



ETHNOMEDICINAL PLANTS DIVERSITY IN SACRED GROVES OF NORTH COASTAL ANDHRA PRADESH, INDIA

K. Satyavathi¹, S.B. Padal² & D. Sandhya Deepika³

¹Research Scholar, Department of Botany, Andhra University, Visakhapatnam -530003, A.P, India.

^{2&3}Professors, Department of Botany, Andhra University, Visakhapatnam -530003, A.P, India.

*Corresponding Author Email: sbpadal08@gmail.com

ABSTRACT

In the present investigation, an attempt was made to study the diversity of ethnomedicinal plants in different sacred groves of north coastal Andhra Pradesh, which comes under the Eastern Ghats of India. This paper deals with the 98 species of probable medicinal potential belonging to 90 genera and 52 families. These ethnomedicinal plant parts are used for various diseases like, Paralysis, Diabetes, Obesity, Brain tonic, Cold, TB and Bronchitis etc.,

KEY WORDS

Plant diversity, ethnomedicinal plants, tribal people, sacred groves.

INTRODUCTION

Many sacred groves in India are known to harbour significant number of plants with medicinal value. India, well known for its varied culture and traditions harbour a large number of sacred groves especially in northeastern India and Western Ghats¹. The groves were fairly documented in Maharashtra highlighted the role of groves in environmental conservation²⁻⁴.

An important tradition of nature worship is to protect patches of forest dedicated to deities or ancestral spirits. In Greek groves and forests were enclosed usually by stone walls. This enclosure was called "Temenos" in Greek, meaning a cut-off place or a demarcated place. Sacred groves might have also originated as a result of its utilitarian nature, a social institution or as a part of the taboos that evolved historically over several generations to provide a site for culturally crucial social interactions⁵.

India has a long tradition of prudent use and wise conservation of all resources that are useful to people. Traditionally, the local people have been preserving small patches of relatively dense forests based on religious values and beliefs. These are called 'sacred groves' and act as treasure houses for large numbers of

endemic and rare plants of the region⁶⁻⁸. Sacred groves thus are the relics of vegetation which have survived under a variety of ecological situations in India and are the present hot spots of biodiversity⁹.

Andhra Pradesh, is reported to harbor over 800 groves and Southern Andhra Pradesh area (SAP) alone to 543 groves in a WWF preliminary study, in which both the authors are part of the investigating research team. Part of the WWF project, the author's team has done random survey in all the districts of SAP except Chittoor¹⁰. The sacred groves in the state were referred to Pavithravanaalu¹¹.

STUDY AREA

Ethnomedicinal plants diversity survey was conducted in Sacred Groves of North coastal Andhra Pradesh. The emphasis laid on the Northcoastal Andhra Pradesh is situated between 81°51' and 84°46' E and 19°9' and 17°14' N. The predominant tribal communities inhabiting the study area are Bagata, Konda Dora, Valmiki, Konda, Kammara, Mali, Kotia, Khond, Jatapu, Muka Dora, Gadaba, Porja, Khond and Savaras etc.,. The predominant soil type of the entire district is sandy and clay. The area is characterized by tropical to sub-tropical climate.

MATERIALS AND METHODS

Intensive field surveys in various sacred groves of North Coastal Andhra Pradesh were carried out during 2016–2017, covering pre-monsoon, monsoon and post-monsoon seasons. Specimens of each species of flowering and non-flowering plants were collected along with necessary field data. Collected specimens

were made into herbarium as per the methods suggested¹². The collected specimens were identified only after a critical examination with the help of different floras like Flora of the Presidency of the Madras¹³, Flora of Visakhapatnam District¹⁴ and Flora of Vizianagaram District¹⁵. The voucher specimens were deposited at the Botany Department Herbarium (AUV), Andhra University, Visakhapatnam.

