

# Ethnopharmacological Studies in Health Care Among the Tribals of Angul Forest Division, Odisha

<sup>1</sup>Mukesh Kumar,

<sup>2</sup>Mokhtar Alam, <sup>1</sup>Mohd. Zakir,

<sup>1</sup>Hakimuddin Khan,

<sup>1</sup>Kishore Kumar,

<sup>3</sup>Aminuddin and

<sup>1</sup>L. Samiulla

<sup>1</sup>Regional Research Institute  
of Unani Medicine, Mathasahi,  
Bhadrak-756 100, Odisha

<sup>2</sup>Drug Standardization Research  
Institute (Unani),  
Kamla Nehru Nagar,  
Ghaziabad-201002, U.P.

<sup>3</sup>Central Council for Research in  
Unani Medicine,  
61-65, Institutional Area,  
Janakpuri, New Delhi-110058

## Abstract

Ethnobotanical leads are invaluable for the discovery of novel active compounds of therapeutic value from natural sources, particularly from plants. Based on this rationale, an ethnopharmacological field investigation of medicinal plants was carried-out in Angul forest division, Odisha, between November-December 2013. Some 202 medicinal species have been collected and identified from the study area. Of these, 33 have been found to be used by local inhabitants for treating their diseases and conditions. The information on folk medicinal uses of plants viz. botanical name, family, Unani name (if any), mode of application etc. have been presented in this communication.

**Keywords:** Ethnopharmacological leads, Tribals, Angul forest division, Odisha.

## Introduction

For many thousands of years, plants have been used to heal a broad range of illnesses, from minor ailments such as cuts and skin infections, to more serious diseases including typhoid fever, diabetes and cancer-like conditions. By targeting medicinal plants rather than surveying at random, there is a significantly increased chance of finding lead compounds (Mcrae *et al.*, 2005). The present investigations are based on this rationale and provide first-hand data on 33 medicinal species widely used in the folk treatment of various diseases and conditions by the tribals and ethnic groups of the study area.

Angul district is one of the centrally located district of the state of Odisha. It lies between 20°37' to 21°10' N latitude and 84°53' to 85°28' E longitude. Most of the area of this district is covered with dense forests which are of tropical dry deciduous type. The total forest cover of the district is 3509.59 km<sup>2</sup>. From the point of view of area, it stands 11<sup>th</sup> among the 30 districts of Odisha. Angul forest division is divided into six distinct ranges i.e., Raigoda, Durgapur, Chhendipada, Kaniha, Talcher, Purunagarh. The forests in the region are: Dry mixed deciduous forest, Tropical dry deciduous forest and moist deciduous forest. The areas visited include Khinda, Jamunda, Hinsida, Takursinga, Shankarpur, Pampasar, Jamunda, Balanga, Jamudibridge, Purunakote, Tikarpada, Nuakheta Banamira. Badakera, Tukuro, Jarpada, Antulia, Chhotkei, Tarava, Utunga, Kumuri, Lohiagargh, Tayansi. Chhendipada, Balipata. Dalaka, Talpada, Kaniha, Brahmandei, Rengali, Rengali Dam. Rutbhui, Bolangi, Samal Barrage, Baruan, Biru, Bulajhar, Kandhal, Bikisar. Angul & Adjoining Area forest areas were surveyed.

<sup>1\*</sup> Author for correspondence

The study area is largely inhabited by rural population including tribes such as Kondh, Gond, Munda, Santal, Juang, Khaira and Bhuiyan. The detailed ethnopharmacological study of the district has been taken up with a view to enlist to plant resources and their utilization by the natives. Ethnobotanical plants are known for their therapeutically interest in both organized system of medicine such as Unani and Ayurveda as well as unorganized system of medicine such as Folk medicine. They exhibit great chemical diversity and several of them have been listed as source of valuable drugs (Kirtikar & Basu, 1935; Khare, 2007). Our study suggests that these people have accumulated a wide knowledge in the medicinal usage of plant wealth over the centuries. The present paper gives an account of 33 plant species belonging to 22 families used by the natives in the treatment of various diseases. Most of the uses were found reported when compared with published literature on Indian ethnobotany (Jain, 1991; Chopra *et al.*, 1956).

