

Ethnobotanical Studies of Wild Flora at G. Udayagiri Forest In Eastern Ghat, Odisha

¹A. K. Shadangi, ²R. P. Panda, ³A. K. Patra

Environmental Biology Research laboratory P.G Department of Zoology Utkal University, Vanivihar

Abstract: *Ethnobotanical studies on diversity patterns and their economic importance during 2009-2011 have been surveyed. The documentation of data based on taxonomical status of useful flora and their economic importance have been established. 120 potent species belonging to 23 Orders and 55 families have been documented and 37 valuable species have been identified. This study also precautioned to take immediate step to conserve these precious resources before these get extinct.*

I. Introduction

Ethnobotany is a field which elucidates the “cultural position of the tribes who used the plants for food, shelter or clothing” (Harshberger, 1896).

With the advent of human civilization, many systems of therapy have been developed primarily based on plants. Ayurveda, Homeopathy, Sidha, Unani etc. are our traditional systems of medicines. The World Health Organization has estimated that over 80% of the global population rely chiefly on traditional medicine (Akerele, 1992).

Ancient ethnic communities of the world had learnt to utilize their neighbourhood herbal flora for various curative as well as offensive purposes (Subramaniam and Pushpangadan, 1995).

Survey reports also show that supplies of some of the medicinal raw materials are running short in the pharmaceutical industries in India (Report of Task Force, 2000). India has more than one fourth (8000) of the world’s known medicinal plant species (30,000), of which 90% are found in the forest habitats (Krishna Kumar and Katakam, 2002).

The All India Ethno-biology Survey estimated that over 7,500 plant species are used by 4,635 ethnic communities for human and veterinary health care across the country. Nearly 80% of the world populations rely on traditional medicines for primary health care, most of which involve the use of plant extract (Sandhy et al, 2006).

Ethno-medicinal studies have offered immense scope and opportunities for the development of new drugs. Some modern drugs have been deducted from folklore and traditional medicines.

Living close to nature, traditional societies have acquired unique knowledge about the use of wild flora and fauna, most of which are unknown to the people who live away from such natural ecosystem as forests. After years of observations and analysis, trials, error, experimentation or even use of intuitive methods the innovative member of human communities have selected/identified useful and harmful members of the flora and fauna. Majority of kondh population of the district is still using the traditional medicines involving different plant or plant parts against various ailments.

The wealth of traditional knowledge among the people of the district is based on hundreds of years of beliefs and observations. his knowledge has been transmitted orally from generation to generation; however it seems that it is generally diluted and vanishing from the modern society since younger people are not interested to carry on this tradition. Therefore, it warrants the collection and documents of this knowledge before this knowledge is lost for ever.

The present paper deals with the result of exploration of ethnomedicinally important taxa growing in the tribal locality of G.Udayagiri hill forest of kondhamal district, Odisha.

Aim And Objectives

Today there is an increasing desire to unravel the role of ethnobotanical studies in trapping the centuries old traditional folk knowledge as well as in searching new plant resources of food drug etc (Jain, 1987, 1991).

- To study the flora and fauna of the hill forest and to put them in a systematic and scientific taxonomical groups for academic purposes.
- To assess the economically important plant and animal species and to establish ecological conditions in terms of biotic factors.
- To study economic importance and commercial values as well as academic prospects of this hill ecosystem.

II. Materials And Methods

Kondhamal is a tribal district, located in the central part of Odisha. It extends from 19° 36' to 20° 54' N Latitude and 80° 30' to 84° E Longitude and situated at about 1800 meter above the mean sea level. It spreads an area of 8021 sq km, 60% of which is covered with forest. G.Udayagiri forest is present in eastern part of Kondhamal district of Orissa. It is located in 14-28 N-78-52E.

The Kondhamal district of Odisha harbors a rich diversity of ethnobotanical species, which generate considerable benefits from social and economic perspectives. Until now, people are preparing medicines from their available species of plants, which are used to treat common diseases.

The present study was undertaken during the period 2007 - 2009.

The present paper deals with the result of exploration of ethnomedicinally important taxa growing in the tribal locality of G.Udayagiri hill forest of Kandhamal district.

Data for this work were from the following sources.

- The information available in literatures and official documents of the forest ecosystem.
- Data collected during the course of discussion with research personals and tribals.
- Ethno-botanical studies revealed that the tribes of SBR possess a great amount of indigenous knowledge. Tribal life styles blend harmoniously with nature, and they are considered as 'Ecofriendly people'.
- Data collected through field observations of various spots.
- The wild animals would be noted from direct visual observation, from foot prints, faecal materials (Saharia, 1982).
- The vegetation of the study area and complexed diversity pattern of plants are distributed in different regions. Plants were collected, identified and listed according to flora taxonomy (Haris, 1978) and also medicinal values (Pal and Srivastava, 1979, Chakrabarty, 1980).

III. Result And Discussion

The present study revealed that a total of 120 species ethno-medicinal plants belonging to 23 Orders and 55 families have been documented for their therapeutic use against different diseases. For each species botanical name, family, local name, parts used, methods of preparation, administration and ailments treated are provided. Trees (51 species) were found to be the most used plants followed by herbs (39 species), shrubs (22 species) and climbers (8 species) in descending order.

During the study it is observed that the family Euphorbiaceae(8 species) and Fabaceae(8 species) are dominantly used by the tribals to cure their various ailments followed by Zingiberaceae(6 species), Combretaceae(5 species), Mimosaceae(5 species), Apocynaceae, Moraceae, Anacardiaceae, Caesalpiniaceae, Solanaceae; each of 4 species, Lamiaceae, Acanthaceae, Flacourtiaceae, Rutaceae; each of 3 species, Arecaceae, Ebenaceae, Malvaceae, Apocynaceae(2 species each) etc.

