

Inventorization on Ethnomedicinal Plants in Vizianagaram District, Andhra Pradesh

M.V. Vidyullatha, Ch. Muralikrishna, Ch. Sowmitri and S. B. Padal*

*Department of Botany, Andhra University, Visakhapatnam 530 003,
Andhra Pradesh, India*

KEYWORDS Flora. Gummalakshimpuram. Jathapu. Konda Dora. Savara

ABSTRACT Intensive field surveys were carried out during 2020-2021 in the interior tribal pockets of Gummalakshimpuram agency area, Vizianagaram district in Andhra Pradesh, India. The present study deals with 102 species of plants belonging to 89 genera, which belong to 37 families and are used by various tribal groups. The tribal people of this area largely depend on herbal medicines, plant products for primary healthcare and their daily life. These plants are primarily used to cure 42 different diseases by the tribes of these regions.

INTRODUCTION

The study about the traditional medicines of the aboriginals is ethnomedicine. Knowledge of ethnomedicine much older than human civilisation. It is a part of customs and tradition of a specific community and now being considered as an accounted wealth of a new source of wisdom. Recently prospects of ethnomedicine are increasing mainly because of the renewed interest in indigenous drugs especially the tribal medicine. Some recent notable work on ethnomedicine in Andhra Pradesh includes the ethno medicobotanical studies of Paderu and Araku valley in Andhra Pradesh reported (Gupta et al. 1997) and some ethnomedicinal plants used by the Chenchus, Yerukalas, Yanadis, and Sugalis for fevers and anthrax in cattle in hills of Cuddapah district (Reddy et al. 1997). Also, some ethnomedicinal plants used for paralysis by Sugali tribes in Andhra Pradesh (Rajasekhar et al. 1997) and studies on medicinal plants of Warangal and Srikakulam district (Hemadri 1990, 1991) and also other significant contribution on ethnomedicine of Northern Andhra Pradesh (Reddy et al. 1998; Hema and Yasodamma 2008; Nazaneen and Shali 2008; Satyavathi et al. 2014a, b; Padal et al. 2014; Rao et al. 2014; Roja et al. 2014; Satyavathi et al. 2015; Padal et al. 2015 a, b; Shyamala et al. 2016).

Objectives of the Study

A major focus of the investigation is to collect, identify, and document plants commonly used in

tribal communities, conduct an intensive exploration study to gain first hand information from tribal practitioners, and conduct taxonomic and systematic analysis on plants that yield drugs.

Study Area

Gummalakshimpuram tribal region is a village panchayat located in the Vizianagaram district of Andhra Pradesh state in India. The latitude 18.1331583 and longitude 83.4260318 are the geo-coordinates of the Gummalakshimpuram region. The population of Mandal is 47,265 living in 9,877 houses, in a total of 165 villages and 28 panchayats. The tribal region of the district comprises mainly of Jatapu, Savara, Gadaba, Konda Dora and Mukadora tribes among them, in which the Jatapus and Savaras were predominant. They practice podu cultivation followed via horticulture and minor forest produce collection. Due to the fact that maximum of the earlier generations are illiterate, they are least inquisitive about the education of their children and they are recommended to take part in goat or sheep rearing and tending mulch farm animals and buffalos (Fig. 1).

MATERIAL AND METHODS

A comprehensive field survey was conducted in 2020 and 2021 covering all seasons. Specimens were prepared into herbariums according to the methods described by Jain and Rao (1977). As a result of a critical examination of different floras, such as the Flora of the Presidency of the Madras (Gamble and Fischer 1915-1936), the researchers were able to identify the collected specimens, including the Flora of the Vizianagaram

