

Medicinal plants used by Khondu tribes of Dumbriguda Mandal, Alluri Sitaramaraju district, Andhra Pradesh, India

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Abstract

We conducted an ethnomedical survey among Khondu tribal residents living in Dumbriguda Mandal, Alluri Sitaramaraju district, Andhra Pradesh. According to the ethnomedicinal survey, a total of 78 species of plants belonging to 73 genera and 45 families have been identified. Various traditional healers, tribal doctors, and old women of the tribal society were interviewed for this research. In the present study, 78 species were used to treat 37 different ailments/diseases, either individually or in combination. In the study, plants were used in unusual ways by the tribal people, demonstrating the revival of interest in traditional medicine.

Keywords: Medicinal plants; Khondu tribes; Dumbriguda Mandal; Alluri Sitaramaraju District

1. Introduction

Indigenous herbal treatment is a part of the culture and the dominant mode of therapy in most developing countries. The World Health Organization has estimated that over 80% of the global population relies chiefly on traditional medicine [1]. It was officially recognized that 2500 plant species have medicinal value while over 6000 plants are estimated to be explored in traditional, folk and herbal medicine [2]. Ethnobotanical research can provide a wealth of information regarding both past and present relationships between plants and traditional societies. The ethnobotanical investigation has led to the documentation of a large number of wild plants used by tribes for meeting their multifarious requirements [3]. Andhra Pradesh State is ethnobotanically well-explored; most of the work done was during 1985-2002. Hemadri [4] wrote a paper on the procurement of raw drugs in Andhra Pradesh. Rao & Hamadri [5] published the book on *Andhra Pradesh Mandumokkalu* (The Medicinal Plants of Andhra Pradesh). Later, Hemadri wrote two books in Telugu, namely, *Andhra Pradesh lo Vanamulikalu* [6] and *Shastravettalanu Akarshinstunna Girijana Vaidyam* [7]. Rao & Prasad [8] enlisted the ethnomedicines from the tribes of Andhra Pradesh while R.V. Reddy *et al.* [9] studied the ethnobotany of less-known tuber-yielding plants of Andhra Pradesh. Krishnamurthy [10] published a paper on the tribal people of Rampa and Gudem agency of Godavari lower Division, East Godavari district. Banerjee [11] & Gupta *et al.* [12] has reported the ethnobotany of Araku Valley in Visakhapatnam district. The objectives of the present research are the collection, identification and documentation of the plants used by the Khondu tribal community and extensive exploration studies in the area to record first-hand information from the Khondu tribal practitioners.

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2. Material and methods

2.1. Study area

The study area of Dumbriguda is one of the Mandal of Alluri Sitaramraju District. Alluri District is one of the North Eastern Coastal districts of Andhra Pradesh and it lies between 17° - 15' and 18° -32' in Northern latitude and 18° - 54' and 83° - 30' in Eastern longitude. It is bounded on the North partly by neighboring districts known as Vizianagaram and the Orissa State, on the South by East Godavari District, on the West by Orissa State, and on the East by the Bay of Bengal. Dumbriguda is a mandal headquarter which consists of 22 Panchayats and 87 revenue villages. The total population of the area is 44,878 among them 93.43% are tribal communities. It is the first attempt on conducting an exploratory study towards understanding the traditional food system of tribal communities in this region, however, earlier workers had done some similar studies on uncultivated food plants in several other tribal areas in the country and within the state.

2.2. Methodology

Intensive field surveys were carried out during **2021–2022**, covering all the seasons. Collected specimens were made into a herbarium as per the methods suggested by Jain & Rao [13]. The representative taxa were collected and identified with the help of floras [14-16] and made into a herbarium. The voucher specimens were housed in the Botany Department Herbarium (BDH), Department of Botany, Andhra University, Visakhapatnam.

3. Results and discussion

During exploration trips, medicinally useful information have been recorded on 78 plant species belonging to 73 genera and 45 families were recorded which are exploited by the Khondu tribals for their healthcare (Figure 1). The family-wise analysis of ethnomedicinal data revealed that of the 45 families, the dominant ones are Asteraceae represented by 5 species followed by Liliaceae, Fabaceae, Euphorbiaceae, and Apocynaceae with 4 species, Solanaceae, Caesalpiniaceae, Lythraceae, Asclepiadaceae, Araceae, Anacardiaceae and Myrtaceae with 3 species each, Loganiaceae, Lamiaceae, Arecaceae, and Acanthaceae with 2 species each remaining families were single species.

