

Ethnopharmacological Studies Among the Tribal Communities of Udayagiri Forest Division of Nellore District, Andhra Pradesh, India

¹*Penchala Pratap Goli,

¹Asiya Khanum,

²Aminuddin,

³G. Sudersanam

and

¹M. Kashif Hussain

¹Central Research Institute
of Unani Medicine,
Opposite E.S.I. Hospital,
A.G. Colony Road, Erragadda,
Hyderabad-500838

²Central Council for Research
in Unani Medicine,
61-65, Institutional Area, Janakpuri,
New Delhi-110058

³Department of Botany,
S.V. University,
Tirupati-517501

Abstract

The present paper highlights the ethnopharmacological importance of the flora of Udayagiri forest division of Nellore district in the state of Andhra Pradesh. Tribal people inhabited in this area have good knowledge on medicinal potential of the available plant resources. They utilize different parts like roots, tubers, stem bark, leaves, flowers, fruits and seeds. All these parts are employed in the form of paste, powder, juice, decoction, infusion etc. The remedies are also used in crude form, with other additives like 'ghee', 'sesame oil' and 'goat milk', to get relief from different ailments.

The paper discloses hidden knowledge of tribal people on 41 species of plants belonging to 31 families to relieve the ailments like arthritis, Jaundice, rheumatism, burning micturation, fevers, worm infestation, menstrual problems, cold, cough, indigestion, diarrhoea, constipation, diabetes, asthma, stomach-ache, insomnia, piles,, sexual problems, bone fractures, skin diseases, ulcers, cuts, wounds etc.

Keywords: Ethnopharmacological studies, Tribal knowledge, Udayagiri forest division, Andhra Pradesh.

Introduction

History of herbal therapy is age-old in India. Since the ancient times, man has remained dependent on plants as a source of remedies. Traditional systems like Unani, Ayurveda and Siddha acquired their existence in India, due to the presence of rich biological diversity. India is a tropical country and home of extraordinary variety of climatic regions, ranging from tropical in the south to temperate and alpine in the Himalayan north, where elevated regions receive sustained winter snowfall. The climatic conditions are strongly influenced by the Himalayas and the Thar Desert (Joy, 2001; Chatterjee, 1953). Around 70% medicinal plants are found in tropical areas consisting of various forest types spread across the Western and Eastern Ghats; the Vindhyas, Chota Nagpur plateau and Aravalis. With these means India is a treasure of rich biological diversity and the majority of the medicinal plants get their home in tropical forests. Most of the tropical forests are located in Southern part of India. The state of Andhra Pradesh located in southern part of India; is a rich source of tropical forests with diverse flora. The Nellore district of the state has richest flora. Besides, it has centuries old experienced practices of herbal therapies as compared to other districts of the state (Pratap *et al.*, 2010). In view of this rationale, an ethnopharmacological survey of the study area was conducted during 2011.

¹*Author for correspondence

The Study Area

The climate of Nellore district is tropical, maximum temperature of this area ranges from 36°C to 46°C during summer and the minimum from 23°C to 25°C during the winter. April and May are the hottest months. The coldest days are experienced during the months of December to February. This area receives seasonal rain fall up to 1000 mm, 60% of rainfall is received by the North- East monsoon which starts from October and continues till December.

The total geographical area of the district is 85,600 hectares. Out of this up to 40% area is used for agriculture and house hold purposes. The 21% is forest area and remaining is waste lands. The forest is tropical dry deciduous type. The medicinal importance of the flora of this district has been explored earlier Kirtikar and Basu, 1933; Sudarsanam and Rao, 1994; Pullaiah and Chennaiah, 1997; 2007; Bhakshu and Raju, 2007; Suryanarayana and Sreenivas, 2002 and Vedavathy and Mrudula, 1996).

The forests of this area are comprised of vast flora of medicinal plants like *Aegle marmelos* (L.) Corr., *Cochlospermum religiosum* (L.) Alston., *Vitex negundo* L., *Vitex altissima* L.F., *Alangium salviifolium* (L. F.) Wang. etc. Endemic plants of this area are *Pterocarpus santalinus* L.F., *Shorea thumbergia* Roxb., *Terminalia pallida* Brandis. This area is inhabited by several tribal groups like the Chenchus, Yerukulas, and Yanadis or Irulas. They have been living in thick forest zones from immemorial days having no source to get modern medicine for their health care. The main source for their healthcare is forest herbs. They have good therapeutically valuable information for different ailments (Balaji Rao *et al.*, 1995 and Vijaykumar and Pullaiah, 1998.).

