , Roxb	Sirimanu	Velluruvai	Tree	April –June	Salwapet	Leaf in filarial swellings
47	<i>Dalbergia sissoo</i> , Roxb	Sisso	Thaesi maram	Tree	April- October	Salwapet	Wood highly valuable. Leaves along with Sugar to enhance sexual Impotency in men. Whole plant in rheumatoid arthritis. Root bark in dyspepsia. Fresh bark decoction to relieve Burning sensation and ulcers.
48	<i>Dalbergia sissoides</i> , Grah		Thotagatti	Tree	April- November	Salwapet	Timber
49	<i>Desmodium gangeticum</i> , (L) DC.	Ubbu chettu		Herb	November-February	Chinna Masjid	Aerial plant parts administered in epilepsy. Roots tonic, whooping cough, diarrhoea, fever, piles, asthma, dysentery and biliousness
50	<i>Desmodium dichotomum</i> , (Willd) DC.			Herb	December-February	Chinna Masjid	Palatable fodder
51	<i>Desmodium triflorum</i> , (L) DC.	Muntama ndu	Sirupulladi	Herb	December-February	Chinna Masjid, Kona	Leaves ground with cow's milk, a good remedy for infantile diarrhoea and dysentery. Palatable fodder.
52	<i>Desmodium wightii</i> , Grah			Herb	September-November	Chinna Masjid	Palatable fodder
53	<i>Dolichos falcatus</i> , Klein	Adavi Pillipesra		Herb	September-November	Chinna Masjid	Palatable fodder
54	<i>Indigofera cerulea</i> , Roxb	Karunili		Shrub	September-November	Kona canal	Flowers yield an indigo dye. Palatable fodder.
55	<i>Indigofera linifolia</i> , Retz			Herb	November-January	Kona canal	Whole plant paste in wound healing and also a good fodder
56	<i>Indigofera linnaei</i> , Ali	Yerra Palleru	Chappu nerunji	Herb	November-January	Kona canal	Whole plant used in leucorrhoea, fever, diuretic and epilepsy
57	<i>Indigofera mysorensis</i> , Rottl	Adavi senaga		Shrub	November-January	Chinna Masjid	Palatable fodder
58	<i>Indigofera tinctoria</i> , Linn.	Konda neeli	Aavuri	Herb	August - December	Kona canal	Leaf juice to increase lactation in nursing mothers. Root and Leaves in jaundice, leucorrhoea, anemia and arthritis
59	<i>Lab purpureus</i> , (L) Sweet	Chikkudu kaaya	Thattan payiru	Herb	December-February	Salwapet	Fruits used as good vegetable. Good fodder.

60	<i>Mucuna atropurpurea</i> , DC.			Shrub	January - April	Loddi vaagu	Roots purgative. Pods emmenagogue.
61	<i>Mundulea sericea</i> , (Willd) Chev.	Yerri billu	Pilavaram	Shrub	Through out the year	Loddi vaagu	Seeds fish poison.
62	<i>Phaseolus trilobus var. trilobus</i> , Aiton	Naripairu	Pilavaram	Herb	November - January	Kona canal	Palatable fodder
63	<i>Pongamia pinnata</i> , (L) Pier.	Kanuga	Poonga	Tree	Through out the year	Durgam palli, Kona canal	Dried fruits tied around the neck in whooping cough. Shade dried flowers made paste with ghee administered to treat diabetes. Roots in paralysis, ulcers and gum teeth. Bark in night blindness. Seeds in abdominal disorders and snakebite.
64	<i>Pseudarthria viscida</i> , W&A.	Nayaku ponna	Kodivottai	Herb	December- January	Chinna Masjid	The extract of root powder with coconut milk is administered in cataract. Roots are recommended in rheumatism, asthma, piles and diarrhoea
65	<i>Pterocarpus santalinus</i> , Linn.	Yerra chanda namu	Sivappu chanda namu	Tree	April – March	Salwapet	Heartwood is administered in diabetes stomach ulcers, diarrhea, headache, skin diseases and pimples. Dried fruit powder with coconut milk given orally in dysentery and bleeding. Red wood valuable
66	<i>Rhynchosia aurea</i> , DC.	Adavi vulava		Herb	November- December	Chinna Masjid	Palatable fodder
67	<i>Sesbania sesban</i> , (L) Merr.	Chitti avise	Chithagathi	Shrub	November – March	Durgam palli,	Shade dried leaf powder along with cow's milk to treat constipation and indigestion. Flowers in leucorrhoea. Seeds in diarrhoea and skin eruptions.
68	<i>Stylosanthes fruticosa</i> , (Retz) Alston	Sella kampa	Panachedi	Herb	November – January	Chinna Masjid	Whole plant powder boiled with tender coconut taken orally for fever. Leaf in diarrhoea and cold.
69	<i>Tephrosia purpurea</i> , Per.	Vempali	Kaattu Kolingi	Herb	Through out the year	Chinna Masjid Kona canal	Gives blue dye. Dried herb used as a remedy for bronchitis, cough, boils, pimples, jaundice and in kidney disorders. Root bark paste to relieve stomach pain, dyspepsia, diabetes, rheumatism, asthma, urinary complaints and cough.
70	<i>Tephrosia villosa</i> , W&A.			Under Shrub	November – January	Pedda Masjid	Palatable fodder