*Address for correspondence:
E-mail: sbpadal08@gmail.com

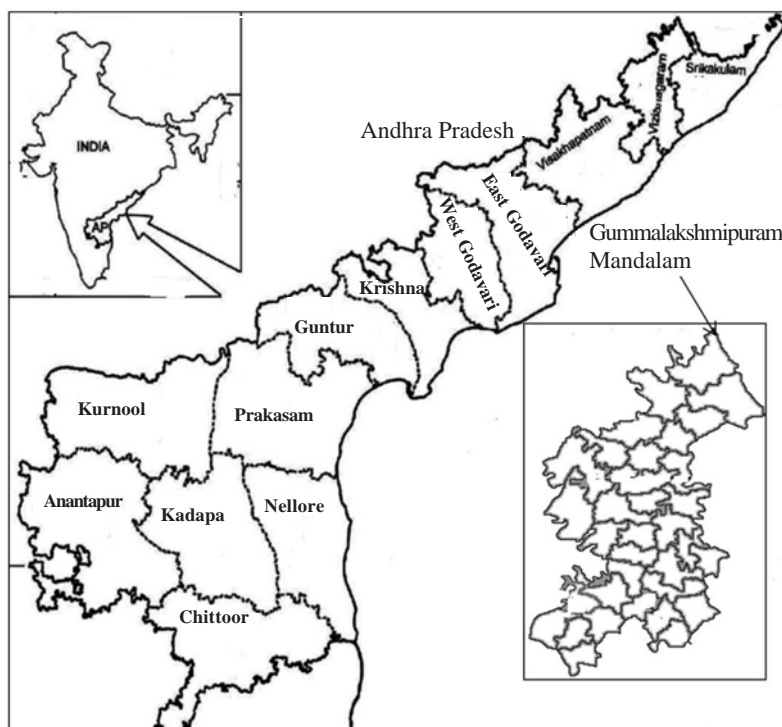


Fig. 1. Study area

District (Venkaiah 2004) and the Flora of Visakhapatnam District (Rao and Kumari 2002-2008). The botanical specimens were deposited with the Botany Department Herbarium (BDH) of the Andhra University, Visakhapatnam.

RESULTS AND DISCUSSION

There has been a lot of research done on medicinally useful plant species that are exploited by the tribal population during exploration trips. 102 plant species have been identified and categorised into 89 genera and 37 families. The family wise analysis of ethnomedicinal data revealed that of the 37 families, the dominant ones are Fabaceae represented by 9 species (8.82%) followed by Caesalpiniaceae with 7 species (6.86%), Apocynaceae and Asclepiadaceae with 6 species each (5.88% each), Asteraceae, Euphorbiaceae, Rubi-

aceae with 5 species each (4.90% each), Anacardiaceae and Lamiaceae with 4 species each (3.92% each), and Acanthaceae, Amaranthaceae, Araceae, Combretaceae, Mimosaceae, Moraceae, Zingiberaceae and Solanaceae with 3 species each (2.94% each) constituting 73.53 percent of the total families. Based on this study, it is evident that the local people used herbs (38.24%), followed by trees (36.27%), climbers (12.75%), shrubs (11.76%), and parasites (0.98%) (Table 1). A root is the most commonly used plant part for medicinal purposes depending on the plant (30.39%) followed by leaf (19.61%), tuber (13.73%), whole plant (7.00%), seed (4.90%), fruit (3.92%), root bark (3.92%), flowers (2.96%), latex (2.96%), rhizome (2.11%), stem (2.96%), gum (2.96%), inflorescence (2.96%) and plant (0.98%). Intensive survey and repeated personal interviews in different pockets resulted in coming across 42 dis-

