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Ethnomedicinal Plants Diversity in R. V. Nagar Forest Range, Alluri Sita Rama Raju District, Andhra Pradesh, India

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Abstract **Original Research Article**

The present investigation the traditional knowledge of medicinal plants that are in use in R.V. Nagar Forest range in Alluri Sitarama Raju district, Andhra Pradesh, India. Ethnomedicinal uses of 165 plant species along with botanical name, family, habit, parts and diseases are presented. They belong to 137 genera and 74 families. These plants used to cure 59 types of ailments. Most remedies were taken orally, accounting for 78% of medicinal use. Most of the remedies were reported to have been from herbs and tree species.

Keywords: Ethnomedicinal plants, Diversity, R.V. Nagar Forest range, Alluri Sitarama Raju District.

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INTRODUCTION

Medicinal plants are globally valuable sources of new drugs [1–4]. There are over 1300 medicinal plants used in Europe, of which 90 % are harvested from wild resources; in the United States, about 118 of the top 150 prescription drugs are based on natural sources [5]. Furthermore, up to 80 % of people in developing countries are totally dependent on herbal drugs for their primary healthcare, and over 25 % of prescribed medicines in developed countries are derived from wild plant species [6]. With the increasing demand for herbal drugs, natural health products, and secondary metabolites of medicinal plants, the use of medicine. The need for the integration of local indigenous knowledge for a sustainable management and conservation of natural resources receives more and more recognition [7]. Moreover, an increased emphasis is being placed on possible economic benefits especially of the medicinal use of tropical forest products instead of pure timber harvesting [8]. The present study aims to investigate the ethnomedicinal plants used by primitive tribes of R.V. Nagar forest range and the practices they employ.

MATERIAL AND METHODS

Study Area

R.V. Nagar forest Range is situated between 17°48" to 18° 00" N and 82° 02" to 82° 16" E and covers an area of 312 sq.km with high species diversity and wealth of medicinal plants. In view of the unique vegetation composition with several semi evergreen species in the tracts of R.V Nagar Forest Range of Alluri Sitarama Raju District, particularly of Lankapakala and Sapparlu area.

METHODOLOGY

Data Collection

The method of collection of voucher specimens, herbaria preparation and technique for the collection of ethnomedicinal information was followed [9, 10]. The information of these plants comes in the form of local names and at the end of each interview, specimens of plants mentioned for their medicinal uses were collected and identified. Specimens were identified with the help of the Floras [11, 12]. Herbarium voucher specimens are deposited in the Department of Botany, and the authentication of the plant species was done by Prof. M. Venkaiah, Department of Botany, Andhra University, Andhra Pradesh, India. The plant species were enumerated according to family followed by their medicinal uses.

RESULTS AND DISCUSSION

The investigation revealed the medicinal properties of 165 species belonging to 137 genera under 74 families. Mimosaceae is the dominant family (11spp.), followed by Euphorbiaceae (10), Fabaceae (9 spp.), Asclepiadaceae (6 spp.), Verbanaceae, Liliaceae, Combretaceae and Araceae with each (5 spp. The other

families contributed two or one species each. Among all the species, herbs are found to be more (58) followed by trees (57), shrubs (29) and climbers (24). These medicinal plants use to cure 59 types of ailments. The main ailments in the study area were boils, cough, diabetes, dysentery, dyspepsia, ear-ache, fever, foot cracks, gastric troubles, general debility, gout, insect sting, jaundice, paralysis, mouth ulcers, rheumatism, scorpion sting, skin diseases, snake bite, stomach-ache, tooth-ache and wounds. High numbers of medicinal plant species are available for the treatment of skin diseases and indigestion. The majority of remedies were taken orally, accounting for 78% of medicinal use, followed by external application. To improve the acceptability of certain oral remedies, additives are frequently used.