TABLE 1. Ethnomedicinal plants Diversity in Sacred Groves of Visakhapatnam District, A.P

S.No	Botanical Name	Common Name	Family	Habit	Parts	Ailments
1	<i>Abrus precatorius</i>	Gurivinda	Fabaceae	Climber	Seed	Paralysis
2	<i>Acacia nilotica</i>	Nalla thumma	Mimosaceae	Tree	Bark	Diabetes
3	<i>Achyranthes aspera</i>	Utthareni	Amaranthaceae	Herb	Leaves	Obesity
4	<i>Acorus calamus</i>	Vasa	Araceae	Herb	Rhizome	Brain tonic, Cold
5	<i>Adhatoda vasica</i>	Addasara	Acanthaceae	Shrub	leaves	TB, Bronchitis
6	<i>Aegle marmelos</i>	Maredu	Rutaceae	Tree	Leaves	Diabetes
7	<i>Agave cantala</i>	kiththa nara	Agavaceae	Herb	Leaves	Syphilis
8	<i>Alangium salviifolium</i>	Udugu chettu	Alangiaceae	Tree	Bark	Skin disease
9	<i>Aloe barbadensis</i>	Kalabanda	Liliaceae	Herb	Leaves	Diabetes
10	<i>Alpinia galanga</i>	Dumpa rastram	Zingiberaceae	Herb	Rhizome	Diabetes
11	<i>Alstonia venenata</i>	Edakula pala	Apocyanaceae	Tree	Fruit	Syphilis
12	<i>Alternanthera sessilis</i>	Ponna ganti	Amaranthaceae	Herb	Leaves	Ophthalmic disease
13	<i>Ammania baccifera</i>	vendrapaku	Lythraceae	Herb	Root	Cancer
14	<i>Amorphophalus foliosus</i>	Kanda	Araceae	Herb	Corm	Rheumatoid Arthritis
15	<i>Andrographis paniculata</i>	Nelavemu	Acanthaceae	Herb	Plant	Dysentery,
16	<i>Annona squamosa</i>	Seetha phalam	Annonaceae	Tree	Root	Abortion,
17	<i>Argemone mexicana</i>	Balu rakkasa	Papavaraceae	Herb	Leaves	Skin disease
18	<i>Argyreia nervosa</i>	Chandra podi	Convolvulaceae	Climber	Root & Seed	Diabetes
19	<i>Aristolochia indica</i>	Eswari	Aristolochiaceae	Climber	Leaves	Snake bite
20	<i>Aristolochia bracteolata</i>	Gadida gadapaku	Aristolochiaceae	Climber	Leaves	Eczema
21	<i>Asparagu racemosus</i>	Pilli teegalu	Liliaceae	Herb	Tuberous root	Diabetes, Leucorrhoea
22	<i>Atlantia monophylla</i>	Adavi nimma	Rutaceae	Tree	Fruit peel oil	Rheumatoid Arthritis
23	<i>Azadirachta indica</i>	Vepa	Meliaceae	Tree	Leaves	Diabetes
24	<i>Azima tetraantha</i>	Uppu kampa	Salvadoraceae	Tree	Roots	Rheumatoid Arthritis
25	<i>Bacopa monnieri</i>	sambani chettu	Scrophulariaceae	Herb	Leaves	Diabetes
26	<i>Balanites roxburghii</i>	Gara chettu	Balanitaceae	Shrub	Bark,Seed	Leprosy, Diabetes
27	<i>Bauhinia purpurea</i>	Deva kanchanam	Caesalpiniaceae	Tree	Stem bark	Obesity
28	<i>Bauhinia vahli</i>	Addaku	Caesalpiniaceae	Tree	Root	Syphilis, Dysentery