71	<i>Vigna grahamiana</i> , (W&A) Verle.			Herb	November – March	Chinna Masjid	Palatable fodder
72	<i>Zornia diphylla</i> , (L). Pers		Pori karppan thalai	Herb	November – January	Chinna Masjid, Kona	Whole plant paste for dysentery. Used as cattle fodder and also as green manure. Root decoction induces sleep.

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REFERENCES

1. Jayashree-Rout, Sajem AL, Nath M; Medicinal Plants of North Cachar Hills of Assam used by the *Dimasa* tribe. Indian Journal of Traditional Knowledge, 2012; 11: 520-527.
2. Gamble JS, Fischer CEC. The Flora of the Presidency of Madras. Adlard & Son LTD, London. Vols. I – III, 1921.
3. Nair NC, Henry AN; Flora of Tamil Nadu. Vol .I. Botanical Survey of India, Department of Environment, Southern Circle, Coimbatore, India, 1983.
4. Matthew KM; The Flora of the Tamil Nadu Carnatic, Vol. I – III. The Rapinat Herbarium, St. Joseph's College, Tiruchirapalli, India, 1991.
5. Subba-Rao GV, Kumar GR; Flora of Visakhapatnam District, Andhra Pradesh. Vol. I & II, 1992.
6. Pullaiah T, Chennaiah; Flora of Andhra Pradesh. Vol.1 Scientific publishers. Jodhpur, 1997.
7. Pullaiah T, Ahmed A, Lakshmi KA; Pteridophytes in Andhra Pradesh. India. RP pub. New Delhi, 2003.
8. Venkaiah M; Studies on the Vegetation and Flora of Vizianagaram District, Andhra Pradesh. Andhra University Publications, 2004.
9. Savithamma N; Important Medicinal Plants of Tirupati, 2006
10. Madhava-Chetty K, Venkataramaiah P; Hydrophytes of Chittoor District in Andhra Pradesh. Indian Journal of Economic and Taxonomic Botany, 2000; 24: 197 – 206.
11. Jain SK; Ethnobotany in India: An overview, Botanical Survey of India, Howrah, 1983.
12. Manish-Mathur, Sundaramoorthy; Economic assessment and conservation priorities of Indian Thar desert medicinal plants. Indian Journal of Natural products and Resources, 2013; 4(3); 283 – 294.
13. Thakur 2009; Forest vegetation and forestics of Sagar district, Central India. Journal of Indian Botanical Society, 2009; 88 (1&2): 11-17.
14. Datar MN, Lakshminarasimhan P; Endemic plants of Bhagwan Mahaveer national Park, Goa – An Analysis based on their Habitat, Phenology and Life form types. Indian Forester, 2011; 1451 – 1456.
15. Meenakshi-Thakur VK, Santvan, Amrita-Nigam; Status and uses of Tree flora of Darlaghat Wildlife Sanctuary, Solan (HP). Indian Forester., 2012; 138 (10): 958-960.
16. Amit-Kumar, Santosh-Prasad, Sanjay-Singh; Climbers and lianas distribution in Jharkhand forests. Indian Forester, 2013; **139**(12): 1121 – 1125.
17. Sujana KA, Anil-Kumar N; Ph.D Thesis “A study on Taxonomy, Ecology and Ethnobotany of woody climbers in forests of Wayanad, Kerala” submitted to the University of Madras, 2013.