Materials and Methods

Ethnopharmacological data was collected through interaction with traditional healers, tribal doctors and elder people during survey trip conducted in 2011. During the interviews information on local name (s) of the plants, useful plant parts, method of preparation and dosage were recorded. The voucher specimens for each species was collected in quadruplicates, which were carefully tagged with field numbers after making a critical observation on the habit, habitat, colour and odour of flowers, phyto-association, occurrence and other relevant ecological features, which cannot be discerned from dried herbarium specimens (Pratap *et al.*, 2009, 2010; Hemadri 1984; Gupta *et al.*, 2003, 2005, 2007, 2009; Reddy *et al.*, 1989; Sudhakar and Rao 1985; Reddy *et al.*, 1989; Suryanarayana 1996 and Vedavathy and Mrudula, 1995). Medicinal uses and identification of plants specimens were authenticated with the help of published literature (Kirtikar and Basu, 1935; Crellin, 1967; Ramarao *et al.*, 1987; Ellis 1987; Henry, 1996; Pullaiah and Chennaiah, 1997, 2007 and Suryanarayana and Srinivasa Rao, 2002). The

method of collection of voucher specimens, preservation and mounting of herbarium specimens was done in accordance with the techniques as per Jain and Rao (1977).

Results

The present study revealed unrecorded folk medicinal utilization of 41 plants species belonging to 31 families (Fig. 1-5). These included trees (42%), followed by herbs (26%), climbers (26%) and shrubs (6%). The field observations with folk medicinal claims of the plants species recorded during the study have been presented in table-1.

Important Folk Medicinal Plants of Study Area



Fig 1. *Actinopteris radiatus* (Sw.) Link.



Fig 3. *Helicteres isora* Linn.



Fig 4. *Hybanthus enneaspermus* (L.) Muell



Fig 2. *Holarrhena pubescens* (Buch.-Ham.) Wall. ex G. Don.



Fig 5. *Crinum asiaticum* L.

Table 1: Ethno-pharmacological uses of plants recorded from the tribal groups of Udayagiri forest division.

S. No.	Botanical Name	Habit	Local Name	Part Used	Source of Information	Disease/ Condition	Method of Usage
1.	<i>Acacia catechu</i> (L.f.) Willd. (Mimosaceae)	Tree	Kasu chettu	Bark	Chenchus	Scabies	Stem bark paste is applied externally on affected area.
2.	<i>Acorus calamus</i> L. (Araceae)	Herb	Vasa	Rhizome	Chenchus	Lack of memory	Root powder, about 500 mg mixed with milk is administered orally once a day for one week to the children as a memory booster.
3.	<i>Actinopteris radiatus</i> (Sw.) Link. (Actinopteridaceae)	Herb	Mayurasiki	Whole plant	Chenchus	Rheumatoid arthritis	Paste prepared from whole plant is rubbed on effected joints.
4.	<i>Adhatoda vasica</i> Ness Wall. (Acanthaceae)	Shrub	Addasaramu	Root	Yerukulas	Fever	10-15g of root powder is administered orally.
5.	<i>Alangium salviifolium</i> (L.f.) Wang. (Alangiaceae)	Tree	Uduga	Root Bark	Chenchus	Snake Bite	Root bark infusion, about 10 ml is taken orally at 2 hours interval entire day as antidote.
6.	<i>Albizia lebbek</i> (L.) Benth. (Mimosaceae)	Tree	Dirisana	Bark	Chenchus	Asthma	Bark powder 10 gm is administered orally for one month.

S. No.	Botanical Name	Habit	Local Name	Part Used	Source of Information	Disease/ Condition	Method of Usage
7.	<i>Andrographis serpyllifolia</i> (Rott. ex Vahl.) Wt. (Acanthaceae)	Herb	Jerri mokka	Root	Yanadis	Scolopendra bite.	Root paste, 20 to 30g is administered orally at every 2 hours the entire day and the paste is applied locally on the sight of sting.
8.	<i>Argemone mexicana</i> L. (Papaveraceae)	Herb	Balu rakkisa	Latex	Yanadis	Scabies	Latex is applied externally.
9.	<i>Aristolochia indica</i> L. (Aristolochiaceae)	Climber	Nalla eswari	Root	Chenchus	Cobra bite	Root paste, about 10 g administered orally for every half an hour up to 12 hours.
10.	<i>Asparagus racemosus</i> Willd. (Liliaceae)	Climber	Satavari	Tuberous roots.	Yanadis	Oligogalactea	Raw tuberous roots are consumed as Galactagogue.
11.	<i>Bauhinia racemosa</i> Lam. (Caesalpiniaceae)	Tree	Arichettu	Bark	Yerukulas	Burning micturition	Bark infusion about 10 ml is taken orally.
12.	<i>Bombax ceiba</i> L. (Bombacaceae)	Tree	Mulla buruga	Gum	Yerukulas	Sexual disorders	The gum about 4-7 g is taken daily as aphrodisiac.
13.	<i>Butea monosperma</i> (Lam.) Taub. (Fabaceae)	Tree	Moduga	Bark powder	Yerukulas	Piles	Bark powder 5 g is administered orally once a day for one week.

