



Medicinal Plant Knowledge and Ethnomedicinal uses of Tribal People of Niyamagiri Hill, Kalahandi District, Odisha, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: The current study was prepared to collect the ethnomedicinal data from tribal peoples of Niyamagiri hill region of Kalahandi district, Odisha, India. The Tribals of this region have been using medicinal plants to treat various kinds of diseases since time immemorial.

Methods: The aim and objective were to record the information on medicinal uses of plants by leading healers by taking interviews and recording the comprehensive knowledge about the medicinal properties of different plants with the snowball technique and sampling method. Plants were recognized by the local practitioner also known as Kabi Raja or Vaidya, in the forest floor and were classified botanically.

Results: The present study recorded the use of different parts of 150 plant species belonging to 131 genera of 78, unlike flowering plant families, against various diseases, with special reference to diarrhoea, dysentery, cold, cough, piles and fever. The practitioners use these plants to treat kinds of ailments like asthma, skin diseases, piles, constipation, diabetes, fever, cough, toothache, wound healing, headache, infertility in women, mouth ulcer, stomach disorder, indigestion, insect bites, ring worms, thirst, eczema, dysentery and diarrhoea. All these medicinal plants are used as healing sources as modern medical facilities are far away from them. All these plants have a different climatic zone that helps them grow, specifically in the hilly forest of the district. The current

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record of ethnomedicinal data specified that the backward and tribal local people commonly used plants for the treatment of diarrhoea and dysentery are *A. salvifolium*, *A. spinosus*, *A. paeoniifolius*, *A. paniculata*, *B. acutangula*, *B. purpuria*, *B. malabaricum*, *B. pinnatum*, *B. lanzan*, *C. arborea*, *C. fistula*. For cold and cough the plants are *A. indica*, *A. sativum*, *A. galanagal*, *A. mexicana*, *A. integrifolia*, *B. acutangula*, *B. campestris*, *B. pinnatum*.

Conclusion: The present study consists of 150 plants species were collected from Niyamagiri hill region of Kalahandi district, Odisha. All plants are rich in different medicinal properties like healing, therapeutic properties. It is found that still a large number of tribal people are using their traditional knowledge and culture and have adopted herbal therapy for most of the diseases because of strong belief on the local practitioners. They use medicinal plants so intelligently with knowing their medicinal properties, their preparation, their storage and how to administer different dose with great efficiency against kinds of ailment. Due to modernization, population growth and cutting down of trees the Niyamagiri hill is losing its rich diversity of medicinal plants frequently, which is a matter of concern. This concern need to be resolved with proper management and conservation of medicinal plants of Niyamagiri hill region of kalahandi district.

Keywords: *Dongaria Kandhs and Kutia Kondhs; plant identification; therapeutic plants; traditional medicine of Niyamagiri hill.*

1. INTRODUCTION

From the beginning, human beings have a relationship among life, disease and plants. From the evolution of society, people started studying illnesses and cure [1]. After they faced diseases, there is no imitate that people of earliest set interest on the synthetic remedy for their ailments due to their civilization but they tested to make could easily attain, which they could find from their surroundings. [2]. An ancient perception of the use of disease indicates that traditional medicinal practices have been associated with humanity from time immemorial [3]. These traditional medicine implementations involve the therapeutic methods using predictable medicines that are used orally through generations. In view of indigenous segregation over several years, these applies are unique to different groups and communities, which have continued to date. Information of traditional practices is now partially utilized by a few closed communities, especially the aboriginal tribals/marginalized population for whom it becomes a part of their cultural practices [4].

These mystical natural surroundings have hidden resources of biodiversity and use of flowering plants to manage, most of the traditional medicines which are used are getting from medicinal plants, minerals and organic matters for various treatment purposes to cure different diseases. About 21,000 plants are listed by world Health Organization (WHO) which are used for medicinal purposes around the world [5]. In India 2500 species are found, out of which

150 species are used for commercially purposes [5]. Medicinal herbs are found abundantly in India and the majority of plants were suitable for food, where as other plants either poisonous or medicinally useful [6].

About 80% of the world population are using medicinal plants as the main available drugs [7], the utilization of therapeutic plants is exceptionally boundless in numerous species. Since it is generally viewed as that herbal medications are less expensive and more secure in contrast to man-made medications and may be used without or at least side effects. Plants utilized for crude medication restrain an ample scope of substances that can be utilized to regard endless just as irresistible infections. Clinical microbiologists have an incredible enthusiasm for medicinal plants screening for new therapeutics [8]. The real treatments begin in plants as metabolites. The plant concentrates of antimicrobial exercises may occupy the scope of various parts, including aldehyde and phenolic mixes [9].

