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Study of some ethnomedicinal plants for treatment of dysentery of North Coastal Andhra Pradesh, India

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Abstract

Paper deals with some medicinal plants of North Coastal Andhra Pradesh to treat dysentery disease (Infection of the intestines with bacteria or protozoans, resulting in severe diarrhoea with blood and mucus in the faeces) with help of medicinal plants. 40 plant species are recorded as medicinal plants which are used by the tribal people of North Coastal Andhra Pradesh. Out of these 40 plant species 17 trees, 11 herbs, 7 climbers and 5 are shrubs. The 40 plants are being used commonly for dysentery, Root is used in a quantum of 28%, leaf in 21%, stem bark (12%), tuberous / seeds / tubers / fruit (2%), each. Stem (2.41%), gum (5%), whole plant (14%) and flower (3%). These findings warn us from popularization of ethnomedicinal practices in dysentery before alternate steps are taken up to grow medicinal flora in a campaign approach. Phytochemical studies of above said plants need to be taken up to find out the exact ingredients that help in the curing of dysentery. The exploitation of medicinal plants for their economic value and use must be carried out, but proper care should be taken for their conservation by both *in-situ* as well as *ex-situ* conservation methods.

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Introduction

From ancient times, plants have been used for curing several ailments of mankind and pet animals. Even today with advancement of allopathic medicine, still tribal people and rural population are dependent on the herbs and plants of medicinal interest. Reports of (Anonymous, 1994; Akerele, 1992), revealed that more than 80% of the world populations rely on herbal and traditional medicine. It was estimated that plant species of 2, 500 have been utilized for medicinal purposes and more than 6000 plants are widely used in folk and herbal medicine (Huxley, 1984). Ethno botanical expeditions are necessary for the progress of the tribal welfare. The world is endowed with a rich wealth of medicinal plants. These plants are a local heritage with global importance. It is estimated that around 70, 000 plant species from lichens to flowering trees, have been used at one time or other for medicinal purposes. It is estimated that 64-84% of world's population depends on traditional medicine (Khan *et al.* 2004, Augustine and Sivadasan (2004). Traditional knowledge forms the basis for innovations of novel drugs for the benefit of the humanity. Several workers (Ramarao Naidu, 2002; Padal et al., 2010, Reddy, 2010; Lakshmi,2002; Venkaiah,2004; Prayaga Murty and Venkaiah; Prayaga Murty and Narasimha Rao, 2010) have been worked on ethnomedicinal plants from north coastal Andhra Pradesh. So far no one can take the special attempt on the Ethnomedicinal plants for treatment of Dysentery. In the present study information was gathered from the tribal pockets of North Coastal Andhra Pradesh regarding the applications of dysentery (Infection of the intestines with bacteria or protozoans, resulting in severe diarrhoea with blood and mucus in the faeces) from various plant species as medicinal remedy for the first time.

Materials and methods

Study area

North Coastal Andhra Pradesh is situated between 17° 10¹ to 19° 10¹ N latitudes and 81°53¹ to 84° 50¹ E longitudes. It is bounded on the north by Orissa state, on the South by East Godavari district, on the eastern part bordering with Bay of Bengal and on the West by East Godavari district and part of Orissa. North Coastal Andhra Pradesh comprising three districts of Srikakulam, Vizianagaram and Visakhapatnam. The total geographical area of 23, 48,612 hectares of the three districts. The major river systems are Vamsadhara, Nagavalli, Janjavathi, Champavathi,Vegavathi, Vattigadda, Gosthani, Sarada, Varaha and Thandava. The soils are red loamy and alluvial. The area is divided into coastal land, plain land and hilly land areas.

The type of forest met with in North Coastal Andhra Pradesh, as per the classification of
Champion and Seth () are.