The plant parts used ranged from leaves (68), root (40) whole plant (5), stem bark (39), rhizome (5), fruits (16), flowers (14), Stem (17), latex (3), gum(2), twig(2), oil(6), Sap(2) and resin in one plant.

Medicines were prepared in the form of paste, oil extract, powder, decoction and infusion; three plants are used in all forms. The latex is used as such in three plants. External application is involved in the treatment of various types of skin diseases.

Traditional healers are using these plants to cure many diseases like stomachache, headache, diarrhoea and dysentery, fertility problems, skin problems, cold, fever, cough, toothache, jaundice, wounds, diabetes, asthma, tuberculosis, bone fractures, urinary problems, piles, antidote (snake and scorpion bites), rheumatism and leprosy.

It was observed that, most of the remedies consisted of single plant part and more than one method of preparation. However, many of the remedies consisted of different parts of the same plant species to treat single or more diseases. e.g., *Andrographis paniculata* – leaf paste is used to treat poison bites and leaf powder is used to treat diabetes.

Moreover a single plant is used for more than one disease. e.g., *Andrographis paniculata* (diabetes and scorpion bites), *Terminalia arjuna*(wounds, headache and tooth infections).

Common health problems in the sites of the study area were skin problems such as wounds, cuts, burns and skin diseases and the largest number of the remedies (wounds – 16 remedies and skin diseases – 13 remedies) was used to treat these troubles. 23 remedies were used to alleviate problems of the respiratory system such as cold, cough and asthma. Most of the plants in Lamiaceae were used to treat cold, cough, fever, headache and asthma. In the present study eight remedies (*Terminalia arjuna*, *Leucas aspera*, *Ocimum sanctum*, *Sida acuta*, *Lantana camara* and *Vitex negundo*) were used to get relief from headache. *Pergularia daemia* and *Vitex negundo* are used by tribals for the treatment of headache.

The tribal people of G.Udayagiri hill forest of Kondhamal district use 21 plant species to treat stomach problems, 09 plants for the treatment of jaundice. In the present study only *Abutilom indicum* was used for the treatment of jaundice.

Abutilon indicum, *Azadirachta indica*, *Ficus benghalensis* and *Terminalia arjuna* were used to treat dental problems. Various studies have reported on the indigenous use of medicinal plants in the treatment of oral diseases.

Andrographis paniculata and *Vinca rosea* were used to treat diabetes by the local traditional healers. The study area is rich in medicinal plant resources. An attempt was made to collect information on the traditional medicinal knowledge present with the local tribes. However, more in depth information may be explored from the tribes residing in the remote area of the G.Udayagiri. This type of study will give new impetus to the traditional system of healthcare.

Medicinal plants play an important role as they are concerned with the human health and life. Most of these plants grow wild in nature and few are cultivated. Either the whole plant or various parts like stem, root, leaf, flower, seed, bark etc. is used for the preparation of medicines under present study.

TABLE -1

Most of the Ayurvedic and Homeopathic drugs are prepared from the plants. Now some of the Allopathic medicines are also prepared from plant products. Life saving drugs like antibiotics is prepared from some fungi and bacteria (Satapathy, 1990;Singh and Sinha, 1991). Beverages are plant products which have some importance for human beings to give refreshing and delicious drinks. They act as stimulants and may be nutritive for having some amount of minerals, vitamins and other nourishing contents (Simmons, 1977).

In view of the importance of traditional medicine which provides health services to 75-80% of the world population, increased demand of herbal drugs by the pharmaceuticals and depleting natural plant resources, it is high time to document the medicinal utility of less known plants available in remote areas of country (Zaidi and Crow 2005).

G.Udayagiri hill forest is a tropical moist deciduous forest in Orissa.

Kondhamal is one of the richest botanical treasures in Orissa is under intense biotic pressure owing to forest fire , practice of podu cultivation by the tribal groups ,over exploitation of medicinal plants for drugs and conversion of forest to agricultural lands. These factors of degradation result not only in the depletion of certain valuable interesting medicinal taxa but also leads to substantial reduction in the density and genetic diversity of forest cover. (Tiwari et al, 1999). This rapid damage to natural habitats, thus threatening the very survival of several indigenous species.

Unsustainable collection of above medicinal plants has placed them in threatened and vulnerable categories. Therefore, in the prevailing situation, conservation of plant resources is very important, as many of these plants, have been reduced to a greater extent. Therefore, sustainable utilization of medicinal plants is an urgent demand of the hour. Sustainable wild collection with fair trade would help to conserve the natural resources of the G.Udayagiri hill forest.

IV. Conclusion

The survey indicated that, the study area has plenty of medicinal plants to treat a wide spectrum of human ailments. Earlier studies on medicinal plants also revealed that the economically backward local and tribal people of Kondhamal prefer folk medicines due to low cost and sometimes it is a part of their social life and culture. It is evident from the study that the knowledge of medicinal plants is limited to traditional healers, herbalists, and elderly persons who are living in rural and tribal areas. This study also points out that certain species of medicinal plants are being exploited by the local residents who are unaware of the importance of medicinal plants. This study concluded that even the accessibility of allopathic medicine for simple and complicated diseases is available, many people in the studied parts of G.Udayagiri hill forest of Kondhamal district is still continue to depend on medicinal plants , at least for some simple diseases such as , cold, cough, fever, headache snake and scorpion bites, skin diseases and tooth infections.

Due to lack of interest among the younger generation as well as their tendency to migrate to cities for lucrative jobs, there is a possibility of losing the wealth of knowledge in the near future. It thus becomes necessary to acquire and preserve the traditional system of medicine by proper documents and identification of specimens.