Table 1: Ethnomedicinal plants used by tribes of Vizianagaram District

G. Sp.	Botanical/Family name	Common name	Habit	Parts	Disease
	Acanthaceae				
1	<i>Andrographis paniculata</i> (Burm.f.) Nees	Neelavemu	Herb	Stem	Asthma
2	<i>Elytraria acaulis</i> (L.f.) Lindau	Kukkapan	Herb	Root	Anasarca
3	<i>Justicia adhatoda</i> L.	Addasaramu	Shrub	Leaf	Cough
	Adiantaceae				
4	<i>Adiantum lunulatum</i> Burm. f.	Gatumandu	Herb	Leaf	Abortion
5	<i>Hemionitis arifolia</i> (Burm. f.) T. Moore	Ramabanam	Herb	Plant	Digestive tonic
	Alangiaceae				
6	<i>Alangium salviifolium</i> (L.f.) Wangerin	Uduga	Tree	Leaf	Rheumatism
	Amaranthaceae				
7	<i>Achyranthes aspera</i> L.	Uttareni	Herb	Seed	Mental cases
8	<i>Aervalanata</i> (L.) Juss.	Pindikura	Herb	Root	Headache
9	<i>Amaranthus spinosus</i> L.	Mullathotakura	Herb	Root	Dyspepsia
	Anacardiaceae				
10	<i>Buchanania lanzan</i> Spreng.	Sarepappu	Tree	Stem bark	Boils
11	<i>Lannea coromandelica</i> (Houtt.) Merr.	Gumpena	Tree	Stem bark	Cuts
12	<i>Mangifera indica</i> L.	Mamidi	Tree	Gum	Boils
13	<i>Semecarpus anacardium</i> L.f.	Nallajeedi	Tree	Seed	Swellings
	Annonaceae				
14	<i>Annona squamosa</i> L.	Sitapalam	Tree	Root	Abortion
15	<i>Polyalthia cerasoides</i> (Roxb.) Bedd.	Asoka	Tree	Gum	Chest pain
	Apiaceae				
16	<i>Centellaasiatica</i> (L.) Urb.	Saraswathi Aku	Herb	Leaf	Anaemia
	Apocynaceae				
17	<i>Alstonia venenata</i> R.Br.	Edakulapala	Shrub	Stem bark	Anthelmintic
18	<i>Holarrhenapubescentis</i> Wall. ex G.Don	Palakodisa	Shrub	Bark	Asthma
19	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Palateega	Climber	Root	Epilepsy
20	<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Pathalagaridi	Herb	Root	Fever
21	<i>Rauwolfia tetraphylla</i> L.	Pathalagaridi	Herb	Root bark	Blood pressure
22	<i>Wrightia tinctoria</i> R.Br.	Ankudu	Tree	Latex	Asthma
	Araceae				
23	<i>Acoru scalamus</i> L.	Vasa	Herb	Rhizome	Cold
24	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Adavikandha	Herb	Corm	Bone fracture
25	<i>Arisaema tortuosum</i> (Wall.) Schott	Dhammasaaru	Herb	Tuber	Headache
	Areceaceae				
26	<i>Caryota urens</i> L.	Jeeluga	Tree	Inflorescence	Aphrodisiac
27	<i>Phoenix sylvestris</i> (L.) Roxb.	Chitiieetha	Tree	Root	Asthma
	Aristolochiaceae				
28	<i>Aristolochia indica</i> L.	Gadidagadapaku	Climber	Root	Diarrhoea
	Asclepiadaceae				
29	<i>Calotropis gigantea</i> (L.) Dryand.	Jilledu	Shrub	Root	Stomach pain
30	<i>Cryptolepis buchananii</i> Roem. andSchult.	Palabaddu	Climber	Root	Diarrhoea
31	<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Sm.	Podapatri	Climber	Root	Cobrabite
32	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	Sugandhipala	Climber	Root	Diarrhoea
33	<i>Pergularia daemia</i> (Forssk.) Chiov.	Dustaputeega	Climber	Leaf	Bone fracture
34	<i>Tylophora indica</i> (Burm. f.) Merr.	Mekameyaniaaku	Climber	Leaf	Asthma
	Asteraceae				
35	<i>Eclipta prostrata</i> (L.) L.	Guntagalagaraku	Herb	Whole plant	Acidity
36	<i>Elephantopus scaber</i> L.	Nelamarri	Herb	Root	Anthelmintic
37	<i>Tridax procumbens</i> (L.) L.	Gaddichamanthi	Herb	Leaf	Cuts
38	<i>Vernonia cinerea</i> (L.) Less.	Sahadevi	Herb	Seed	Leucorrhoea
39	<i>Xanthium strumarium</i> L.	Marulamatangi	Herb	Root	Boils
	Barringtoniaceae				
40	<i>Barringtonia acutangula</i> (L.) Gaertn.	Kadapa Chettu	Tree	Leaf	Headache
	Bignoniaceae				
41	<i>Oroxylum indicum</i> (L.) Kurz	Pampinacettu	Tree	Root bark	Antifertility

Table 1: Contd....