Table 1: Ethnomedicinal plants used by Savara Primitive tribes of Srikakulam District, Andhra Pradesh

S. No	Name of Taxa	Family	Habit	Parts	Ailments
1	*Abutilon indicum* (L) Sweet	Malvaceae	Shrub	Leaves	Laxatives
2	*Acacia caesia* (L.) Willd	Mimosaceae	Shrub	Flowers	Menstrual
3	*Acacia catechu* Willd.	Mimosaceae	Tree	Bark	Stomach ache
4	*Acacia nilotica* (L.)Del	Mimosaceae	Tree	Bark	Mouth Wash
5	*Acacia sinuata* (Lour.)Merr.	Mimosaceae	Shrub	Pods	Purgative
6	*Acacia leucophloea* (Roxb.) Willd.	Mimosaceae	Tree	Bark	Bronchitis.
7	*Acacia torta* (Roxb.) Craib	Mimosaceae	Shrub	Stem Bark	Cough
8	Aloe vera (L.) Burm.f.	Liliaceae	Herb	Leaves	Hypertension
9	*Aeschynomene aspera* L.	Fabaceae	Herb	Leaves	Joint pain
10	*Ailanthusexcelsia* Roxb.	Sterculiaceae	Tree	Bark	Neuritis
11	Alangium salvifolium (L.) Wangerin	Alangiaceae	tree	Root Bark	Skin diseas
12	Albizia amara (Roxb.) B.Boivin	Mimosaceae	Tree	Leaves	Washing Hair
13	Albizia lebbeck (L.) Benth.	Mimosaceae	Tree	Flowers	Boils
14	*Albizia odoratissima* (L.f.) Benth	Mimosaceae	Tree	Bark	Bronchitis.
15	*Aloe barbadensis* Mill.	Liliaceae	Herb	Stem	Eye problem
16	Alternanthera sessilis (L.) R.Br. ex DC.	Amaranthaceae	Herb	Leaves	Fever
17	*Amorphophallus campanulatus* (Roxb.)	Araceae	Herb	Corm	Dysentery
18	*Amorphophallus paeonifolius* (Denst.)	Araceae	Herb	Fruit	Toothache
19	*Andrographis paniculata* (Burm.f.)Wall.	Ancanthaceae	Herb	Whole plant	Diabetes
20	*Annona reticulata* L.	Annonaceae	Tree	Seeds	Diarrhoea
21	*Anogeissus acuminata* (Roxb) Wall	Combretaceae	Tree	Roots	Jaundice
22	Ardisia solanacea (Poir.) Roxb.	Myrsinaceae.	Shrub	Leaves	Cough
23	*Aremonemexicana* L.	Papaveraceae	Herb	Latex	Eye problem
24	*Arisaema tortuosum* (Wall.) Schott.	Araceae	Herb	Tubers	Worms killing
25	Bauhinia vahlii Wight & Arn.	Caesalpiniaceae	Climber	Root	Dysentery
26	*Biophytum sensitivum* DC	Oxalidaceae	Herb	Seeds	Wounds
27	*Blumea bifoliatal* DC in Wight	Asteraceae	Herb	Leaves	Skin disease
28	*Boerhaavia diffusa* L.	Nyctaginaceae	Herb	Whole plant	Asthma
29	*Boerhaia erecta* L.	Nyctaginaceae	Herb	Whole plant	Diuretic
30	*Bombax ceiba* L	Bombacaceae	Tree	Root	Dysentery
31	*Calotropisgigantea* (L.)R. Br.	Asclepiadiaceae	Shrub	Root	Skin diseas
32	*Calotropisprocera* (Ait), R. Br.	Ascpliadiaceae	Shrub	Bark	Dysentery
33	*Calycopteris floribunda* (Roxb) Lam.	Combretaceae	Shrub	Leaves	Dysentery
34	*Canavalia gladiata* (Jacq.) DC	Fabaceae	Climber	Roots	Epilepsy
35	*Canvalia virosa* Roxb.	Fabaceae	Climber	Roots	Joint pain
36	*Cananga odorata* (Lam.) Hook	Annonaceae	Tree	Flowers	Skin diseas
37	*Canthium dicoccum* Gaertn.	Rubiaceae	Tree	Bark	Fever
38	*Canthium parviflorum* L.	Rubiaceae	Tree	Stem Bark	Arthritis
39	*Capparis zeylanical* L	Capparidaceae	Shrub	Whole plant	Rheumatism
40	*Cedrella toona* Roxb.	Meliaceae	Tree	Bark	Stmachache
41	*Celastrus paniculatus* Willd.	Celastraceae	Climber	Seed oil	Scabies
42	*Celosia argentea* L.	Amaranthaceae	Herb	seed	Mouth sores
43	*Centella asiatica* Urban.	Umbelliferae	Herb	Whole plant	Jaundice
44	*Chlorophytum laxum* Roxb.	Liliaceae		Roots	Piles
45	*Chloxylon swietenia* DC.	Flindersiaceae	Tree	Stem bark	Epilepsy
46	*Chrozophora prostrata* Dalz.	Euphorbiaceae.	Herb	Roots	Cough
47	*Cinnamomum zeylanicum* Blume.	Lauraceae	Tree	Bark	Indigestion
48	*Cepadessa baccifera* (Roth) Miq	Meliaceae	Shrub	Leaves	Skin disease
49	*Cissampelos pareria* L.	Menispermaceae	Climber	Roots	Diarrhoea
50	*Cissus quadrangularis* L.	Vitaceae	Climber	Stem	Bone fracture