Table-1: Medicinal Plants of G.Udayagiri Hill Forest

Sl. No.	Botanical Name	Local Name	Family	Habit	Parts Used	Medicinal uses
1.	<i>Abrus precatorius L.</i>	Kaincha Ko- Karanji	Fabaceae	Climber	Seed	Decoction of seed is taken orally to clean the stomach during indigestion and food poisoning. Paste of leaf is useful in scorpion bites, bone fracture and stiffness of bone and shoulder.
2.	<i>Abutilon indicum (L.) Sweet</i>	Pedhipedh ika	Malvaceae	Herb	Leaves	Seven leaves with 7 black pepper are ground and the paste is mixed with sugar candy and is taken orally for 7 days to cure jaundice.
3.	<i>Acacia leucophloea</i>	Kantasiris a Ko-Gohira	Mimosaceae	Tree	Stem bark	The dried bark powdered is applied on fresh wounds to check bleeding.
4.	<i>Acacia pinnata (L.) wild.</i>	Antarikant a Ko- Kundoru	Mimosaceae	Shrub	Leaf, bark	Juice of bark is taken orally as an antidote to snake bite. Leaf juice along with mother's milk is given to the infants to cure indigestion.
5.	<i>Acalypha indica</i>	Indramaris a Ko- Indramaris	Euphorbiaceae	Herb	Leaf, root	Leaf juice is applied to cure scabies. Decoction of the leaf is taken orally to cure asthma, bronchitis and mouth infection.
6.	<i>Achyranthes aspera L.</i>	Aparamar ang Ko- Rusabodu	Amaranthaceae	Herb	Leaf, root	A piece of root is crushed and chewed to cure toothache. Root paste and black pepper is administered during cholera, indigestion and diarrhoea. Roots are also used in cough, pyrrhoea, diarrhoea, chlorea, and fever.
7.	<i>Adhatoda vasica Nees.</i>	Basanga	Acanthaceae	Shrub	Leaf, stem	Plant decoction with honey is prescribed twice daily in empty stomach for 7 days to cure jaundice. Root bark decoction with honey is taken orally in empty stomach to cure asthma. Decoction of the leaves and root is taken along with ginger for cough and gonorrhoea, constipation and malaria.
8.	<i>Aegle marmelos (L.) Corr</i>	Bela Ko-Bella	Rutaceae	Tree	Leaf, fruit	Powder of dried unripe fruits is taken with water, twice daily, to cure chronic dysentery and ulceration in stomach. Leaf juice is taken orally, thrice a day, to reduce high fever. Root paste is used to cure rheumatism.
9.	<i>Ageratum conyzoides</i>	Pokasungha	Asteraceae	Herb	Leaf	Leaf juice is applied to cure abscess, boils, itches, cuts and wounds.
10.	<i>Alangium lamarckii Thw. Enum.</i>	Ankula Ko- Dhala Ankola	Alangiaceae	Tree	Leaf, root, bark	Leaf poultice is applied on joints to get relief from rheumatism. Decoction of the bark is taken twice daily, to cure constipation. Decoction of the root is taken to expel worms from the intestine.

11.	<i>Albizia lebbeck</i> (L.) Benth.	Sirsa Ko- Sidjui	Mimosaceae	Tree	Root, bark, gum	Decoction of the bark is taken 2-3 times per a day to prevent bleeding from piles. Powdered gum is taken with water to prevent and cure night blindness.
12.	<i>Aloe vera</i>	Ghikuanari	Liliaceae	Herb	Leaf	Leaf pulp is used to promote menstrual flow, to kill worms from the body. The juice of leaves is applied on eczema, cuts, burns .
13.	<i>Alstonia scholaris</i> (L.) R.Br.	Chhatina	Apocynaceae	Tree	Leaves	Decoction of leaves kills lice on head. It is used as an antidote to snake bite.
14.	<i>Andrographis paniculata</i> (Burm.f.) Nees	Bhuinimba Ko- Kalmeg	Acantahceae	Herb	Leaf	Leaf juice is taken orally for the treatment of malaria, and to kill intestinal worms. Dry leaf powder is used as insecticide.
15.	<i>Annona squamosa</i> L.	Sitaphal Ko-Bederi	Annonaceae	Tree	Leaf	Leaf juice is applied on itches and boils to kill the worms and on wounds of cattle. Dried leaf ash is used as shampoo to kill the lies.
16.	<i>Anogeissus acuminata</i> (Roxb. ex. DC.) Guill.& Perr.	Phansi Ko- Parsi	Combretaceae	Tree	Leaf, bark	Leaf juice is applied as an antidote to scorpion bite. Poultice of the bark is applied on the cuts and wounds to check bleeding.
17.	<i>Anogeissus latifolia</i> (Roxb. ex. DC.)	Dhou Ko-Dhau	Combretaceae	Tree	Leaf, bark	Leaf juice is used as an antidote to scorpion bite. Poultice of bark is applied on wounds to prevent bleeding.
18.	<i>Aporosa octandra</i> (Bunch-Ham. Ex. D. Don) A.R.Vickery	Masania	Euphorbiaceae	Tree	Stem bark	Stem bark paste is applied to rheumatism, cuts, wounds ,itches and bone fractured area.
19.	<i>Argemone maxicana</i> L.	Agara Ko- Sundi	Papaveraceae	Herb	Root, leaf, latex, Seed oil	Fresh root is eaten, 2-3 times daily, to reduce fever and to cure skin diseases. Leaf juice along with salt is applied on ringworm and skin itching. Latex is applied on scabies, eczema, miliarca .
20.	<i>Artocarus heterophyllus</i>	Panasa	Moraceae	Tree	Laves, Latex. Root	The leaves are useful in fever, boils, wounds , skin diseases. The latex is useful in dysopia, ophthalmities and pharyngitis. , snakebite and glandular swellings.
21.	<i>Asparagus racemosus</i> Willd.	Satabari Ko- Penhepari	Liliaceae	Climber	Root	Extract of fresh root is boiled with milk and sugar candy and taken orally twice a day to cure dysentery. Paste of root is taken during pregnancies to prevent abortion. Decoction of root is given to lactating mother , 2-3 times a week to increase milk.