<i>G. Sp.</i>	<i>Botanical/Family name</i>	<i>Common name</i>	<i>Habit</i>	<i>Parts</i>	<i>Disease</i>
	Bombacaceae				
42	<i>Bombax ceiba</i> L.	Buruga	Tree	Leaf	Leucorrhoea
	Boraginaceae				
43	<i>Coldenia procumbens</i> L.	Hamsapadu	Herb	Whole plant	Cuts
	Burseraceae				
44	<i>Garuga pinnata</i> Roxb.	Kambha	Tree	Stem bark	Stomach pain
	Caesalpiniaceae				
45	<i>Bauhinia racemosa</i> Lam.	Arichettu	Tree	Stem bark	Asthma
46	<i>Bauhinia vahlii</i> Wight and Arn.	Addaku	Climber	Root	Dysentery
47	<i>Caesalpinia bonduc</i> (L.) Roxb.	Gachakaya	Shrub	Seed	Abortion
48	<i>Cassia absus</i> L.	Chanupala	Herb	flower	Asthma
49	<i>Cassia alata</i> L.	Tamaramokka	Herb	flower	Asthma
50	<i>Cassia occidentalis</i> L.	Kasinta	Herb	Root	Anthelmintic
51	<i>Tamarindus indica</i> L.	Chinta	Tree	Bark	Asthma
	Capparidaceae				
52	<i>Capparis zeylanica</i> L.	Aridonda	Shrub	Root bark	Earache
	Combretaceae				
53	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight and Arn.	Tellamaddi	Tree	Bark	Asthma
54	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Thanechettu	Tree	fruit	Asthma
55	<i>Terminalia chebula</i> Retz.	Karakaya	Tree	fruit	Cough
	Dioscoreaceae				
56	<i>Dioscorea bulbifera</i> L.	Chedhadumpa	Climber	Root	Sterility
	Ebenaceae				
57	<i>Diospyros chloroxylon</i> Roxb.	Bheedi	Tree	Leaf	Diarrhoea
58	<i>Diospyros melanoxylon</i> Roxb.	Thumiki	Tree	Stem bark	Cold
	Euphorbiaceae				
59	<i>Euphorbia hirta</i> L.	Pachabottlu	Herb	Leaf	Dysentery
60	<i>Jatropha curcas</i> L.	Nepalam	Shrub	Latex	Burns
61	<i>Mallotus philippensis</i> (Lam.) Müll.Arg.	Sindhuram	Tree	fruit	Anthelmintic
62	<i>Phyllanthus amarus</i> Schumach. and Thonn.	Nelausiri	Herb	Plant	Jaundice
63	<i>Phyllanthus emblica</i> L.	Usirichettu	Tree	Leaf	Bone fracture
	Fabaceae				
64	<i>Dalbergia latifolia</i> Roxb.	Iridi	Tree	Stem bark	Fever
65	<i>Desmodium gangeticum</i> (L.) DC.	Seetammajada	Herb	Leaf	Acidity
66	<i>Erythrina suberosa</i> Roxb.	Mullamoduga	Tree	Root	Dysentery
67	<i>Mucuna acuminata</i> Baker	Dhulagondi	Climber	Root	Dysmenorrhoea
68	<i>Pongamia pinnata</i> (L.) Pierre	Kanuga	Tree	Leaf	Cough
69	<i>Pterocarpus marsupium</i> Roxb.	Yegisa	Tree	Stem bark	Conception
70	<i>Pueraria tuberosa</i> (Willd.) DC.	Gummuduteega	Climber	Root	Ulcers
71	<i>Tephrosia hirta</i> Bojer	Vempali	Herb	Root	Fever
72	<i>Zornia diphylla</i> (L.) Pers.	Malam mokka	Herb	Whole plant	Diarrhoea
	Lamiaceae				
73	<i>Leonotis leonurus</i> (L.) R.Br.	Ranabheri	Herb	Inflorescence	Breast pain
74	<i>Ocimum basilicum</i> L.	Thulasi	Herb	Seed	Diarrhoea
75	<i>Ocimum tenuiflorum</i> L.	Krishna Tulasi	Herb	Leaf	Conjunctivitis
76	<i>Orthosiphon rubicundus</i> (D. Don) Benth.	Nelatappidi	Herb	Root	Diarrhoea
	Lauraceae				
77	<i>Cassytha filiformis</i> L.	Savaralu	Parasite	Whole plant	Hydrocele
78	<i>Litsea glutinosa</i> (Lour.) C.B. Rob.	Naramamidi	Tree	Stem bark	Rheumatism
	Malvaceae				
79	<i>Sida acuta</i> Burm.f.	Ganneru	Herb	Root	Boils
	Meliaceae				
80	<i>Soyimida febrifuga</i> (Roxb.) A. Juss.	Somida	Tree	Root	Dysmenorrhoea
	Mimosaceae				
81	<i>Azadirachta indica</i> A. Juss.	Vepa	Tree	Leaf	Allergy
82	<i>Mimosa pudica</i> L.	Nidraganneru	Herb	Root	Epilepsy
83	<i>Xylia xylocarpa</i> (Roxb.) Taub.	Kondatangedu	Tree	Root	Gonorrhoea

Table 1: Contd....