S. No	Name of Taxa	Family	Habit	Parts	Ailments
51	*Cleome gynandra* L.	Capparidaceae	Herb	Leaves	Headache
52	*Citrus medica* L.	Rutaceae	Tree	Fruit	Dysentery
53	*Cleome viscosa* L.	Cleomaceae	Herb	Leaves	Eye problem
54	*Cuscuta reflexa* Roxb.	Cuscutaceae	Climber	Whole plant	Liver problem
55	*Cynodon doctylon* L	Poaceae	Herb	Rhizomes	Urinary problems
56	*Cyperus articulatus* L.	Cyperaceae	Herb	Root	Hypertension
57	*Dalbergia latifolia* Roxb	Fabacea	Tree	Leaves	Leprosy
58	*Datura metal* L.	Solanaceae	Herb	Seeds	Narcotics
59	*Decalepis hamiltonii* Wight & Arn.	Asclepidaceae	Climber	Root	Blood purifier
60	*Desmodium gangeticum* L.	Fabacea	Shrub	Root	Diarrhoea
61	*Diplazium esculentum* (Retz.) Sw.	Athyriaceae	Herb	Leaves	Cough
62	*Eclipta prostrata* L.	Asteraceae	Herb	Whole plant	Skin disease
63	*Embelia ribes* Burm.f	Myrsinaceae	Herb	Root	Cough
64	*Emblica officinalis* Gaertin	Euphorbiaceae	Tree	Fruit	Laxatives
65	*Euphorbia antiquorum* L.	Euphorbiaceae	Shrub	Stem	Purgative
66	*Euphorbia hitra* L.	Euphorbiaceae	Herb	Whole plant	Heart complaint
67	*Evolvulus numularis* L.	Convolvulaceae	Herb	Whole plant	Memory tonic
68	*Ficus bengalensis* L.	Moraceae	Tree	Latex	Rheumatism
69	*Gloriosa superba* Linn.	Liliaceae	Herb	Tubers	Stomachache
70	*Gmelina asciatica* L.	Verbenaceae.	Tree	Fruit	Gonorrhoea
71	*Gnetum ula* L.	Gnetaceae	Climber	Seeds	Rheumatism
72	*Gymnema sylvestre* (Retz.)R.Br.	Asclepidaceae	Climber	Leaves	Diabetes
73	*Heliotropium indicum* L.	Boraginaceae	Herb	Whole plant	Wounds
74	*Hemidesmis indicus* (L.) R. Br.	Asclepidaceae	Climber	Roots	Tonic
75	*Hemionitis arifolia* (Burm.) Moore.	Pteridaceae	Herb	Root	Wounds
76	*Jasminum scandens* Vahl.	Oleaceae	Climber	Roots	Ringworm
77	*Jatropa curcus* L.	Euphorbiaceae	Tree	Bark	Dysentery
78	*Jatropa glandulifera* Roxb.	Euphorbiaceae	Shrub	Latex	Rheumatism
79	*Jatropa gossypifolia* L.	Euphorbiaceae	Shrub	Root	Leprosy