22.	<i>Azadirachta indica</i> A.Juss.	Nima Ko-Nimba	Meliaceae	Tree	Leaf, bark, seed oil	Decoction of leaf and bark is taken to cure skin diseases. Poultice of leaf and bark is applied on snake bite and scorpion stings. Leaf juice is taken in empty stomach to cure diabetes. Seed oil is applied on leprosy wounds and on piles to check bleeding.
23.	<i>Bacopa moneri</i> (L.) Pannel.	Brahmi	Scrophulariaceae	Herb	Leaf	Leaf juice is given in diarrhoea, dysentery, and cholera. Leaf paste is applied on wounds, cuts, ulcers, boil and venomous insects. Leaves are also used to prevent tumour, cancer, chicken pox and epilepsy.
24.	<i>Bauhinia purpurea</i> L.	Barada Ko-Simidi	Caesalpiniaceae	Tree	Bark	Decoction of bark is taken 2-3 times daily to cure diarrhoea.
25.	<i>Bauhinia variegata</i> Linn.		Fabaceae	Tree		Decoction is used 15 days to cure knots of tuberculosis.
26.	<i>Boerhavia diffusa</i> L.	Purini	Nyctaginaceae	Herb	Leaf, root	Plant paste with black pepper and applied on snake bite area. Root powder with equal amount of sugar candy is taken to cure cough.
27.	<i>Bombax ceiba</i> L.	Simili Ko-Bura	Bombacaceae	Tree	Root, flower , fruit, gum	Flower and fruit paste is applied on snake bite as an antidote. Powder of dried gum is taken with water in empty stomach to cure blood dysentery.
28.	<i>Breynia rhamnoides</i> (retz.) Muell.	Jhanjika Ko- Jhajangi	Euphorbiaceae	Shrub	Leaf, stem	Juice of stem is applied on eye to cure conjunctivitis. Paste of young leaves with sugar candy is taken to cure diarrhoea.
29.	<i>Bryophyllum</i> <i>pinnatum</i> (Lam.) Curtz.	Hemakeda r Ko- Amarpoi	Crassulaceae	Herb	Leaf	A paste of 2-3 leave with black pepper is taken with water to cure diarrhoea and dysentery.
30.	<i>Buchanania lanzan</i> Spr.	Charo	Anacardiaceae Order- Sapindales	Tree	Stem bark, root, fruit	The powder of stem bark is used to heal wounds. Roots are useful in the treatment of diarrhoea. Leaves are used in the treatment of skin diseases.
31.	<i>Casearia graveolens</i> Dalz.	Giridi Ko-Giridi	Flacourtaceae	Shrub	Fruit, bark	Powder of dried fruits is used to kill mice and rats. Powder of dried fruits is used to store food grains as it is a good repellent for insects.
32.	<i>Caesalpinia digyna</i> Rottl. in Ges.	Gila Ko- Retu	Caesalpiniaceae	Shrub	Leaf	Leaf juice is taken with water by the women to regulate menstrual disorders. Roasted leaves are also applied over bruises boils, wounds and insect bite.
33.	<i>Calotropis gigantea</i> R.Br.	Arakha Ko- Zelari	Asclepiadaceae	Shrubs	Leaf, root, bark, latex, flower s	Flowers fried in cow ghee is taken to reduce cold, asthma and cough. Paste of root and bark is applied on scorpion and snake bites as an antidote foe quick relief.
34.	<i>Capparis zeylanica</i>	Asadua	Capparaceae	Shrub	Leaf,	Powder of dried leaves is used