G. Sp.	Botanical/Family name	Common name	Habit	Parts	Disease
	Moraceae				
84	<i>Ficus benghalensis</i> L.	Marri	Tree	Leaf	Boils
85	<i>Ficus racemosa</i> L.	Juvvi	Tree	Stem bark	Diarrhoea
86	<i>Streblus asper</i> Lour.	Rugechettu	Tree	Stem bark	Diarrhoea
	Ranunculaceae				
87	<i>Naravelia zeylanica</i> (L.) DC.	Pullabatchala	Climber	Leaf	Cold
	Rhamnaceae				
88	<i>Ziziphus abyssinica</i> Hochst. ex A. Rich.	Parimi	Climber	Root	Chest pain
89	<i>Ziziphus rugosa</i> Lam.	Konda Regu	Tree	Leaf	Diabetes
	Rubiaceae				
90	<i>Adina cordifolia</i> (Roxb.) Hook. f.	Kambachettu	Tree	Stem bark	Leucorrhoea
91	<i>Ixora pavetta</i> Andr.	Ramabanam	Shrub	Stem bark	Jaundice
92	<i>Pavetta indica</i> L.	Papidi	Shrub	Leaf	Blisters
93	<i>Rubia cordifolia</i> L.	Mangalikatthi	Herb	Root	Stomach pain
94	<i>Tarenna asiatica</i> (L.) Kuntze	Kommi	Shrub	Stem bark	Dysentery
	Solanaceae				
95	<i>Datura stramonium</i> L.	Ummeta	Shrub	Root	Asthma
96	<i>Solanum nigrum</i> L.	Kamanchi	Herb	Whole plant	Gonorrhoea
97	<i>Solanum surattense</i> Burm. f.	Mullavnga	Herb	Root bark	Jaundice
	Sterculiaceae				
98	<i>Helicteres isora</i> L.	Chamalanara	Shrub	Fruit	Dysentery
99	<i>Sterculia urens</i> Roxb.	Kovelachettu	Tree	Root	Antifertility
	Zingiberaceae				
100	<i>Curcuma longa</i> L.	Pasupu	Herb	Rhizome	Rheumatism
101	<i>Zingiber officinale</i> Roscoe	Allamu	Herb	Rhizome	Dyspepsia
102	<i>Zingiber roseum</i> (Roxb.) Roscoe	Adaviallum	Herb	Root	Leucorrhoea

eases in the area. In the present study, 102 different species have been reported to treat 42 different ailments like digestive tonic, abortion, acidity, allergy, anaemia, anasarca, anthelmintic, antifertility, aphrodisiac, asthma, blisters, blood pressure, boils, bone fracture, breast pain, burns, chest pain, cobra bite, cold, conception, conjunctivitis, cough, cuts, diabetes, diarrhoea, dysentery, dysmenorrhoea, dyspepsia, earache, epilepsy, fever and gonorrhoea. During the study, data will be collected on local residents utilisation of plant biomass resources, especially for medicinal purposes.

In the present investigation, *Holarrhena pubescens* Wall. ex. G. Don, *Tamarindus indica* L., *Terminalia arjuna* (Roxb. ex DC.) Wight and Arn., *Cassia absus* L., *Cassia alata* L., *Terminalia bellirica* (Gaertn.) Roxb., *Wrightia tinctoria* R. Br., *Tylophora indica* (Burm. f.) Merr., *Datura stramonium* L., *Phoenix sylvestris* (L.) Roxb., *Andrographis paniculata* (Burm. f.) Nees and *Bauhinia racemosa* plants were used for curing asthma. Similarly, for curing asthma from Paderu division (Padal et al. 2010) local tribes used *Aristolochia indica* L., *Bacopa monnieri* (L.) Wettst., *Balanites aegyptica* Del., and *Biophytum sensitivum* DC plants.