80	*Justicia adhatoda* L.	Acanthaceae	Shrub	Leaves	Rheumatism
81	*Lantana camara* L.	Verbenaceae	Shrub	Leaves	Wounds
82	*Lantana indica* Roxb.	Verbenaceae	Shrub	Leaves	Wounds
83	*Lawsonia inermis* L.	Lythraceae	Shrub	Leaves	dandruff
84	*Lepedogathis cristata* Willd.	Acanthaceae	Herb	Whole plant	Fever
85	*Leucas aspera* Willd	Liliaceae	Herb	Flowers	Cough
86	*Lemonia acidissima* L.	Rutaceae	Tree	Gum	Stomachache
87	*Litsea deccanensis* Gamble	Lauraceae	Tree	Bark	Fever
88	*Lygodium microphyllum* Cav.	Schizaeaceae	Climber	Leaves	Dysentery
89	*Madhuca indica* L.	Sapotaceae	Tree	Bark	Ulcers
90	*Madhuca longifolia* L.	Sapotaceae	Tree	Seeds	Rheumatism
91	*Maranta arundinaceea* L.	Marantaceae	Herb	Rhizomes	Stomachache
92	*Marchantia palmata* Nees.	Marchantiaceae	Herb	Leaves	wounds
93	*Marsilea quadrifolia* L.	Marsileaceae	Herb	Leaves	Cough
94	*Memecylon umbellatum* Burma.	Melastomataceae	Tree	Root	Cynic problem
95	*Merremia tridentata* (Linn.) Hallier f.	Convolvulaceae	Herb	Whole plant	Rheumatism
96	*Mesua ferrea* L.	Clusiaceae	Tree	Flowers	Snake Bite
97	*Michelia champaca* L.	Magnoliaceae	Tree	Flowers	Fever
98	*Milletia auriculata* Barker	Fabacea	Climber	Root	Snake Bite
99	*Mimosa pudica* L.	Mimosaceae	Herb	Root	Asthma
100	*Mirabilis jalapa* Linn.	Nyctaginaceae	Herb	Leaves	Boils
101	*Monochoria hastata* L.	Pontederiaceae	Herb	Whole plant	Cooling agent
102	*Morinda angustifolia* Roxb.	Rubiaceae	Tree	Root	Stomachache
103	*Morinda citrifolia* L.	Rubiaceae	Tree	Leaves	Wounds
104	*Mucuna monosperma* DC.	Fabacea	Climber	Seeds	Cough
105	*Murayya paniculata* L.	Rutaceae	Shrub	Fruit	Snake Bite
106	*Musa rosacea* Jacq.	Musaceae	Shrub	Rhizomes	Dysentery
107	*Nerium indicum* Mill.	Apocynaceae	Shrub	Leaves	Anticancer
108	*Ocimum basilicum* L	Lamiaceae	Herb	Whole plant	Fever
109	*Ocimum gratissimum* L.	Lamiaceae	Shrub	Leaves	Rheumatism
110	*Ophiorrhiza mungos* Linn.	Rubiaceae	Herb	Root	Snake Bite