### **Materials and Methods**

Ethnobotanical field trip was undertaken during November-December 2013 in order to explore the traditional knowledge of the inhabitants of Angul forest division and to make collections of native medicinal plants. Information regarding folk medicinal plants was obtained through field interviews with tribal people who practice indigenous medicine. In many cases, it was necessary to make a good rapport with these people in order to win over their confidence. Most of the information included in this study was gathered from elderly and experienced practitioners who were very knowledgeable about medicinal plants. The gathered data were cross-checked for reliability and accuracy by interacting with different groups of the tribals in other areas to confirm the use, mode of administration and dosage and differences of the herbal materials, if any. The medicinal plants were botanically identified by using the Flora of Orissa (Saxena & Brahmam, 1994-1996) and the Botany of Bihar & Orissa (Haines, 1921-25). After eliciting detailed information regarding the wild medicinal plants, the collected materials were carefully brought to the Survey of Medicinal Plants Unit, Regional Research Institute of Unani Medicine, Bhadrak, for identification and processing. Herbarium sheets for all the collected plant specimens were prepared and deposited in the Herbarium of Survey of Medicinal Plants Unit, Regional Research Institute of Unani Medicine, Bhadrak, India, for future reference and record.

### **Enumeration**

The medicinal plants used as folk medicine in the study area are arranged in

alphabetical order. Their botanical name, family in bracket, local name, Unani name (if any), locality with collection number, part used, name of the disease(s) against which used, mode of preparation and administration, and informant who shared his valuable information are given for each recipe discussed.

1. *Acorus calamus* L. (Araceae); Hemokedar, Waj-e-Turki, Kumuri-9653, Root. Dysentery; Root paste is given orally to treat blood dysentery. (Bhuiyan).
2. *Andrographis paniculata* (Burm.f.) Wall. ex Nees (Acanthaceae); Bhuinimbo; Balanga-9590; Leaf; Malarial fever, Skin disease; Leaf decoction is used with honey to treat malarial fever. Leaf juice is taken orally to treat skin diseases. (Munda).
3. *Asparagus racemosus* Willd. (Liliaceae); Satabari; Satawar; Purunakote-9608; Root; Dyspepsia; Root juice is mixed with honey and used for dyspepsia. (Laku Bhuiyan)
4. *Azadirachta indica* A. Juss. (Meliaceae); Nimbo; Neem; Kandhal-9746; Leaf; Skin Diseases; Leaf juice 100 ml is taken for a month to treat skin diseases. (Kharia).
5. *Bauhinia racemosa* L. (Caesalpiniaceae); Barada; Kachnal; Antulia-9625; Stem bark, Leaf; Stem bark one teaspoon is used in dysentery. Two tea spoonful leaves decoction is used in malarial fever. (Naik).
6. *Biophytum sensitivum* (L.) DC (Oxalidaceae); Lajkoli; Tikarpada-9617; Leaf; Diabetes; One teaspoonful leaf juice is taken twice a day to treat diabetes. (Paresh)
7. *Bridelia retusa* (L.) Spreng. (Euphorbiaceae); Kassi; Tikarpada-9619; Stem Bark; rheumatism; Stem bark decoction is used to treat rheumatism. (Singlu).
8. *Butea superba* Roxb. (Fabaceae); Palasnoi; Antulia-9626; Shoot; piles; two teaspoonful shoot decoction is given to treat piles. (Munda).
9. *Chromolaena odorata* (L.) King & Robins (Asteraceae); Poksunga; Hinsida-9560 leaf; cuts; Leaf juice is applied locally on cuts to check bleeding. (Kapoor Gond)
10. *Costus speciosus* (Koenig) Sm. (Zingiberaceae); Andkhira; Talpada-9694; Root; anthelmintic; Two spoon root juice is taken thrice daily as anthelmintic. (Tunu).