	L.	Ko-Asuda			Bark, fruit, root	as tooth powder to stop toothache. Decoction of bark is taken thrice daily to cure cough and asthma.
35.	<i>Careya arborea</i> Roxb.	Kumbhe	Lecythidaceae	Tree	Bark, flowers	Bark juice with raw cow milk is taken to cure dysentery and also applied on the fractured limbs. Flowers and fresh bark juice is taken with honey to cure cough.
36.	<i>Caryota urens</i> L.	Salapa Ko-Henka	Arecaceae	Tall shrub	Sap	Fresh sap of the plant is taken early morning in empty stomach to remove constipation.
37.	<i>Cassia fistula</i> L.	Sunari Ko-Bhanga	Caesalpiniaceae	Tree	Fruit, bark	Paste of fruit along with sugar is taken to cure dysentery and indigestion. Paste of bark is applied on the forehead to cure headache. Decoction of fruit is taken to reduce rheumatic pain.
38.	<i>Cereus pterogonus</i> Lem. Cart.Gen. Sp.	Shiju Ko-Bongadaru	Cactaceae	Shrub	Stem	Juice of the stem is applied on the blisters caused due to burns for cooling effects.
39.	<i>Chloroxylon swietiana</i>	Bheru Ko-Sangei sali	Rutaceae	Tree	Leaf, bark	Decoction of bark is taken 2-3 times daily to cure stomach pain and blood dysentery. Poultice of leaf is applied on joints to reduce rheumatic pain and on cuts and wounds.
40.	<i>Cissampelos pareira</i> L.	Akanabindi Ko-Subudhibarso	Menispermaceae	Climber	Root, leaf	Decoction of root is taken orally to reduce stomach pain, malaria and fever. Leaf juice is used in scorpion stings, leprosy, migraine and scabies.
41.	<i>Cissus quadrangularis</i> L.	Hadabhan ga	Vitaceae	Shrub(Climbing)	Stem	A paste of stem is plastered with castor oil in bone crack and bone fracture.
42.	<i>Cleistanthus collinus</i> (Roxb) Benth. Ex. Hook. f.	Karada Ko-Mardang	Euphorbiaceae	Tree	Leaves, bark	Paste of bark is applied on septic wounds. Decoction of fruits and leaves are taken to cure acute gastro-intestinal irritations.
43.	<i>Clerodendrum indicum</i> (L.) Kuntze.	Kharakhari	Verbenaceae	Shrub	Root	Root paste with 7 black pepper is taken to cure mumps, mouth ulcers and glossitis.
44.	<i>Costus speciosus</i> (Koenig.) Sm. Trans.Lin.	Gaigobra Ko-Gaigaruda	Zingiberaceae	Herb	Rhizome, root	Paste of rhizome along with curd is taken orally to cure dysentery.
45.	<i>Crateva adansoni</i> DC.Prod.	Baruna Ko-Kamilimar mu	Capparaceae	Tree	Leaf, bark	Leaves are chewed in tooth ache. Bark paste with cow urine is applied on breast for lactation after child birth.
46.	<i>Curculigo orchoides</i> Gaertn	Talamuli	Hypoxidaceae	Herb	Tuber	Tuber is made into paste and applied externally as an antidote to snake bite.
47.	<i>Curcuma aromatica</i> Salisb.	Palua	Zingiberaceae	Herb	Tuber	Rhizome is useful in anorexia, dyspepsia, dehydration, dysentery, diarrhoea, asthma, fever, urticaria and in general debility.

48.	<i>Curcuma domestica</i> Val.	Haladi	Zingiberaceae	Herb	Tuber	The decoction of rhizome is given in bronchitis, diarrhoea and intermittent fever. Rhizome is also used in gall stone.
49.	<i>Cuscuta reflexa</i> Roxb.	Nirmuli	Convolvulaceae	Climber	Stem, Whole plant	Plant is used in cuts, wounds, burns and various skin diseases. Stem decoction with honey is taken in every morning for 7 days to epilepsy.
50.	<i>Dalbergia latifolia</i> Roxb. Pl. Corom.	Sisso Ko-Masu	Fabaceae	Tree	Leaf, bark	Leaf juice is applied on leprosy wound to cure. Decoction of bark is taken to cure diarrhoea and to reduce obesity.
51.	<i>Datura metel</i> L.	Kala Dudura Ko- Dudura	Solanaceae	Under shrub	Leaf, root, flower , fruit	Decoction of leaf and root is used to cure influenza. Juice of flower is directly put on the ear to relieve earache. Poultice of fruit is applied on scalp to remove dandruff.
52.	<i>Dendrophthoe</i> <i>falcata</i> (L. f.) Etting.Akad.	Malang Ko- Madanga	Loranthaceae	Shrub	Stem, whole plant	Paste of the whole plant is applied externally twice a day for seven days to cure paralysis.
53.	<i>Diospyros</i> <i>chloroxylum</i> Roxb.	Kaseikoli Ko-Kosai koli	Ebenaceae	Tree	Fruits, twigs	Raw fruits are chewed to stop dysentery. Twigs are used as tooth sticks to prevent bad breath.
54.	<i>Diospyros</i> <i>malanoxylon</i> Roxb.	Kendu Ko-Duri	Ebenaceae	Tree	Leaf, bark	Decoction of the bark is given in diarrhoea and dysentery. Decoction of the leaves is taken orally to expel gases from the stomach.
55.	<i>Ehertia laevis</i> Roxb.	Masania Ko- Masania	Ehertiaceae	Tree	Leaf, root, bark	Decoction of the root is taken orally, once a day, to cure gynaecological problems. Decoction of the leaves is taken to cure cold and cough.
56.	<i>Erythrina variegata</i> L.	Paladhua Ko- Sembed	Fabaceae	Tree	Leaf, bark	Leaf juice mixed with rice flour is taken at bed time for 3 days to expel the worms. Decoction of bark is taken twice daily to cure blood dysentery.
57.	<i>Elephantopus scaber</i> L.	Mayurchul ia	Asteraceae	Herb	Root	Root paste along with salt is taken in empty stomach in the morning for 21 days to cure abdomen and stomach pain.
58.	<i>Embelica ribes</i> Burm. f.	Biduanga	Myrsinaceae	Climber	Seed	Fruit powder with honey is given in helminthiasis and jaundice. Decoction of seed powder is also useful in headache, migraine and dizziness.
59.	<i>Euphorbia hirta</i> L.	Chitakutei Ko-Dudhi	Euphorbiaceae	Herb	Leaf, root, whole plant	A piece of root dipped in turmeric paste is tied on left hand to get relief from intermittent fever. Leaf juice is given to the children to remove worms.
60.	<i>Ficus benghalensis</i> L.	Bara	Moraceae	Tree	Bark	Bark juice is given in empty stomach, twice a day for 3-4 weeks to cure fissure.