29	<i>Benincasa hispida</i>	Bhudida kaya	Cucurbitaceae	Climber	Fruit	Diabetes, Piles
30	<i>Blumia mollis</i>	Kukka pogaku	Asteracea	Herb	Leaves	Cooling effect,
31	<i>Boerhaavia diffusa</i>	Atika mamidi	Nyctaginaceae	Herb	Root	Asthma, Jaundice
32	<i>Boswellia serrata</i>	Guggila	Burseraceae	Tree	Gum resin	Rheumatoid Arthritis
33	<i>Brassica nigra</i>	Nalla avalu	Brassicaceae	Herb	Seed	Rheumatoid Arthritis
34	<i>Butea monosperma</i>	Modugu	Fabaceae	Tree	Leaves	Diabetes
35	<i>Caesalpinia bonduc</i>	Gachcha kaya	Caesalpiniaceae	Tree	Seed	Abortion
36	<i>Calotropis gigantia</i>	Jilledu	Asclepiadaceae	Herb	Root	Rheumatoid Arthritis
37	<i>Cassia auriculata</i>	Thangedu	Caesalpiniaceae	Shrub	Flower bud	Diabetes
38	<i>Cassia fistula</i>	Rela	Caesalpiniaceae	Tree	Root bark	Diabetes, Jaundice
39	<i>Cassia occidentalis</i>	kasintha	Caesalpiniaceae	Herb	Seed	Cough
40	<i>Celastrus paniculata</i>	Palleru thivva	Celastraceae	Tree	Stem bark	Abortifacient
41	<i>Centella asiatica</i>	Saraswathi aku	Apiaceae	Herb	Leaves	Diabetes tonic
42	<i>Cissampelos pareira</i>	Visha boddi	Menispermaceae	Climber	Root	Rheumatoid Arthritis
43	<i>Cissus repens</i>	Kuppirodda	Vitaceae	Climber	Root	Rheumatoid Arthritis
44	<i>Clitoria ternata</i>	Sankupuvvu	Fabaceae	Climber	Root bark	Rheumatoid Arthritis
45	<i>Coccina grandis</i>	Kakidonda	Cucurbitaceae	Climber	Root, Leaves	Diabetes
46	<i>Cocculus hirsutus</i>	Dusara teega	Menispermaceae	Climber	Leaves	Diabetes
47	<i>Costus speciosus</i>	Bokachika	Zingiberaceae	Herb	Rhizome	Bronchitis, piles,
48	<i>Curculigo orchioides</i>	Nelathadi	Hypoxidaceae	Herb	Tuberous Root	Piles, Scorpion sting
49	<i>Cryptolepis buchnani</i>	Adavi pala theega	Asclepiadaceae	Climber	Root	Rheumatoid Arthritis
50	<i>Datura metal</i>	Ummetha	Solanaceae	Shrub	Leaves	Rheumatoid Arthritis
51	<i>Dichrostachys cinerea</i>	Veluthuru chettu	Mimosaceae	Tree	Root	Rheumatoid Arthritis
52	<i>Eclipta alba</i>	Guntha galaga raku	Asteracea	Herb	Leaves	Blackening of hair,
53	<i>Erythrina variegata</i>	Baditha	Fabaceae	Tree	Stem bark	Leucorrhoea
54	<i>Euphorbia hirta</i>	Chukka mokka	Euphorbiaceae	Herb	Leaves	Leucorrhoea
55	<i>Evolvulus alsinoides</i>	Vishnu kranthi	Convolvulaceae	Herb	Leaves	Brain tonic, Jaundice
56	<i>Ficus racemosa</i>	Madi	Moraceae	Tree	Root latex	Diabetes
57	<i>Ficus religiosa</i>	Ravi	Moraceae	Tree	Unripe fruit	Diabetes, Paralysis
58	<i>Gloriosa superba</i>	Nabhi	Liliaceae	Herb	Leaves	Leprosy, Mumps
59	<i>Gymnema sylvestre</i>	Podapatri	Asclepiadaceae	Climber	Leaves	Diabetes & Diuretic
60	<i>Helicteres isora</i>	Nuli thada	Sterculiaceae	Tree	Root bark	Diabetes
61	<i>Hemidesmus indicus</i>	Sugandhi pala	Periplocaceae	Climber	Root	Blood purification