The given practices have been followed by the different vaidhyas of this forest since generations, and they have acquired the knowledge of these practices from their ancestors. For example, the roots of *Rauvolfia serpentina* were used to treat snake bites. Similarly, the most common plants used in general purposes are *Caryota urens* and *Madhuca longifolia* for the preparation of tea-like beverages, leaves of *Chloroxylon swietenia* for the preparation of food and *Andrographis paniculata* for their anti-alcoholic activity. These interesting findings of the present study were crosschecked several times with the help of vaidhyas and some local bodies. The use of forty medicinal plants for the treatment of dysentery has previously been reported (Prayaga Murthy et al. 2012) and the plants used in the present study for dysentery and diarrhoea are *Aristolochia indica* L., *Cryptolepis buchananii* Roem. and Schult., *Hemidesmus indicus* (L.) R. Br. ex Schult., *Bauhinia vahlii* Wight and Arn., *Diospyros chloroxylon* Roxb., *Euphorbia hirta* L., *Erythrina suberosa* Roxb., *Zornia diphylla* (L.), Pers. *Ocimum basilicum* L., *Orthosiphon rubicundus* (D. Don) Benth., *Ficus racemosa* L., *Streblus asper* Lour., *Tarenna*

asiatica (L.), Kuntze ex K. Schum and *Helicteres isora* L.

The presence of many herbs in the study area might be a sign of their abundance, as well as the fact that they are readily available near households and are more effective in treating ailments in comparison to other forms of growth (Singh et al. 2012). The results are in line with other ethnomedicinal studies conducted in other regions of North Coastal Andhra Pradesh (Satyavathi and Padal 2018; Chandravathi et al. 2020). A study was conducted on the tribes of Srikakulam district to identify the species responsible for leucorrhoea problems in the area and found a total of 31 species belonging to 27 families (Satyavathi et al. 2015). The Visakhapatnam District has 455 ethnomedicinal plants reported for treating various diseases used by local tribes (Padal et al. 2010). The prevalence of traditional medicine for primary healthcare has increased from eighty percent to ninety percent in recent years (Rai et al. 2000; Anzar et al. 2007; Jan et al. 2020).

CONCLUSION

All remaining frameworks of medicine can be traced back to ethnomedicine. Generally, the significance of some of these conventional medications has been recognised worldwide since they turned out to be incredibly powerful and have different solutions that might be useful for mankind when a comprehensive logical examination is directed into their properties. By an assortment of factors, including formative exercises, population explosions and other anthropogenic factors, the restorative plants utilised in the neighbourhood well-being customs are continuously being wiped out.

RECOMMENDATIONS

On the basis of the experience of the present study some recommendations are as follows. Herbal gardens should be developed in tribal areas of Vizianagaram District. The government of Andhra Pradesh should encourage the tribe for cultivation and management practices of medicinal plants in their localities instead of collecting them from the forest areas.

ACKNOWLEDGEMENT

The researchers thankful to the local villagers for their assistance during the field work.

REFERENCES

- Anzar AA, Rashid I, Reshi Z, Dar GH, Wafai BA 2007. The alien flora of Kashmir Himalaya. *Biological Invasions*, 9: 262 -292.
- Chandravathi D, Padal SB, Prakasa Rao J 2020. Ethnomedicinal investigation on Primitive Tribal Groups of Eastern Ghats, Koyyuru Mandal, Visakhapatnam District, South India. *Asian Journal of Plant Science and Research*, 10(3): 1-12.
- Gamble JS, Fischer CEC 1915-1936. *Flora of the Presidency of Madras*. 3 Volumes, London, Rep. Ed. 1957. Calcutta. London: West, Newman and Adlard.
- Gupta V, Hussain CSJ, Imam S 1997. Medico ethnobotanical survey at Paderu Forest of Araku Valley, Andhra Pradesh, India. *Fitoterapia*, 68: 45-48.
- Hemadri K 1990. Contribution to the medicinal flora of Karimnagar and Warangal districts, Andhra Pradesh. *Indian Medicine*, 2: 16-28.
- Hemadri K 1991. Contribution to the medicinal flora of Srikakulam district, Andhra Pradesh. *Indian Medicine*, 3: 17-34
- Hema L, Yesodamma N 2008. Importance of Medicinal Plants of Ardhagiri Hill, Chittoor district, Andhra Pradesh. *International Seminar on Medicinal Plants and Herbal Products*, 7-9 March, P. 45.
- Jan M, Mir TA, Khare RK 2020. Indigenous medicinal usage of family Solanaceae and Polygonaceae in Uri, Baramulla, Jammu and Kashmir. *Journal of Medicinal Herbs and Ethnomedicine*, 6: 86-89.
- Jain SK, Rao RR 1977. *A Handbook of Field and Herbarium Methods*. BSI, Calcutta: Today and Tomorrow Printers.
- Mary Roja N, Satyavani S, Sadhana B, Nikitha T, Padal SB 2014. A review on ethnomedicinal plants having anti diabetic activity in north coastal Andhra Pradesh, India. *Adv Bio and Biomed*, 1(1): 1-9.
- Nazaneen Praveen S, Shali Sahib T 2008. Plants Traditionally Used as Galactagogue in Nallamalais of Kurnool District of Andhra Pradesh. *International Seminar on Medicinal Plants and Herbal Products*, 7(9): 55.
- Padal SB, Sandhya Sri B, Raju JB 2014. Ethno-medicine used against fever among the tribes of Visakhapatnam district, Andhra Pradesh, India. *Int J Ethnob Ethnm*, 1(1): 1-5.
- Padal SB, Devi Soundarya S, Satyavathi K 2015a. Traditional Phytotherapy for health care of tribal's in Eastern Ghats of Andhra Pradesh, India. *Int J Ethnob Ethnm*, 1(1): 1-9.
- Padal SB, Prayaga Murty P, Srinivasa Rao D, Venkaiah M 2010. Ethnomedicinal plants from Paderu Division of Visakhapatnam District, A.P, India. *Journal of Phytology*, 2(8): 70-91.
- Prayaga Murthy P, Srinivasa Rao D, Venkaiah M 2012. Study of Some ethnomedicinal Plants for treatment of dysentery of North Coastal Andhra Pradesh, India. *International Journal of Biosciences (IJB)*, 2(1): 18-24.
- Rajasekhar D, Balaji Rao NS, Chengal Raju D 1997. Folk claims from Sugalis of Andhra Pradesh for the treatment of paralysis. *Ancient Sci Life*, 17: 107-110.
- Rao A, Satyavathi K, Padal SB 2014. Some native medicinal plants - Around Palakonda Division of Srikakulam