From the present study, it is evident that the local people used trees (31), followed by herbs (28), shrubs (11), climbers (7) and parasites (1), (Figure 2, Table. 1). Depending upon the plant part used for medicinal purposes root and stem constitutes the highest percentage (15) followed by leaf (13), seed (6), Tuber and root bark (4), whole plant, stem, rhizome, fruit and flower (3) and remaining were single. Intensive surveys and repeated personal interviews in different pockets resulted in coming across 37 diseases in the area.

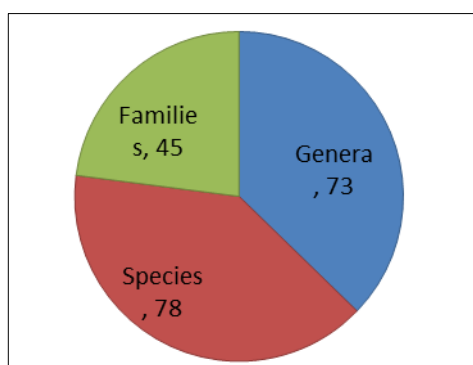


Figure 1 Floristic analysis of EMPs

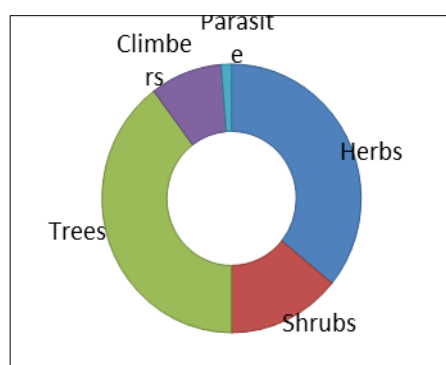


Figure 2 Habit-wise analysis of EMPs

A total of 78 species reported in the present study are used in curing 37 different ailments abortion (5), acidity (1), anemia (2), anasarca (1), anthelmintic (3), antifertility (2), Antiseptic (1), asthma (11), blood pressure (1), boils (3), body pain (1), bone fracture (2), Bronchitis (1), burns (1), chest pain (1), conjunctivitis (3), cough (1), cuts (2), dandruff (3), diarrhea (5), dysentery (2), dyspepsia (4), fever (2) fractures (4), gonorrhoea (3), Headache (2), Hydrocele (2), Jaundice (5), Leucorrhoea (4), Stomachache (1) and Swellings(1). Similar work carried out by Padal [17] Reported from the Paderu Division about 455 plant species of 354 genera belonging to 115 families. Out of the 455 species, 448 species are Angiosperms followed by 6 species of Pteridophytes and one species of Gymnosperm. Among the angiosperms, dicotyledons are 369, and monocotyledons are 79. Out of 455 plant species herbs are 138, shrubs 128, trees 136, stragglers and climbers 50, ferns 6, and parasites/epiphytes 7. Koteswara Rao [18] Reported 341 plant species, and 279

genera belonging to 104 families. Among the 104 families 283 species belong to 83 families are dicots, 49 species belong to 13 families are monocots, 8 species belong to 7 families are Pteridophytes and 1 species is Lichen from Primitive tribal groups of Visakhapatnam District. Sandhya Sri [19] Reported 372 plant species, and 294 genera belonging to 101 families. Among the 101 families 328 species belong to 88 families are dicots, 41 species belong to 11 families are monocots, and 3 species belong to 2 families are Pteridophytes from the Bagata tribe of Visakhapatnam Agency. Aruna Kolli [20] Reported 249 species and 202 genera belonging to 81 families. Out of 249 species, 245 species are Angiosperms, and 3 species are Pteridophytes. Among the angiosperms, 217 species are dicots and 28 species are Monocots from the Jatapu tribes of the Hill Region of Srikakulam, Vizianagaram Districts located on the East coast of India.