62	<i>Hygrophila auriculata</i>	Niti gobbi	Acanthaceae	Herb	Seed	Gonorrhoea
63	<i>Ichnocarpus frutescens</i>	Nalla teega	Apocyanaceae	Climber	Leaves	Diabetes
64	<i>Jatropha curcas</i>	Pedda nepalam	Euphorbiaceae	Tree	Stem bark	Cough,
65	<i>Kydia calycina</i>	Konda pathi	Malvaceae	Tree	Leaves	Body pains
66	<i>Mangifera indica</i>	Mamidi	Anacardiaceae	Tree	Leaf base	Diabetes
67	<i>Manilkara hexandra</i>	pala chettu	Sapotaceae	Tree	Stem	Motions control
68	<i>Mimosa pudica</i>	Aththi pathi	Mimosaceae	Herb	Root	Contraceptives
69	<i>Momordica charantia</i>	Kakara kaya	Cucurbitaceae	Climber	Fruit	Diabetes
70	<i>Moringa oleifera</i>	Munaga	Moringaceae	Tree	Root	Cold
71	<i>Mucuna prurita</i>	Durada gondi	Fabaceae	Climber	Seed	Sperm production
72	<i>Mukia madraspatana</i>	Potti budama	Cucurbitaceae	Climber	Leaves & seed	Diabetes
73	<i>Musa paradisiaca</i>	Arati	Musaceae	Herb	Flower bud	Diabetes
74	<i>Nyctanthes arbor-tristis</i>	Pari jatham	Nyctanthaceae	Tree	Flower	Skin disease
75	<i>Ocimum americaum</i>	Bhu thulasi	Lamiaceae	Herb	Leaves	Cooling effect
76	<i>Ocimum basilicum</i>	Sabja mokka	Lamiaceae	Herb	Seed	Cooling effect
77	<i>Opuntia dillenii</i>	Naga jemudu	Cactaceae	Shrub	Stem	Contraceptives
78	<i>Phyllanthes amarus</i>	Nelvusirika	Euphorbiaceae	Herb	Whole plant	Diabetes, Jaundice
79	<i>Phyllanthes emblica</i>	Usiri	Euphorbiaceae	Tree	Fruit	Vitamin C
80	<i>Piper longum</i>	Pippallu	Piperaceae	Climber	Plant	Cough & Cold
81	<i>Plumbago zeylanica</i>	Chitra mulam	Plumbaginaceae	Herb	Leaves	Cancer & Digestion
82	<i>Polygonum glabrum</i>	Neeti ganneru	Polygoniaceae	Herb	Root	Jaundice
83	<i>Pongamia pinnata</i>	kanuga	Fabaceae	Tree	Branches	Dental infections
84	<i>Pterocarpus marsupium</i>	Yegisa	Fabaceae	Tree	Wood	Diabetes
85	<i>Rauvolfia serpentina</i>	Sarpagandi	Apocyanaceae	Shrub	Bark	Dog bite,
86	<i>Ricinus communis</i>	Amudamu	Euphorbiaceae	Shrub	Seed	Jaundice
87	<i>Sida cordata</i>	Gayapaku	Malvaceae	Herb	Leaves	Paralysis
88	<i>Strychnos nux-vomica</i>	Mushidi	Loganiaceae	Tree	Leaves	Scorpion ting
89	<i>Syzygium cumini</i>	Neredu	Myrtaceae	Tree	Seed	Diabetes
90	<i>Terminalia bellarica</i>	Thani chettu	Combretaceae	Tree	Seed	Digestion, Gastric
91	<i>Terminelia chebula</i>	Karakaya	Combretaceae	Tree	Fruit	Diabetes, Cough
92	<i>Tinospora cordifolia</i>	Tippa teega	Menispermaceae	Climber	Stem	Diabetes & Fever
93	<i>Tylophora indica</i>	Gori pala	Asclepiadaceae	Climber	Leaves	Bronchial allergy
94	<i>Urgenea indica</i>	Adavi ulli	Liliaceae	Herb	Bulb	Snake bite
95	<i>Vitex negundo</i>	Vavili	Verbenaceae	Tree	Leaves	Body pains
96	<i>Wrightia tinctoria</i>	Ankudu chettu	Apocyanaceae	Tree	Latex	Wounds & Cuts
97	<i>Xanthium strumarium</i>	Marula mathangi	Asteracea	Herb	Plant	Malaria
98	<i>Zyziphus mauritiana</i>	Regu chettu	Rhamnaceae	Tree	Root	Malaria