- District, Andhra Pradesh, India. *Int J Ethnobot Ethnol*, 1(2): 1-8.
- Rao GVS, Kumari GR 2002–2008. *Flora of Visakhapatnam District - 2 Volumes*. Botanical Survey of India, Kolkata.
- Rai LK, Prasad P, Sharma E 2000. Conservation threats to some important plants of the Sikkim Himalaya. *Biological Conservation*, 93: 27-33.
- Reddy KN, Bhanja MR, Raju VS 1998. Plants used in ethno veterinary practices in Warangal District, Andhra Pradesh, India. *Ethnobotany*, 10: 75-84.
- Reddy RV, Lakshmi NVN, Venkata Raju RR 1997. Folk veterinary medicinal plants in Cuddapah hills of Andhra Pradesh, India. *Fitoterapia*, LXIX, 4: 322-328.
- Satyavathi K, Sandhya Deepika D, Padal SB, 2014a. Ethnomedicinal plants used by Bagata tribe of Paderu forest Division, Andhra Pradesh, India. *Int J Adv Res Sci Technol*, 3(2): 36-39.
- Satyavathi K, Satyavani S, Padal TSN, Padal SB 2014b. Ethnomedicinal plants used by primitive tribal of Pedabayalu Mandalam, Visakhapatnam District, A.P, India. *Int J Ethnobot Ethnol*, 1(1): 1-7.
- Satyavathi K, Sandhya Deepika D, Padal SB, Prakasa Rao J 2015. Ethnomedicinal plants used for Leucorrhoea by tribes of Srikakulam District, Andhra Pradesh, India. *Malaya Journal of Biosciences*, 2(4): 194-197.
- Satyavathi K, Padal SB 2018. Folklore medicine of primitive tribals in Dumbriguda Mandal, Visakhapatnam District, Andhra Pradesh, India. *Int J of Life Sciences*, 6(2): 523-528.
- Shyamala T, Anil Kumar O, Padal SB 2016. Ethnomedicinal plants used for Rheumatoid arthritis by tribal people in Visakhapatnam District, Andhra Pradesh, India. *Int J Ethnobot Ethnol*, 3(1): 1-5.
- Singh GA, Kumar A, Tewari DD 2012. An ethnobotanical survey of medicinal plants used in Terai forest of western Nepal. *Journal of Ethnobiology and Ethnomedicine*, 8(19): 1-9.
- Venkaiah M 2004. *Studies on Vegetation and Flora of Vizianagaram District, Andhra Pradesh*. Visakhapatnam: Andhra University Press.

Paper received for publication in November, 2021
Paper accepted for publication in January, 2022