61.	Ficus racemosa	Dimiri	Moraceae	Tree	Root sap, stem bark	Root sap with sugar candy is taken twice a day in empty stomach to cure jaundice. Stem bark paste is taken with water to increase lactation.
62.	Flacourtia indica Merr.	Kanteikoli Ko- Meral	Flacourtiaceae	Shrub	Root, Fruit	Fruit is taken in jaundice and to cure enlarged spleen. Root past is taken orally with water in empty stomach for 10-15 days to cure chronic abdomen pain.
63.	Flacourtia cataphracta Roxb.	Baincha Ko- Baincha	Flacourtiaceae	Tree	Fruit, bark	Fruits are taken for a week to reduce bile related problems. Decoction of bark is taken to increase digestion.
64.	Gmelina arborea Roxb.	Gambhari Ko- Gumna	Verbenaceae	Tree	Leaf, fruit	Decoction of leaf juice is given 2-3 times daily for 3-4 weeks to cure urinogenital infections.
65.	Grewia tilifolia Vahl.	Dhamana Ko- Dhamana	Tiliaceae	Tree	Bark	Juice of the bark is taken orally , twice daily, to cure acute dysentery.
66.	Hemidesmus indicus R.Br.	Anantamu la Ko- Sugandhi	Asclepiadaceae	Herb	Root	Root paste with 2-3 black pepper is taken in 3 doses daily to cure all types of diarrhoea of children.
67.	Holarrhena antidysentrica Wall. ex A.Dc..	Keruan Ko-Kenua	Apocynaceae	Small tree	Leaf, seed, bark	Seed paste is given in water to cure stomachache and diarrhoea. Leaves are kept over the affected area to get relief from rheumatic pain.
68.	Hygrophila auriculata (Schum.)	Koilekha Ko- Kanikanta	Acanthaceae	Herb	Leaf, seed, root	Decoction of the root with honey is taken in empty stomach twice a day, for 15 days to get relief from body ache, arthritis and rheumatism. Leaf extraction is taken orally to get relief from arthritis.
69.	Ipoimea sepiaria Koenig ex. Roxb.	Musakani Ko- Musakani nai	Convolvulaceae	Herb	Leaf	Juice of the leaves is taken for stomach cooling.
70.	Lannea coromandelica (Houtt.) Merr.	Mohi Ko- Nanam	Anacardiaceae	Tree	Bark	Decoction of bark is used as a mouth in case of bleeding gum and toothache. Paste of bark is applied in ulcers to get relief.
71.	Lawsonia inermis L.	Manjuati	Lythraceae	Shrub,	Root, leaves, flower	Root powder with a cup of water is given for 5 days in jaundice and menstrual disorders. Leaf juice with candy is given in spermatorrhoea.
72.	Leucas aspera	Gayasa	Lamiaceae	Herb	Leaf	1-2 drops of leaf juice is poured in one of the nostrils to cure migraine and headache.
73.	Limonia acidissima L.	Kaitha	Rutaceae	Tree	Leaves, bark, fruit	Powder of dried bark is applied on burns for quick healing. Leaves boiled in water is used to cure knee and joint pain.
74.	Madhuca indica J.F.Gmel.	Mahula	Sapotaceae	Tree	Flower, bark	Decoction of bark with honey is taken daily for 4-5 days to cure dysentery and diarrhoea. Flowers fried with ghee is

						given to cure piles.
75.	<i>Mangifera indica</i> L.	Amba	Anacardiaceae	Tree	Leaf, fruit, bark	Paste of leaf or young fruit is taken orally with water to cure diarrhoea. Stem bark juice is taken with water to check dysentery. Young leaf juice with black pepper and unboiled cow milk is used to cure vomiting, gastric disorders, bile and acidity.
76.	<i>Mimosa pudica</i> L.	Lajakuli Ko-Lajuli	Mimosaceae	Herb	Leaf, root	Paste of root fried with ghee is applied in caries teeth to get relief from toothache. Leaf paste is applied on forehead to get relief from headache and migraine.
77.	<i>Michelia champaca</i> L.	Champa	Magnoliaceae	Tree	Leaf, stem bark	Cleaning of hair with leaf decoction helps in removing lies and dandruff. A decoction of the bark and leaves is given after childbirth; the bark is used as a febrifuge.
78.	<i>Nyctanthes arbor-tristis</i> L.	Gangasiuli	Oleaceae	Shrub	Leaf, root bark	Leaf juice is poured in nostrils twice a day to cure sinusitis, headache and nasal bleeding. Root bark decoction with black pepper is taken in empty stomach to check lumbago or lower backache.
79.	<i>Ocimum bacilicum</i> L.	Dahana Babui Tulasi	Lamiaceae	Herb	Leaf, seed	Seeds with water is taken during dysentery. Decoction of leaves is given in constipation.
80.	<i>Ocimum sanctum</i> L.	Tulsi	Lamiaceae	Herb	Leaf, root	Decoction of leaves reduces ear ache and fever. Root is used in malarial fever.
81.	<i>Oxalis corniculata</i> L.	Ambiliti Ko-Ambilisaga	Oxalidaceae	Herb	Leaf	Decoction of the leaves is taken to cure stomach pain.
82..	<i>Phoenix pusilla</i> Gaertn,	Banakhajuri	Arecaceae	Shrub	Leaf, rhizome	Rhizome juice is given in empty stomach with water to cure jaundice. Leaf juice kept is taken to cure intestinal worm.
83.	<i>Paederia foetida</i> L.	Prasaruni Ko-Gandhali	Rubiaceae	Shrub(Climbing)	Leaf	Leaf juice with black pepper is given to prevent indigestion.
84.	<i>Pavetta tomentosa</i> Roxb.	Pengu Ko-Kattapeng	Rubiaceae	Shrub	Leaf	Leaf boiled with water is fermented to get relief from pain due to blood clot.
85.	<i>Phyllanthus fraternus</i> Webster	Badiamla	Euphorbiaceae	Herb	Root, whole plant	Root powder with black pepper is taken with water to cure amoebic dysentery and diarrhoea of children.
86.	<i>Phyllanthus emblica</i> L.	Amla Ko- Aura	Euphorbiaceae	Tree	Fruit	Dried fruit mixed with rock salt is given to cure cough. Fruit juice is taken to cure liver problems.
87.	<i>Plumbago indica</i> L.	Lal Chitaparu Lalchita	Plumbaginaceae	Herb	Leaves, root	Root poultice with water is taken in empty stomach for abortion. In case of cuts wounds and bodyache, castor oil is first applied on the