S. No	Name of Taxa	Family	Habit	Parts	Ailments
111	*Opuntia stricta* (Haw*)* Haw.	Cactaceae	Shrub	Fruit	Cough
112	*Oroxylon indicum* L	Bignoniaceae	Tree	Root	Diarrhoea
113	*Ougenia oojinensis* Roxb.	Fabaceae	Tree	Bark	Diarrhoea
114	*Oxalis corniculatal* L.	Oxalidacea.	Herb	Whole plant	Piles
115	*Pandanus fascicularis* Lam	Araceae	Shrub	Root	Diabetes
116	*Phyllanthus amara* Schum	Euphorbiaceae	Herb	Whole plant	Jaundice
117	*Phyllanthus emblica* L.	Euphorbiaceae	Tree	Fruit	Liver problem
118	*Piper longum* L.	Piperaceae	Climber	Fruit	Respiratory
119	*Piper nigrumn* Linn.	Piperaceae	Climber	Seed	Cough
120	*Pittosporum napaulense* (DC) Rehder	Pittosporaceae	Tree	Bark	Narcotics
121	*Plumbago zeylanica* L.	Plumbaginaceae	Herb	Root	Fits
122	*Portulaca oleracea* L.	Portulaceae	Herb	Leaves	Scurvy
123	*Pteris vittata* L.	Pteridaceae	Herb	Rhizomes	Dysentery
124	*Pterocarpus santilinus* Linn.	Fabacea	Tree	Bark	Cough
125	*Scindapsus officinalis* (Roxb.) Schott	Araceae	Climber	Inflorescence	Cough
126	*Selaginella tenera* (Hook.) Spring	Selagillaceae	Herb	Whole plant	Cough
127	*Selaginella rependa* Spring	Selagillaceae	Herb	Whole plant	Fever
128	*Semicarpus anacardium* L.	Anacardeaceae	Tree	Seed	Cuts
129	*Stachytarpheta urticifolia* (Salisb.) Sims	Verbenaceae	Herb	Leaves	wounds
130	*Sterculia urens* Roxb	Sterculiaceae	Tree	Root	Fertility
131	*Streblus asper* Lour	Moraceae	Tree	Stem	Pyorrhoea
132	*Strychnos nux*vomica L.	Loganiaceae	Tree	Seed	Snake Bite
133	*Strychnos potatorum* L	Loganiaceae	Tree	Root	Snake Bite
134	*Syzygium cumini* (L.) Skeels	Myrtaceae	Tree	Fruit	Asthma
135	*Tamarindus indica* L.	Caesalpiniaceae	Tree	Seed	Dysentery
136	*Terminalia arjuna* (Roxb.) Wight & Arn.	Combretaceae	Tree	Bark	Asthma
137	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Tree	Fruit	Diarrhoea
138	*Terminalia chebula* Retz.	Combretaceae	Tree	Fruit	Wounds
139	*Thalictrum foliolosum* DC.	Ranunculaceae	Tree	Root	Eye problem
140	*Thespesia lampas* (Cav.) Dalzell	Malvaceae	Tree	Root	Typhoid
141	*Tiliacora acuminata* Lam.	Menispermaceae	Climber	Root	Snake Bite
142	*Tinospora cordifolia* (Thunb.) Miers	Menispermaceae	Climber	Whole plant	Stomachache
143	*Toddalia asiatica* (L) Lam.	Rutaceae	Climber	Root	Snake Bite
144	*Tragia involucrata* Linn.	Euphorbiaceae	Climber	Root	Fever
145	*Trema orientalis* (L.) Bl.	Ulmaceae	Tree	Leaves	Mouth ulcers
146	*Tribulus terristris* L.	Zygophyllaceae	Herb	Seeds	Kidney problems
147	Tylophora indica (Burm. f.) Merrill.	Asclepidaceae	Climber	Leaves	Asthma
148	*Urena lobata* Sp.	Malvaceae	Herb	Whole plant	Rheumatism
149	*Veteveria zizanioides* (L.) Nash	Poaceae	Herb	Root	Skin diseases
150	*Viscum articulatum* Burm	Viscaceae	Shrub	Stem	Bone fracture
151	*Vitex nigundo* L.	Verbenaceae	Tree	Leaves	Rheumatism
152	*Waltheria americana* L.	Sterculiaceae	Herb	Whole plant	wounds
153	*Woodfordia fruticosa* L.	Lythraceae	Shrub	Flowers	Dysentery
154	*Wrightia arborea* (Densst.) Mabb	Apocynaceae	Tree	Bark	Urinary problems
155	*Wrightia tinctoria* (Roxb.) R.Br.	Apocynaceae	Tree	Leaves	Stomachache
156	*Xanthium indicum* Koenig in Roxby.	Asteraceae	Shrub	Root	Malaria fever
157	*Ximenia americana* L.	Olaceae	Tree	Root	Diarrhoea
158	*Xylosma longifolia* Clos.	Flacourteaceae	Tree	Leaves	Narcotics
159	*Xylia xylocarpa* (Roxb.) Taub.	Mimosaceae	Tree	Root	Gonorrhoea
160	*Zaleya decandra* (L.) Burm.f.	Aizoaceae	Herb	Root	Jaundice
161	*Zehneria maysorensis* (Wight & Arn.)	Cucrbitaceae	Climber	Root	Diarrhoea
162	*Zingiber capitatum* Roxb.	Zingiberaceae	Herb	Rhizomes	Cough
163	*Zingiber officinale* Thw.	Zingiberaceae	Herb	Rhizomes	Digestive Problem
164	*Zingiber roseum* (Roxb.) Roscoe.	Zingiberaceae	Herb	Rhizomes	Stomachache
165	*Zizyphus maritiana* Lam.	Rhamnaceae	Shrub	Root	Fever