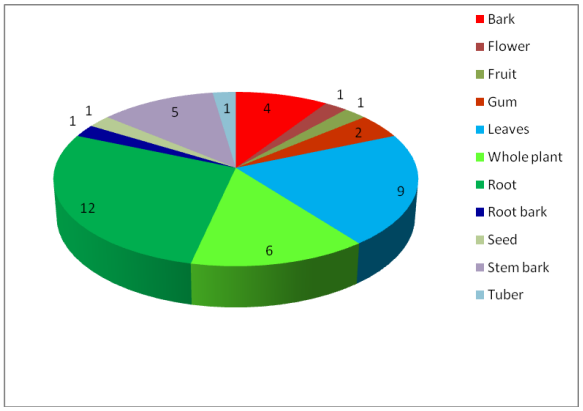
1. Tropical Semi-Evergreen Forests
2. Tropical Moist Deciduous Forests: It is divided in to three types.
   a. Northern Tropical Moist deciduous forests
   b. South Indian Tropical Moist deciduous forests
   c. Southern Tropical Moist deciduous rivarian forests
3. Dry Deciduous Forests
4. Northern Mixed Dry Deciduous Forests
5. Dry Savannah Forests
6. Tropical Dry Evergreen Forests
7. Coastal Vegetation
8. Aquatic Vegetation

Methods

The various methods used for the study of Medicinal plants of Northern Andhra Pradesh, India, were essentially the same as described by (Jain,1981, 1987, and 1989; Chadwick and Mars,1994; and Martin,1995). Study was under taken during the period 2008-2009. It is the outcome of intensive field trips were made in the interior tribal pockets of the forest areas. Village wise information was gathered about the plants, which have medicinal values from the Tribal / Viadyas / Villagers who secured from their hereditary and ancestral line. Collecting information from them is not

an easy task as they treat it will be an outmost secret, which was not even shared among their community members. While carrying out the fieldwork, help was taken from the traditional healers in the ethnobotanical information, as they are familiar with the plants around them. Enquiries were made on type of plants they use and their usage in their daily life. Information about the uses of plants was obtained from the tribal doctors, elders and housewives. Tribal houses, fields, place of worships, gardens, and weekly markets were also visited. Communication with these people was made in Telugu.

Fig. 1. Part wise analysis of Ethnomedicinal plants.



Plant collection

Intensive field trips have been made into the interior villages in different season's i.e. pre-monsoon, monsoon, and post monsoon seasons of the year for the collection of information on various plants used by the tribal people for dysentery. During this field trip different plants were collected and made observation on the habit, habitat, ecological association, leaves arrangement, flower colour, fruit and seeds.

Identification

Voucher specimens were identified with the help of standard floras of Flora of the Presidency of Madras, Gamble and Fischer (1915-1936), Flora of Andhra Pradesh (Pullaiah *et al.,* 1997) and local floras like Srikakulam district (Rolla S. Rao & Harasriramulu,1986) Vizianagarm district (Venkaiah,2004); Visakhapatnam district (G.V Subba Rao,1977); East Godavari District (Rolla S. Rao *etal.*,1999.); West Godavari district (Rolla S. Rao *et al.,* 1986) Weed flora North Coastal Andhra Pradesh (Prayaga Murty, 2009).

Results and discussion

During field survey, 40 plant species are recorded as medicinal plants which are used by the tribal people of North Coastal Andhra Pradesh. Out of these 40 plant species 17 trees, 11 herbs, 7 climbers and 5 are shrubs. The 40 plants are being used commonly for dysentery. Out of these 40 plant species The present investigation revealed an important and most alarming situation with respect to utilization of morphological parts in ethnomedicinal practices. Root is used in a quantum of 28%, leaf in 21%, stem bark (12%), tuberous / seeds / tubers / fruit (2%), each. Stem (2.41%), gum (5%), whole plant (14%) and flower (3%). These findings warn us from popularization of ethnomedicinal practices in dysentery before alternate steps are taken up to grow medicinal flora in a campaign approach.