						affected parts and then 3-4 leaves is applied to get relief.
88.	<i>Plumbago zeylanica</i> L.	Dhala Chitaparu Ko- Sitaparu	Plumbaginaceae	Herb	Root	Poultice of root is applied externally in leprosy and rheumatism. Milky juice of the plant is taken to reduce hysteria.
89.	<i>Pongamia pinnata</i> (L.) Pierre.	Karanja	Fabaceae Fabales-DC	Tree	Leaf, fruit, root	Juice of roots with coconut milk and lime water used for treatment of gonorrhoea. Roots are also used in vaginal and skin diseases, cleaning gums, teeth and ulcers.
90.	<i>Psidium guajava</i> L.	Piluli Ko-Mehu	Myrtaceae	Tree	Twig	Paste of tender twig with cold water is given to cure blood dysentery.
91.	<i>Rauwolfia serpentina</i> Benth. Ex. Kurz.	Patalagaru da Ko- Chhedaba y	Apocynaceae	Shrub	Leaves, root	Root paste with honey is taken in empty stomach for 21 days to cure mental disorder. Juice of leaves is applied on eye to cure cornea. Root is also used as an antidote to snake bite.
92.	<i>Ricinus communis</i> L.	Jada Ko- Kala	Euphorbiaceae	Shrub	Stem bark, oil,	Castor oil is used as a message for easy delivery. Latex is applied on skin to cure scabies.
93.	<i>Sapindus emarginata</i> Vahl.	Ritha Ko- Maktaman ji	Sapindaceae	Tree	Leaf, fruit, seed	Fruit juice is used as nasal drop to cure headache and migraine. Seed powder is used as Snuff in epileptic fit.
94.	<i>Schleichera oleosa</i> (our.) <i>Oken</i>	Kusuma	Sapindaceae	Tree	Leaves, stem, bark, oil	Bark and stem extracts are used for wounds and to slow down cancer cell growth. Leaves stimulate hair growth.
95.	<i>Semacarpus anacardium</i> L. f.	Kalabhalla Ko-Bhalla	Anacardiaceae	Tree	Fruit, seed oil	Seed oil is applied on cuts and wounds, leprosy, and rheumatism for healing. Fruits boiled with rice is taken once daily for 3-4 weeks to cure arthritis.
96.	<i>Sensevieria roxburghiana</i> Shultz. & Shultz	Murga	Agavaceae	Herb	Stem	Juice of tender shoot is taken orally to cure throat infection and in earache.
97.	<i>Shorea robusta</i> Gaertn f.	Sala Ko- Sarjom	Dipterocarpaceae	Tree	Oleoresin, bark	Oleoresin (Jhuna) with water and black pepper is given in diarrhoea. Bark paste is used as an antidote to insect, dog and jackal bites.
98.	<i>Sida acuta</i> Burm. f.	Bajramuli Ko- Bariar	Malvaceae	Herb	Leaf, flower root	Juice of the leaf is taken to check diarrhoea. Paste of the root is applied for bone fracture.
99.	<i>Solanum virginianum</i> pers.	Bhejibaiga na Ko- Ankuranti	Solanaceae	Herb	Root, fruit, leaf, flower	Leaf juice with black pepper and honey is taken in empty stomach for a week to cure cough and tonsillitis. Flowers fried in ghee is chewed everyday to cure asthma.
100.	<i>Streblus asper</i> Lour.	Sahada Ko-sara	Moraceae	Tree	Bark	Decoction of the bark is taken to cure fever. Milky juice is applied on chapped hands and sore heals.

101.	<i>Solanum xanthocarpum</i> Schrad & Wend.	Bheji Baigana	Solanaceae	Herb	Root, seeds, leaves	The decoction of the root is useful to expel worms from the intestine, bronchitis, asthma, fever and lumbago. Decoction of seeds is given in asthma, cough, boils and scabies.
102.	<i>Strychnos nuxvomica</i> L.	Kochila Ko-Kara	Loganiaceae	Tree	Seed, stem bark	Bark of root is used for cholera and stem bark is used for cure dysentery and dyspepsia. Extraction of leaves cure skin diseases.
103.	<i>Swertia angustifolia</i> Buch. Ham.ex. D. Don	Chiretia Ko- Bongamar icha	Gentianaceae	Herb	Leaves, stem, whole plant	Decoction of the plant is given to expel worms from intestine. Decoction of leaf and stem is given to cure malaria fever.
104.	<i>Syzygium cumini</i> (L.) Skeels.	Jamu	Myrtaceae	Tree		
105.	<i>Tephrosia villosa</i> Pers.	Kulthia Ko- Piderkalat a	Fabaceae	Shrub	Root	Root paste with raw milk is taken in empty stomach to cure cold fever and typhoid.
106.	<i>Tamarindus indica</i> L.	Tentuli Ko- Kaiyan	Caesalpiniaceae	Tree	Leaf, fruit, flower	Dried flowers with sugar is taken to check blood dysentery. Poultice of leaf is applied on boils for quick burst.
107.	<i>Terminalia arjuna</i> (DC.) Wt.&Arn	Arjuna Ko- Yarramad di	Combretaceae	Tree	Leaves, bark	Decoction of leaves cures diabetes. Bark paste is applied to cure bone fracture.
108.	<i>Terminalia chebula</i> Retz.	Harida Ko-Rola	Combretaceae	Tree	Leaf, bark, fruit	The decoction of bark cures fractures, ulcers, asthma, cough and jaundice. The juice of fresh leaves cures ear pain. . Decoction of fruit is used to cure mouth ulcer.
109.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bahada Ko- Lupung	Combretaceae	Tree	Seed, Bark	Extraction of bark relieves sprains. Seed extract cures asthma.
110.	<i>Tephrosia purpurea</i> (L.) Pears.	Kolathia ponhra	Fabaceae	Shrub	Root	Decoction of roots control stomach ache.
111.	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomas.	Guluchi Ko- Gurusilai	Menispermaceae	Climber	Leaf, stem, root	Extraction of leaves improve fertility and decoction of leaves cures malaria fever. Stem decoction is used to check stomach pain.
112.	<i>Trichodesma indicum</i> R.Br.	Raktachui n	Boraginaceae		Leaf, root	Leaf paste is applied on the cuts and wounds for quick healing. Root paste is used for body ache and anasarca.
113.	<i>Vanda roxburghii</i> R.Br	Rasna Ko- gachcho janaya	Orchidaceae	Herb	Stem, flower , seeds	Crushed seeds are eaten to expel worms. Decoction of plant is useful in gout, and rheumatic arthritis. Leaf paste is given in psoriasis.
114.	<i>Vinca rosea</i>	Sadabahar	Apocynaceae	Herb	Leaf	It is used in case of nosebleed, bleeding gums, mouth ulcers and sore throats. The herb is also effective in the treatment of diabetes and different types of cancers.
115.	<i>Vitex negundo</i> L.	Begunia Ko-	Verbenaceae	Shrub	Leaf, stem	Decoction of leaves is taken once for 2 weeks, to cure