11. *Crateva magna* (Lour.) DC (Capparaceae); Baruna; Kumuri-9651; Leaf/Bark; Leaf/Bark paste is applied locally on boils to reduce pain & early healing. (Bhuiyan).
12. *Curculigo orchioides* Gaertn. (Hypoxydaceae); Talmuli; Musli Siyah; Purunakote-9613; Root; Wounds; Crushed roots are applied on cuts to check bleeding & healing wounds. (Bhuiyan).
13. *Dendrophthoe falcata* (L.f.) Etting. (Loranthaceae); Madang; Baruan-9735; Whole plant; Asthma; Whole plant is crushed and taken one tea spoonful twice daily to treat asthma. (Raghu Bhuiyan).
14. *Ficus benghalensis* L. (Moraceae); Baro; Baragad; Kandhal-9748; Latex; Spermatorrhoea; Latex along with Misri is used to treat spermatorrhoea. (Kharia).
15. *Gardenia latifolia* Ait. (Rubiaceae); Damagaruda; Purunakote-9611; Fruit; Joint pain; Fruit with Harida & Bahada is taken in equal quantity and boiled in mustard oil. This oil is applied locally on joints to treat joint pain. (Bhuiyan).
16. *Helicteres isora* L. (Sterculiaceae); Muda; Marorphali; Purunakote-9607; Fruit; Stomachache; Fruits boiled in mustard oil & filtered & filtered oil is applied locally on stomach to treat stomachache. (Laku Bhuiyan)
17. *Holarrhena pubescens* (Buch.-Ham.) Wall. ex G. Don (Apocynaceae); Kurmi; Inderjo Talkh; Balanga-9594; Follicles; Dysentery; Crushed follicle's juice is taken one teaspoon to treat dysentery. (Mahendra Bhuiyan)
18. *Kalanchoe pinnata* (L.) Pers. (Crassulaceae); Amarpoi; Zakhm-e-Hayat; Nuakheta-9679; Leaf; Skin diseases; Leaf juice is applied locally to treat skin diseases. (Naik)
19. *Lansea grandis* Engl. (Meliaceae); Moi; Talpada-9696; Bark; Wounds; Bark juice is applied locally to check burning & healing wounds. (Kharia).
20. *Leonotis naepetifolia* (L.) R. Br. (Lamiaceae); Bhutabhairavi; Shankarpur-9563; whole Plant; cuts; Plant juice is applied locally on cuts to check bleeding. (Ramu Bhuiyan).
21. *Mimusops elengi* L. (Sapotaceae); Baulo; Mulsari; Chakrasi Samal Barrage-9729; Leaf; Dental Care; Leaves are chewing raw to treat toothache. (Pukar).
22. *Ocimum canum* Sm. (Lamiaceae); Nandabagudi; Shankarpur-9562; Seed; Jaundice; Seeds soaked in one glass of water to overnight and filtered and water taken early morning to treat jaundice. (Kapil Munda)