CONCLUSIONS

This forest region is good resource and wealth for various flora and fauna because of several bioactive compounds are being extracted from traditional medicinal plants. There is a need to create and maintain a database on traditional botanical knowledge of the local inhabitants which helps to conserve the native

phytodiversity. Due to anthropogenic activities, density as well as canopy of the forest was reduced knowingly or unknowingly. The present study alarming that, it is a high time to have a look on its conservation and management strategies to protect our heritage and forest wealth. Such studies may also provide some information to biochemists and pharmacologists in screening of individual species and in rapid assessing of phyto-constituents for the treatment of various diseases.

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REFERENCES

1. Nalawade, S. M., Sagare, A. P., Lee, C. Y., Kao, C. L., & Tsay, H. S. (2003). Studies on tissue culture of Chinese medicinal plant resources in Taiwan and their sustainable utilization. *Bot Bull Acad Sin*, 44, 79–98.
2. Chen, S., Yao, H., Han, J., Liu, C., Song, J., Shi, L., ... & Leon, C. (2010). Validation of the ITS2 region as a novel DNA barcode for identifying medicinal plant species. *PloS one*, *5*(1), e8613.
3. Chacko, S. M., Thambi, P. T., Kuttan, R., & Nishigaki, I. (2010). Beneficial effects of green tea: a literature review. *Chinese medicine*, *5*(1), 1-9.
4. Hamilton, A. C. (2004). Medicinal plants, conservation and livelihoods. *Biodiversity & Conservation*, *13*(8), 1477-1517.
5. Balunas, M. J., & Kinghorn, A. D. (2005). Drug discovery from medicinal plants. *Life sciences*, *78*(5), 431-441.
6. Cole, I. B., Saxena, P. K., & Murch, S. J. (2007). Medicinal biotechnology in the genus scutellaria. *In Vitro Cellular & Developmental Biology-Plant*, *43*(4), 318-327.
7. Posey, D. (1992). Traditional knowledge, conservation and "The Rain Forest Harvest". In: Sustainable Harbest and Marketing of Rain Forest Products. Plotkin, M. & L. Famolare, (Eds.). Island Press, Washington DC, pp. 46-50
8. Pimbert, M., & Pretty, J. (1995). Parks, People and Professionals: Putting "Participation" into Protected Area Management. UNRISD Discussion Paper 57. Geneva.
9. Jain, S. K., & Rao, R. R. (1977). Field and Herbarium Methods, (Today & Tomorrows publication, New Delhi).
10. Pullaiah, T., & Chennaiah, E. (1997). Flora of Andhra Pradesh, India. Volume.1, Scientific Publishers, Jodhpur.
11. Gamble, J. S., & Fischer, C. E. C. (1935). Flora of the Presidency of Madras. London. (rep. ed. 1957: BSI, Calcutta).
12. Ellis, J. L. (1987). Flora of Nallamalais, Vol. 1 and II. Botanical Survey of India, Calcutta.