Table 1 Ethnomedicinal plants used by Khondu tribes of Dumbriguda Mandal, Alluri District

S.No	Plant Name	Family	Habit	Part Used	Disease
1	<i>Abrus precatorius</i>	Fabaceae	Climber	Seed	Abortion
2	<i>Acorus calamus</i>	Araceae	Herb	Rhizome	Cold
3	<i>Alangium salvifolium</i>	Alangiaceae	Tree	Leaf	Arthritis
4	<i>Alstonia venenata</i>	Apocynaceae	Shrub	Stem bark	Anthelmintic
5	<i>Amaranthus spinosus</i>	Amaranthaceae	Herb	Root	Dyspepsis
6	<i>Amarphophallus paeoniifolius</i>	Araceae	Herb	Corm	Bone fractures
7	<i>Arisaema tortuosum</i>	Araceae	Herb	Tuber	Headache
8	<i>Aristolochia indica</i>	Aristolochiaceae	Climber	Root	Diarrhea
9	<i>Artocarpus heterophyllus</i>	Moraceae	Tree	Leaf	Skin disease
10	<i>Asparagus racemosus</i>	Liliaceae	Herb	Tuber	Bronchitis
11	<i>Bombax ceiba</i>	Bombacaceae	Tree	Leaf	Leucorrhoea
12	<i>Bridelia retusa</i>	Euphorbiaceae	Tree	Stem bark	Chest pain
13	<i>Buchanania lanzan</i>	Anacardiaceae	Tree	Stem bark	Boils
14	<i>Butea monosperma</i>	Fabaceae	Tree	Stem bark	Antifertility
15	<i>Caesalpinia bonduc</i>	Caesalpiniaceae	Shrub	Seed	Abortion
16	<i>Caryota urens</i>	Arecaceae	Tree	Inflorescence	Aphrodisiac
17	<i>Cassia absus</i>	Caesalpiniaceae	Herb	Flowers	Asthma
18	<i>Centella asiatica</i>	Apiaceae	Herb	Leaf	Anaemia
19	<i>Chlorophytum arundinaceum</i>	Liliaceae	Herb	Tuber	Hydrocele
20	<i>Chloroxylon swietenia</i>	Flindersiaceae	Tree	Stem bark	Cold
21	<i>Cissus quadrangularis</i>	Vitaceae	Herb	Stem	Fever
22	<i>Costus speciosus</i>	Costaceae	Herb	Rhizome	Abortion
23	<i>Cryptolepis buchanani</i>	Asclepiadaceae	Climber	Root	Diarrhoea
24	<i>Dalbergia latifolia</i>	Fabaceae	Tree	Stem bark	Fever
25	<i>Datura metal</i>	Solanaceae	Shrub	Root	Asthma
26	<i>Dendrophthoe falcata</i>	Loranthaceae	Parasite	Stem bark	Asthma
27	<i>Eclipta prostrata</i>	Asteraceae	Herb	Whole plant	Acidity
28	<i>Elephantopus scaber</i>	Asteraceae	Herb	Root	Anthelmintic
29	<i>Elytraria acaulis</i>	Acanthaceae	Herb	Tuber	Anasarca