		Nirgundi				diabetes. Stem sap with sesame oil is poured into ear to cure otalgia and suppurative otitis media.
116.	<i>Withania somnifera</i> Dunal.	Aswagandha	Solanaceae	Shrub	Root	Burnt root powder with butter is taken everyday early morning to cure asthma.
117.	<i>Xylia xylocarpa</i> (Roxb.) Taub.	Kongra Ko-Tingna	Mimosaceae	Tree	Bark, seed oil	Decoction of the bark is taken twice in a week to expel worm from the intestine. Seed oil is applied in rheumatic pain to get relief.
118.	<i>Zingiber officinale</i> Rosc.	Ada	Zingiberaceae	Herb	Rhizome	Juice of rhizome mixed with mustard oil is poured into ear to cure suppurative otitis media.
119.	<i>Zingiber purpureum</i> Rosc. Trans. Linn.	Ramakedar	Zingiberaceae	Herb	Rhizome	Paste of rhizome is taken with water in snake bite. Paste is also applied locally on scorpion and snake bite.
120.	<i>Zingiber zerumbet</i> Burm. f.	Gada	Zingiberaceae	Herb	Rhizome	Rhizome is useful in cough, cold, asthma, bronchitis, worms, leprosy, and other skin diseases.

References

- [1] Harshberger, J.W., 1896. The Purpose of Ethnobotany. Bot. Gaz., 21: 146-158.
- [2] Akerele O. 1992. WHO guideline for assessment of herbal medicines. Fitoterapia 63, 99-118.
- [3] Subramoniam, A. and Pushpangadan, P. 1995. Ethnopharmacological validation of traditional medicines. In: Glimpses of Indian Ethno-pharmacology by Pushpangadan P, Nyman U, George V, (ed.). TBGRI, Thiruvananthapuram, pp. 351-360.
- [4] Krishna Kumar A. and Katakam A. 2002. Credit for conservation. Frontline 19: 9-22.
- [5] Sandhya, B., Thomas, S., Isabel, W. and Shenbagarathai, R. 2006. Ethnomedicinal plants used by the Valaiyan community of Piranmalai Hills (Reserved Forest), Tamil Nadu, India. – A pilot study. African journal of Traditional, Complementary and Alternative Medicines, 3(1): 101-114.
- [6] Jain, S.K., 1987. A Manual of Ethnobotany. Scientific Publishers, Jodhpur, India. ISBN: 8185046603.
- [7] Jain, S.K., 1991. Dictionary of Indian Folk Medicine and Ethnobotany. Deep Publications, New-Delhi. ISBN: 8185622000.
- [8] Pal, D.C. and Srivastava, J.N. (1979): Preliminary Notes on the Ethnobotany of Singhbhum District, Bull. Bot. Surv. India. 18: 247-280. Plants for the control CEE-NFS (Centre for Environment Education News and Feature Service, Ahmedabad) News IV 37. 169 pp1.
- [9] Sahaia, V.B. (1982): wildlife in India, Nataj, Dehadun, India.
- [10] Jain, S.K. 1991. Some magico-religious beliefs about plants among Adibasis of Orissa. Adibasi 12: 38-44.
- [11] Zaidi MA, Crow SA 2005. Biologically active traditional medicinal herbs from Balochistan, Pakistan. J. Ethnopharmacol, 96: 331-334
- [12] Tiawari et al. 1999. References of Orissa Enterprising Publisher, an India State of Eastern Region, Bhubaneswar Orissa, India. pp-8.
- [13] Tiawari et al. 1999. References of Orissa Enterprising publisher, an India State of Eastern Region, Bhubaneswar Orissa, India. pp-8
- [14] Simmons, i.g., (1977) : Ecology of Natural Resources Edward Arnold, London.
- [15] Haines, H.H., (1978) : The Botany of Bihar and Orissa.
- [16] Chakabaty, T. (1980) : Science Spectrum Medicines from Plants, Science Reporter 17(6) 397:399.