S. No.	Botanical Name	Habit	Local Name	Part Used	Source of Information	Disease/ Condition	Method of Usage
14.	<i>Calophyllum inophyllum</i> Linn. (Clusiaceae)	Tree	Ponna chettu	Bark	Chenchus	Pain in testicles	Bark powder is applied externally.
15.	<i>Ceropegia bulbosa</i> Roxb. (Asclepiadaceae)	Climber	Batchali dumpa	Tuber	Chenchus	Burning micturition	One tuberous root is taken orally.
16.	<i>Cissampelos pariera</i> L. (Menispermaceae)	Climber	Vishaboddi	Root	Chenchus	Snake bite	Oral administration of, about 15 g of root paste and externally keeping the same preparation on the sight of bite works as antidote.
17.	<i>Corallocarpus epigaeus</i> Rottl. and Willd. (Cucurbitaceae)	Climber	Linga donda	Tuberous root stock	Chenchus	Snake bite	Root powder is administered orally, about 4 g for every 2 hours up to entire day works as antidote for cobra bite.
18.	<i>Crinum asiaticum</i> L. (Amaryllidaceae)	Herb	Changlva gadda	Tuberous bulb	Yanadis	Worm infestation	Consuming of bulb, about 5-7 g kills intestinal worms.
19.	<i>Decalepis hamiltonii</i> Wight & Arn (Asclepiadaceae)	Climber	Maredu kommulu	Tuberous roots	Chenchus	Burning micturition	Root decoction (20 ml) is administered orally for one week.
20.	<i>Dioscorea bulbifera</i> Linn. (Dioscoriaceae)	Climber	Karu.karinda	Bulbils	Yanadis	Skin diseases	External application of paste of bulbils relieves scabies.

S. No.	Botanical Name	Habit	Local Name	Part Used	Source of Information	Disease/ Condition	Method of Usage
21.	<i>Dioscorea oppositifolia</i> Var. (Dioscoriaceae)	Climber	Adavidum-pathige	Tuberous roots	Yanadis	Oligospermia	Consuming of Tuberous roots increases sperm count.
22.	<i>Gmelina asiatica</i> Linn. (Verbenaceae)	Under shrub	Nela gummati	Fruit	Yanadis	Dandruff	External application of fruit paste on hair eradicates dandruff.
23.	<i>Helicteres isora</i> Linn. (Sterculiaceae)	Tree	Nulidhada	Fruit	Chenchus	Worm infestation	Consuming of fruit powder kills intestinal worms.
24.	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don. (Apocynaceae)	Tree	Kodisa pala	Bark	Chenchus	Diarrhoea	Consuming of bark powder, about 5 g relieves Diarrhoea.
25.	<i>Holostemma ada-Kodien</i> Schultes. (Asclepiadaceae)	Climber	Pala gaddalu	Roots	Chenchus	Sexual disorders	The root is shade dried mixed with bark powder is administered with milk or hot water in dose of 3-5 g a day as aphrodisiac.
26.	<i>Hybanthus enneaspermus</i> (L.) Muell. (Violaceae)	Herb	Ratna purusha	Whole plant	Chenchus	Sexual debility	Plant powder is administered orally as aphrodisiac.
27.	<i>Hygrophila auriculata</i> (Schum.) Heine. (Acanthaceae)	Herb	Mulla gobbi	Leaves	Chenchus	Jaundice	Consuming of 1 or 2 leaves daily in the morning with cow milk relieves Jaundice.
28.	<i>Oroxylum indicum</i> Vent. (Bignoniaceae)	Tree	Dundilamu	Root Bark	Yanadis	Worm infestation	Oral administration of about 10 ml root bark infusion works as Anthelmintic.