In the present study *Achyranthes aspera* root is used in curing dysentery similar findings were found in north east India (Singh *et al.* 1997), in Nepal (Mahato and Chaudhary, 2005), in north India, (Kumar *et al.* 2006.) *Oroxylum indicum* used for jaundice in Dadra and Nagar Haveli (Sharma and Singh, 2000).and abdominal pain, stomach pain, leprosy and piles, (Rao 1977). Primitive tribal groups of the study area used stem bark of *Holarrhena pubescens* to treat dysentery in Kamrup district of Assam (Gogoi and Borthakur, 2001), for amoebic dysentery in Arghakhanchi district of west Nepal (Panthi and Chaudhary, 2003), stem bark for dysentery and diarrhoea in Sikkim (Chhetri, 2005), stem latex for scabies and bark powder to cure amoebic dysentery in Nepal (Mahato and Chaudhary, 2005), stem latex to cure scabies and bark for amoebic dysentery in Palpa district of Nepal (Mahato *et al.* 2005), stem bark for dysentery in Solan district of Himachal Pradesh (Verma and Chauhan, 2006), stem bark to cure amoebic dysentery and fever and seed

powder as anthelmintic in children in Purulia district, West Bengal (Chakraborty and Bhattacharjee, 2006) and bark infusion to treat jaundice by Chakma tribe of Bangladesh (Rahman *et al.* 2007) and for dysentery and jaundice by tribal people of Bangladesh (Biswas *et al.* 2010).

Table 1. Ethomedicinal plants used for treatment of dysentery.

Species name	Family	Part used
Abelmoschus crinitus Wall.	Malvaceae.	Leaves
Acacia chundra (Roxb.ex.Rottl.) Willd.	Mimosaceae	Stem bark
Achyranthus aspera L.	Amarantaceae	Plant
Ageratum conyzoides L.	Asteraceae	Plant
Amaranthus gangeticus L.	Amarantaceae	Plant
Anogeissus acuminata Wall. Ex Bedd.	Combretaceae	Stem bark
Arisaema tortuosum Wall.	Araceae.	Root
Artemesia vulgaris L.	Asteraceae	Leaves
Artocarpus heterophyllus Lam.	Moraceae	Bark
Asparagus recemosus Willd.	Liliaceae	Root
Bauhinia purpurea L.	Caesalpiniaceae	Bark
Bauhinia vahlii Wt & Am.	Caesalpiniaceae	Root
Bixa orellana L.	Bixaceae	Leaves
Boswellia serrata Roxb.	Burseraceae	Gum
Caesalpinia bonduc (L.) Roxb.	Caesalpiniaceae	Root
Calycopteris floribunda (Roxb.) Poir	Combretaceae	Leaves
Cyperus rotandus L.	Cyperaceae	Tuber
Dalbergia sissoo Roxb.	Fabaceae	Root
Elephantopus scaber L.	Asteraceae	Root
Enseta glaucum Roxb.	Musaceae	Flower
Euphorbia hirta L.	Euphorbiaceae	Leaf & Root
Gymnema sylvestre (*Retz.)* R. Br. ex Roem. & Schult.	Asclepiadaceae.	Root
Helicteres isora L.	Sterculiaceae	Fruit
Hemidesmus indicus (L.) R. Br.	Asclepiadaceae.	Root
Holarrhena pubescens (Buch-Ham.) Wall. Ex Don.	Apocynaceae	Stem bark, Root
Jatropha curcas L.	Euphorbiaceae	Seeds
Mesua ferrea L.	Clusiaceae	Root
Murraya koenigii (L.) Spr.	Rutaceae	Leaves, Root
Naringi crenulata (Roxb.) Nicolson.	Rutaceae	Stem bark
Oroxylum indicum (L.) Vent.	Bignoniaceae	Bark
Pithecolobium dulce (Roxb.) Benth.	Mimosaceae	Root bark
Psidium guajava L.	Myrtaceae	Stem bark
Pterocarpus marsupium Roxb.	Fabaceae	Gum
Sida cordata (Burm.t.) Borssum	Malvaceae	Leaves
Sida cordifolia L.	Malvaceae	Plant
Soymida febrifuga (Roxb.) A. Juss.	Meliaceae	Bark
Tephrosia villosa (L.) Pers.	Fabaceae	Root
Toddalia asiatica (L.) Lam.	Rutaceae	Plant
Tylophora indica (Burm. t.) Merr.	Asclepiadaceae	Leaves
Zornia gibbosa Span.	Fabaceae	Whole plant