RESULT AND DISCUSSION

A total of 98 species belonging to 90 genera under 52 families (Table 1) were reported in sacred groves of Visakhapatnam District, Andhra Pradesh. Family wise analysis showing in (Fig. 1). Out of 52 families Fabaceae is the dominated family with (7) species and followed by Caesalpiniaceae (6), Euphorbiaceae (5), Liliaceae, Cucurbitaceae, Asclepiadaceae and Apocyanaceae (4), Mimosaceae, Menispermaceae and Acanthaceae contributed to (3) species, Zingiberaceae, Rutaceae, Moraceae, Malvaceae and Lamiaceae each one

contributed to (2) species and remaining families shows single species. Habit wise analysis, out of 98 species herbs are 35, shrubs 7, trees 36 and climbers are 20, trees are more dominated in sacred groves than the others. These ethnomedicinal plant parts are used for varies diseases like, Paralysis, Diabetes, Obesity, Brain tonic, Cold, TB, Bronchitis, Syphilis, Skin disease, Ophthalmic disease, Rheumatoid Arthritis and Dysentery etc,. Plant parts wise analyses were showing in (Fig.2). For each species botanical name, family, local name, habit, parts used, and ailments treated are provided.

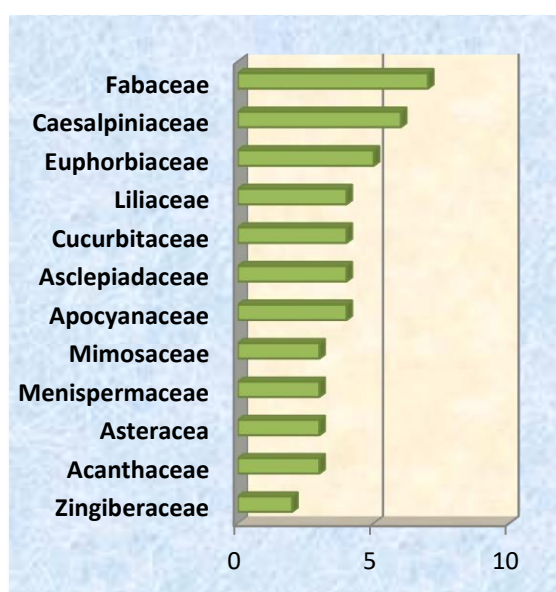


Fig. 1 Showing Dominated families

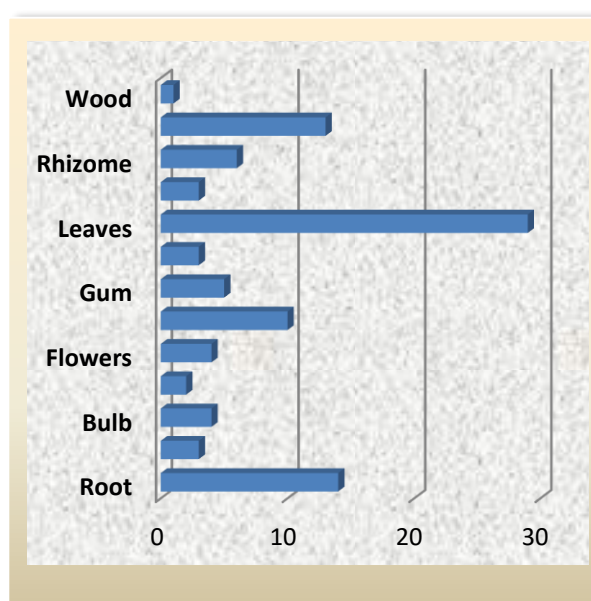


Fig. 2 showing parts wise analysis

The results indicate that plenty of medicinal plants were found in the study area and used by the traditional ways to treat a wide spectrum of human ailments. Folk medicines were found to play important role in the life of ethnic people. Aggressive civilization, rapid growth of industrialization and pollution are important reasons for the loss of different species and cause danger to the biodiversity. Preservation of indigenous plants and to identify on different plants are compulsory, which can give good drug with fewer side effects in cure of various ailments.