S. No.	Botanical Name	Habit	Local Name	Part Used	Source of Information	Disease/ Condition	Method of Usage
29.	<i>Plumbago zeylanica</i> Linn. (Plumbaginaceae)	Herb	Tella chitramulam	Root	Yanadis	Scabies	Root paste is applied externally on affected area.
30.	<i>Pterocarpus marsupium</i> Roxb. (Fabaceae)	Tree	Yegisa	Bark and wood	Yanadis	Diabetes	Consuming of infusion prepared from bark and wood controls Diabetes.
31.	<i>Pueraria tuberosa</i> DC. (Fabaceae)	Climber	Tella gumjadi gadda	Tuberous roots	Yanadis	Impotency	Consuming of root powder daily increases sperm count.
32.	<i>Saraca asoca</i> (Roxb.) De Willd. (Caesalpiniaceae)	Tree	Ashoka	Bark	Yerukulas	Bleeding piles	Bark powder (10 g) is given orally once a day for 10 days.
33.	<i>Semecarpus anacardium</i> L.f. (Anacardiaceae)	Tree	Nalla jeedi	Gum	Yerukulas	Rheumatic arthritis	Infusion prepared from gum is applied externally on affected areas to get relief from Rheumatic arthritic pain.
34.	<i>Sida cordifolia</i> L. (Malvaceae)	Herb	Bala	Root	Yerukulas	Rheumatic arthritis	Root paste mixed with sesame oil heated and applied on affected joints.
35.	<i>Sphaeranthus indicus</i> Linn. (Asteraceae)	Herb	Bodasaramu	Inflorescence	Yerukulas	Cough	Inflorescence powder about 4-5 g is consumed orally which gives immediate relief from cough.

S. No.	Botanical Name	Habit	Local Name	Part Used	Source of Information	Disease/ Condition	Method of Usage
36.	<i>Spondias pinnata</i> (L.f.) Kurz. (Anacardiaceae)	Tree	Adivimamidi	Root bark	Yerukulas	Menstrual disorders	Root bark infusion is taken to check red discharge in pregnant ladies.
37.	<i>Sterculia urens</i> Roxb. (Sterculiaceae)	Tree	Thapasi	Gum	Chenchus	Diabetes	Oral administration of 4-6 g gum daily controls diabetes.
38.	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn. (Combretaceae)	Tree	Tella maddi	Bark	Yanadis	Chest pain, Blood pressure	Bark powder (5-7 g) is given orally daily for one week.
39.	<i>Tylophora indica</i> Wt. and Arn. (Asclepiadaceae)	Climber	Meka meyani aaku	Roots	Chenchus	Asthma	One tae spoon full root powder is administered orally 2 times a day.
40.	<i>Vicoa indica</i> (Linn.) DC. (Asteraceae)	Herb	Adivi proddutiru-gudu	Root	Chenchus	Antidote for scorpion string.	Oral administration of root powder, about 4g works as antidote for scorpion string.
41.	<i>Wrightia tinctoria</i> R.Br. (Apocynaceae)	Tree	Reppala	Bark	Chenchus	Psoriasis	Bark powder mixed with sesame oil is heated and the medicated oil is applied externally to get relief from psoriasis.

Discussion

Medicinal plants play a vital role in the life of human beings by serving good health of mankind. Present study reveals unique utilization of medicinal plants by the tribal groups belonging to Chenchus, Yerukulas and Yanadis or Irulas inhabited in Udayagiri forest division of Nellore district in Andhra Pradesh. In the reported claims of present study, most of the plant parts used for medicinal preparations are leaf, stem bark, root, root bark and gum. All these parts have been reported to be employed in the form of paste, powder, decoction, infusion and also in crude form. Majority of the external applications are for skin diseases, wounds and dandruff. Other external uses reported herein are for arthritis and snake bite. Majority of the internal uses are for conditions like gastro-intestinal disorders, genito-urinary, hepato-biliary, respiratory problems and also as antidotes. Among the reported claims, most of the claims are claimed by Chenchus (20 claims), Yanadis (12 claims) and Yerukulas (9 claims). Many of these claims have been compared with recent literature (Anonymous, 1948-1976, 1992; Hussain *et al.*, 1992; Jain *et al.*, 1991; Rastogi and Mehrotra, 1996-1998; Chetty & Rao, 1989; Hemadri, 1981; Hemadri *et al.*, 1987 & 1988; Vijaykumar & Pullaiah, 1998; Nagaraju & Rao, 1990; Balaji Rao *et al.*, 1995; Gupta *et al.*, 2003, 2005, 2007, 2009; Sudhakar and Rao, 1985; Suryanarayana, 1996; Vedavathy & Mrudula, 1996; Vedavathy and Rao, 1995; Nagaraju, and Rao, 1990 and Nadkarni, 1976) and found that most of the folk medicinal plants are duly reported in the literature, however, their mode of application, ingredients and parts used are different. Therefore, present study represents contemporary uses of medicinal plants for the area investigated.

Conclusion

It can be concluded that information on the majority of these folk preparations in the particular indications may enrich the available ancient traditional as well as contemporary sciences. These species should be studied further to evaluate their efficacy to prove them scientifically for the benefit of common man. This may provide the potential role of ethnobotanical studies in the development of new drugs.

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