30	<i>Erythrina suberosa</i>	Fabaceae	Tree	Root	Dysentery
31	<i>Eucalyptus globulus</i>	Myrtaceae	Tree	Leaf	Antiseptic
32	<i>Gloriosa superba</i>	Liliaceae	Herb	Leaf	Asthma
33	<i>Glycosmis pentaphylla</i>	Rutaceae	Shrub	Fruit	Conjunctivitis
34	<i>Gmelina asiatica</i>	Verbenaceae	Tree	Fruit	Dandruff
35	<i>Grewia tiliifolia</i>	Tiliaceae	Tree	Leaf	Lice
36	<i>Hemidesmus indicus</i>	Asclepiadaceae	Climber	Root	Diarrhoea
37	<i>Holarrhena pubescens</i>	Apocynaceae	Shrub	Stem bark	Asthma
38	<i>Holoptelia integrifolia</i>	Ulmaceae	Tree	Root	Abortion
39	<i>Hugonia mystax</i>	Linaceae	Shrub	Root	Swellings
40	<i>Hybanthus ennaespermus</i>	Violaceae	Herb	Whole plant	Impotency
41	<i>Justicia adathoda</i>	Acanthaceae	Shrub	Leaf	Cough
42	<i>Lagerstroemia parviflora</i>	Lythraceae	Tree	Leaf	Dysentery
43	<i>Lannea coromandelica</i>	Anacardiaceae	Tree	Stem bark	Cuts
44	<i>Lawsonia inermis</i>	Lythraceae	Shrub	Leaf	Jaundice
45	<i>Mallotus philippensis</i>	Euphorbiaceae	Tree	Fruit	Anthelmintic
46	<i>Mangifera indica</i>	Anacardiaceae	Tree	Gum	Boils
47	<i>Manilkara hexandra</i>	Sapotaceae	Tree	Stem bark	Body pain
48	<i>Memecylon umbellatum</i>	Melastomataceae	Tree	Root bark	Leucorrhoea
49	<i>Nelumbo nucifera</i>	Nelumbonaceae	Herb	Perianth	Conjunctivitis
50	<i>Nyctanthus arbor-tristis</i>	Nyctanthaceae	Tree	Seed	Dandruff
51	<i>Ocimum basilicum</i>	Lamiaceae	Herb	Seed	Diarrhoea
52	<i>Ocimum tenuiflorum</i>	Lamiaceae	Herb	Leaf	Conjunctivitis
53	<i>Olox scandens</i>	Olacaceae	Climber	Stem bark	Anemia
54	<i>Oroxylum indicum</i>	Bignoniaceae	Tree	Root bark	Antifertility
55	<i>Phoenix sylvestris</i>	Arecaceae	Tree	Root	Asthma
56	<i>Phyllanthus amarus</i>	Euphorbiaceae	Herb	Plant	Jaundice
57	<i>Phyllanthus emblica</i>	Euphorbiaceae	Tree	Stem	Bone fractures
58	<i>Piper longum</i>	Piperaceae	Climber	Flowers	Asthma
59	<i>Plumbago zeylanica</i>	Plumbaginaceae	Shrub	Root	Abortion
60	<i>Polyalthia cerasoides</i>	Annonaceae	Tree	Gum	Chest pain
61	<i>Rauvolfia serpentina</i>	Apocynaceae	Herb	Root	Fever
62	<i>Scoparia dulcis</i>	Schrophulariaceae	Herb	Root	Dysentery
63	<i>Solanum nigrum</i>	Solanaceae	Herb	Whole plant	Gonorrhoea
64	<i>Solanum surattense</i>	Solanaceae	Herb	Root bark	Jaundice
65	<i>Strychnos potatorum</i>	Loganiaceae	Tree	Seed	Blood pressure
66	<i>Strychnos nuxvomica</i>	Loganiaceae	Tree	Stem bark	Asthma
67	<i>Syzygium cumini</i>	Myrtaceae	Tree	Stem bark	Burns

68	<i>Tamarindus indica</i>	Caesalpiniaceae	Tree	Stem bark	Asthma
69	<i>Tarenna asiatica</i>	Rubiaceae	Shrub	Stem bark	Dysentery
70	<i>Tridax procumbens</i>	Asteraceae	Herb	Leaf	Cuts
71	<i>Tylophora indica</i>	Asclepiadaceae	Climber	Leaf	Asthma
72	<i>Vanda tassellata</i>	Orchidaceae	Herb	Root	Fractures
73	<i>Vernonia cinerea</i>	Asteraceae	Herb	Seed	Leucorrhoea
74	<i>Woodfordia fruticosa</i>	Lythraceae	Shrub	Flowers	Diarrhoea
75	<i>Wrightia tinctoria</i>	Apocynaceae	Tree	Latex	Asthma
76	<i>Xanthium strumarium</i>	Asteraceae	Herb	Root	Boils
77	<i>Xylia xylocarpa</i>	Mimosaceae	Tree	Root bark	Gonorrhoea
78	<i>Zingiber officinale</i>	Zingiberaceae	Herb	Rhizome	Dyspepsia

4. Conclusion

Industrialization, urbanization, modernization and the consequent developmental activities on one side and acculturation of the ethnic societies on the other have set in motion causing destruction of forests and devastation of ethnobotanical knowledge. It is high time now, that all the Governmental and Non-Governmental Organizations should redouble their efforts to conserve plants of potential economic value, particularly ethnomedicinal plants and the ecosystems they inhabit. The scientific validation of these remedies may help in discovering new drugs from the plant species. The information on therapeutic uses of plants may provide great potential for discovering new drugs and promoting awareness among the people to use them as remedies in the health care system. Moreover, it may further be mentioned that over-exploitation of these species in the name of medicine may lead some species ultimately to the disappearance in future.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that they hold no competing interests.

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