Psidium guajava used for dysentery (Gogoi and Borthakur, 2001); dried fruit powder to cure diarrhoea and dysentery and fresh fruit to cure indigestion, jaundice, anaemia and heart complaint in Palpa district of Nepal (Mahato and Chaudhary, 2005) Stem bark is used for dysentery in Mizoram (Bharadwaj and Gakhar, 2003); for curing dysentery, cough and diarrhoea; seeds for menstrual trouble by the Konyak

Naga tribe of Mon district of Nagaland (Jamir *et al.* 2008); fruits, leaves, soaked seed, paste for dysentery, anemia, pain by tribal people of Bangladesh (Biswas *et al.* 2010)Punjani (2006) reported stem bark of *Oroxylum indicum* for curing piles in Sabarkantha district of Gujarat and for treating jaundice in Sunsari district of Eastern Nepal (Deokota and Chhetri, 2007), root bark for diarrhoea and dysentery in Sikkim Himalayas (Chanda *et al.* 2007). Jamir *et al.* (2008) studied the uses of bark, leaves and pods for curing cough, fever, malaria, diabetes, gastrointestinal problems and blood pressure by the tribals of Mon district of Nagaland and root bark for diarrhoea and dysentery by Jaintia tribes of Meghalaya (Jaiswal, 2010) and leaf juice for jaundice and dysentery by tribal people of Bangladesh (Biswas *et al.* 2010). *Psidium guajava* used for dysentery in the present study. It is also reported to be used for dysentery in Orissa (Misra and Dash, 2002), west Nepal (Mohan and Ram, 2003) and Kerala (Augustine and Sivadasan, 2004) and as vermicide in Kamroop district of Assam (Gogoi and Borthakur, 2001). Bhatt and Sabnis (1987) reported the use of bark of *Oroxylum indicum* in north Gujarat.

Among the dysentery plants *Abelmoschus crinitus* , *Acacia chundra*, *Amaranthus gangeticus* , *Ageratum conyzoides Artemesia vulgaris* , *Arisaema tortuosum* , *Boswellia serrata* , *Caesalpinia bonduc* , *Dalbergia sissoo* , *Enseta glaucum* , *Helicteres isora* , *Jatropha curcas* , *Zornia gibbosa* , *Naringi crenulata Toddalia asiatica* , *Elephantopus scaber* , *Calycopteris floribunda* , *Asparagus racemosus Pithecolobium dulce* are hitherto not reported from North Coastal Andhra Pradesh, hence, reported as new information. Phytochemical studies of above said plants need to be taken up to find out the exact ingredients that help in the dysentery.

Conclusion

In the North Coastal Andhra Pradesh, plant species have been used luxuriantly by tribal people in their daily life. In recent years the number of plant species has been decreased due to the loss of forests in North Coastal Andhra Pradesh. The exploitation of medicinal plants for their economic value use must be carried out, but proper care should be taken for their conservation by both in-situ as well as ex-situ conservation methods. In view of this authors request the State Govt., Forest Department and the Non Government Organizations to protect the medicinal plants from the merciless collection and destruction of the habitat or hills. It is also requested to take special attention for the cultivation and propagation of medicinal plants in the forest areas by the local tribal groups. A medicinal plant parks" should be maintained in the North Coastal Andhra Pradesh, as conservation programme.

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