CONCLUSION

Ethnomedicinal plants constitute a large segment of the flora which provides raw materials for use by numerous Pharmaceutical industries. The present study will be useful for researchers in the field of Ethanobotany,

Ethanomedicine, Taxonomy, and Pharmacology for further studies. The tribals and local people who reside near and around the sacred groove still depend on the ethnomedicinal plants to cure various ailments. Numerous anthropogenic activities like developmental projects, ecotourism, modernization, urbanization, overexploitation, over grazing are the major threats for the sacred grove. This recognizes the need to conserve its biological resources. Sacred groves depict cultural, traditional, sociological, biological, economical values and are the chief method of in-situ conservation of biodiversity. Therefore, it is important to take appropriate measures and protect such ecologically important groves. The legal status and management of sacred groves in the country needs to be examined and there is an urgent need to preserve and acknowledge the efforts of the people of this area in preserving other

sacred patches of forest as important areas of local biodiversity.

ACKNOWLEDGEMENTS

The authors are thankful to the local people for their cooperation during the study period.

REFERENCE

1. Malhotra K, Stanley CS, Hemam NS, Das K. Biodiversity conservation and ethics: sacred groves and pools. In: N Fujiki, RJ Macer (Eds.): Bio-ethics in Asia. Japan: Eubois Ethics Institute, 1997; pp. 338 – 345.
2. Gadgil M, Vartak VD. Sacred groves of Maharashtra: An inventory. In: SK Jain (Ed.): Glimpses of Indian Ethnobotany. New Delhi: Oxford and IBH Publishers, 1981; pp. 279-294.
3. Boojh R, Ramakrishnan PS. Sacred groves and their role in environmental conservation. In: Strategies for Environmental Management. Souvenir Volume. Lucknow: Department of Science and Environment of Uttar Pradesh, 1983; pp. 6-8.
4. Ramakrishnan PS. Conserving the sacred for biodiversity: The conceptual frame work. In: PS Ramakrishnan, KG Saxena, UM Chandrashekara (Eds.): Conserving the Sacred for Biodiversity Management. New Delhi: Oxford and IBH Publishing Co., 1998; pp. 1-15.
5. Gadgil, M. and Vartak, V.D. Sacred Groves of Western Ghats of India. *Econ. Bot*, 1976; 30:152 - 160.
6. Chandrashekara, U.M. & S. Sankar. Ecology and management of sacred grove in Kerala, India. *Forest Ecology and Management*, 1998; 112: 165–177; [http://dx.doi.org/10.1016/s0378-1127\(98\)00326-0](http://dx.doi.org/10.1016/s0378-1127(98)00326-0)
7. Jamir, S.A. & H.N. Pandey. Vascular plant diversity in the sacred groves of Jaintia hills in northeast India. *Biodiversity and Conservation*, 2003; 12: 1497–1510.
8. Jadhav, S.N. & K.N. Reddy. Threatened medicinal plants of Andhra Pradesh. ENVIS-SDNP special issue, 2006; 18–28pp.
9. Rao Ravi Prasad B, Reddy AM, Sunitha S. Kurnool jillalo pavithravanalu, jeeva vaividyaatha, samrakshana (in Telugu). Annadatha Sukhibhava, 2001; 1(1): 19-20.
10. Rao, P. Sacred groves and conservation. *WWF India (Quart.)*, 1996; 7: 4–7.
11. Anonymous. Sacred and Protected Groves of Andhra Pradesh. WWF- India, Andhra Pradesh State Office, Hyderabad, 1996.
12. Jain, S.K & R.R. Rao. *A Handbook of Field and Herbarium Methods*. Today and Tomorrow printers, BSI, Calcutta, 1977; 157pp.
13. Gamble J.S. & C.E.C. Fischer. *Flora of the Presidency of Madras* 3 Volumes. London, Rep. ed. 1957. Calcutta, 1915–1936.
14. Rao, G.V.S & G.R. Kumari. *Flora of Visakhapatnam District - 2 Volumes*. Botanical Survey of India, Kolkata, 2002–2008; 612pp.
15. Venkaiah, M. *Studies on Vegetation and Flora of Vizianagaram District, Andhra Pradesh*. Andhra University Press, Visakhapatnam, 2004; 214pp.

***Corresponding Author:**

S.B. Padal*

Email: sbpadal08@gmail.com