23. *Phyllanthus fraternus* Webster (Euphorbiaceae); Badiamla; Jamunda-9575; Plant; Diabetes; One cup plant juice is taken twice a day for 30-60 days to treat diabetes. (Prakash Sahoo)
24. *Pongamia pinnata* (L.) Pierr. (Fabaceae); Karanja; Karanj; Chakrasi Samal Barrage-9730; Seed, Stem/Root; Wounds, Dental Care; Seed oil is used to treat wounds & itching. Young stem/root also used as tooth stick. (Kharia).
25. *Pterocarpus marsupium* Roxb. (Fabaceae); Piyasal; Bijasar; Purunakote-9614; Seed, Wood; Diarrhea & dysentery, Diabetes; Seed oil is used in diarrhea & dysentery and extraction of wood is used in diabetes. (Gopal Bhuiyan).
26. *Rauvolfia tetraphylla* L. (Apocynaceae); Patalgarudu; Chhendipada-9662; Root; snake-bite; Root paste is given with one glass water orally to treat snake-bite. (Munda).
27. *Solanum nigrum* L. (Solanaceae); Nununia; Mako; Balanga-9584; Whole Plant; Jaundice; One glass plant juice is taken twice a day for 7-15 days to treat jaundice. (Khira)
28. *Soymida febrifuga* (Roxb.) A. Juss. (Meliaceae); Rohini; Kandhal-9749; Stem bark; Fever, Diarrhoea & Dysentery; 3-4 teaspoon extract is given twice or thrice to treat intermittent fever, diarrhoea & dysentery. (Bhuiyan).
29. *Spermacoce hispida* L. (Rubiaceae); Jibakata; Bikisar-9750; Whole plant; Hemorrhoid; Plant Leaf juice is taken twice daily 3 teaspoon to treat hemorrhoid. (Kharia).
30. *Spilanthes calva* L. (Asteraceae); Poksunga; Pampasar-9650; Flower; Dental Care; Flowering heads are used in toothache. (Munda).
31. *Tephrosia purpurea* (L.) Pers. (Fabaceae); Kulthia; Sarphuka; Khinda Jamunda-9557; Root; Stomachache; Root juice is taken once a day to treat stomachache. (Tirtha Basi Naik)
32. *Vitex negundo* L. (Verbenaceae); Begunia; Sambhalu; Dalaka-9692; Leaf; Rheumatic disorders; Leaves boiled in oil and filtered. This oil is applied locally to treat rheumatic disorders. (Munda).
33. *Wrightia tinctoria* (Roxb.) R. Br. (Apocynaceae); Kuren; Inderjo Shreen; Balanga-9591; Follicles; Fever; 1-2 glass of tender tips decoction is given orally for treating common fever. (Prakash Sahoo)

## Folk Medicinal Plants from the Study Area



Fig. 1: *Asparagus racemosus* Willd



Fig. 2: *Crateva magna* (Lour.) DC.



Fig. 3: *Curculigo orchioides* Gaertn



Fig. 4: *Dendrophthoe falcata* (L.f.) Etting



Fig. 5: *Helicteres isora* L.



Fig. 6: *Wrightia tinctoria* (Roxb.) R. Br.

## Results and Discussion

In the present investigation 33 medicinal plants are used for the treatment of various diseases e.g., dental care, piles, stomach ache, fever, diarrhoea & dysentery, jaundice, snake-bite, cuts & wounds, asthma, spermatorrhoea, rheumatic disorders etc. The utility lies through their roots, stem bark, latex, leaves, fruits and seeds. These are taken internally or applied externally in the form of infusion, decoction, paste or powder. Most of the plants used in medicines are either mixed with other ingredients or single. Some important medicinal plants need immediate conservation and their cultivation should be encouraged through which their extinction can be prevented and local village people may also get low-cost cure their disease.

A detailed perusal of the ethnobotanical records reveals that a number of ethnobotanical studies have been conducted in different parts of Odisha (Ali *et al.*, 2010; Aminuddin and Girach, 1996; Aminuddin *et al.*, 2013; Dash *et al.*, 2003; Girach *et al.*, 2011; Kandari *et al.*, 2012, Mohapatra and Sahoo, 2008; Mudgal and Pal, 1980; Mukesh *et al.*, 2012, 2013; Mukherjee and Namhata, 1990; Mund and Satapathy, 2011; Rout, 2007; Sahu, and Dhal, 2012; Sahu *et al.*, 2013a, 2013b; Singh, 2012; Singh *et al.*, 2010; Tripathy and Behera, 2008) and found that most of the folk medicinal plants are duly reported in the literature (Jain, 1991; Chopra *et al.*, 1956). However, their mode of application, ingredients and parts used are different. Therefore, the present study represents the contemporary folk uses of medicinal plants of the area investigated. It would be worthwhile to subject all these folk drugs to scientific testing in the context of claims reported herein.

It has been observed that unjudicious exploitation of some species by the local tribes, medicinal plant collectors and exporters have created an alarming situation for the sustainable utilization of plant resources. Besides, the forest resources have been depleted at an alarming rate due to rapid industrialization and urbanization in the district. Further intensive study will be much useful to get more idea about the unexploited, underexploited and threatened plants of this region.

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