Kalahandi locally called Kalahani district is located in Odisha of India. From the ancient time of civilization, this region had a glorious history. The vulnerable tribal groups in Kalahandi district are The Kutia Kondhs and Dongaria kandha. They live in Lanjigarh, Madanpur Rampur, Thuamul Rampur, and Bhawanipatna blocks. About 90% residents are Kondhs are inhabited in Lanjigarh, where over, every sixth household experiences severe food insecurity and hunger. In this context attempt has been made to provide the manageability process of chronic

poverty and hunger in Niyamagiri hill range of kutia kandha and Dongoria kandha livelihood.

There is a growing literature on diversity of rural livelihoods in low income developing countries, particularly in difficult situation [10]. The major determinants of diversification are seasonality, risk, labor markets, credit markets, asset strategies and coping strategies. People residing in drought-prone areas acquire, over time, an ability to deal with food shortages and loss of income, and the complex methods for tackling hardship and 'preserving assets which are needed to sustain a living in the future' usually fall under the broad category of 'coping strategies. The nature of such strategies employed varies depending on types of livelihood, land use patterns, the system of trade, marketing, credit, etc. and local populations 'learn through experience of drought and famine which specific strategies are best in their situation'. Literature on coping mechanisms adopted by India's poor households are limited in nature. Few studies highlights the change in the food consumption pattern, diversification of income generation in to non-farm activities, distress sale or mortgage of land and household assets, dependence on common property resources for raising livestock, seasonal migration to urban areas are the most favoured mechanisms in semi-arid rural India [11-13]. Other coping strategies to combat food insecurity involve the consumption of less preferred food, limiting the portion size of food, borrowing food or money, 'maternal buffering'

(practice of a mother deliberately eating less to ensure children have enough to eat) and the skipping of meals for whole days. The use of tobacco and the consumption of locally-brewed liquor (from mahua flower and date palm juice) also serve as important coping strategies against hunger [13].

2. MATERIALS AND METHODS

2.1 Study Area

The current research is a wide-ranging survey of various tribal villages in the Niyamgiri hill region and its allied villages of Kalahandi district 2018-19. The Niyamgiri hill is between 19° 26' to 19° 43' N latitude and 83° 18' to 83° 28' E longitude. The hills are situated within the districts of Rayagada and Kalahandi, and NE-SW direction is part of the Eastern Ghats of India. Niyamgiri is covered with dense forests like evergreen, semi-evergreen and deciduous forest. In Niyamgiri, eight different vegetation types are seen, according to local microclimate, plant density, species association and effect of biotic and edaphic factors. Dongria Kandhas are the most dominant tribes, and their language is Odia but kuvi. Every chief leads their tribal groups. Approximately 8,000 population of area present according to 2013 census. These tribal communities are initially nomadic, semi-nomadic communities, but presently living in tribal villages, and each consists of 12-25 families present hilly regions of Kalahandi District, Odisha.



Image 1. Index map of Kalahandi district, Odisha, India

2.2 Data Collection

Many discussions were done, and information was gathered from several visits to the villages, randomly from traditional healers, headmen, priests, housewives and patients. Based on the interviews in different regions of different tribal areas, plants from the Niyamgiri hill region were selected. All the information given by the local practitioner on medicinal plants were recorded. Based on that, all the plant species were chosen botanically and authentication was done through valid references [14]. Before the beginning of the fieldwork, a literature survey was provided regarding location and tribals living in the study area.. [15,16] Photos of plants and voucher specimens (herbaria) were conserved at P.G. Department of Botany, Berhampur University, Berhampur. By using the snowball technique and sampling in survey of 21 villages in the districts was done with the interrogator and personal interview [17]. Plant specimens were botanically identified and authenticated with help of valid reference [17]. Descriptive statistics were used to analyze the collected ethnomedicinal data.

3. RESULTS

Alphabetical arrangement of Botanical names of listed plants were done with, family and vernaculars names in Table 1. The information

on the plant parts are used briefly as medicines against ailment(s). The present record of ethno medicinal data are for 150 plant species belongs to 131 genera of 78 families. These plants are used against different diseases like menstrual problem, gonorrhea, jaundice, fever, ringworm, scabies, cough cold, asthma, eczema, piles, earache, infection, gastric stress, stomachache, diabetes, white discharge, dysentery, urinary infections, amenorrhea, improve digestion, improve sperm quality, rheumatism, improve baldness, gum diseases, piles, headache, intestinal worms, toothache. insect bites, itches, odema, chickenpox, nervousness, troubles in sleeping, pregnancy, increasing sperm count, piles and blood mixed diarrhea, inflammation of genital parts, body pain ,check bed-wetting of children, infected nail, yellow fever, cholesterol level, rheumatism and dropsy, joint point, leucoderma, urine blockage, nervous debility, loss of memory, migraines, vomiting for abortion, snake bite, hysteria, skin pigmentation, hernia and hydrocele, scorpion bite wound, kidney stone, metrorrhagia, stranguary, antipyretic, spleen disease, chickenpox, vermifuge, biliousness, anorexia, improve complexion. Herbal medicines are prepared by tribal peoples use single plants parts or many plant parts combination for better activity. Generally medicines are prepared from fresh plants, but in the absences of these plants, sun dried plants parts are used.

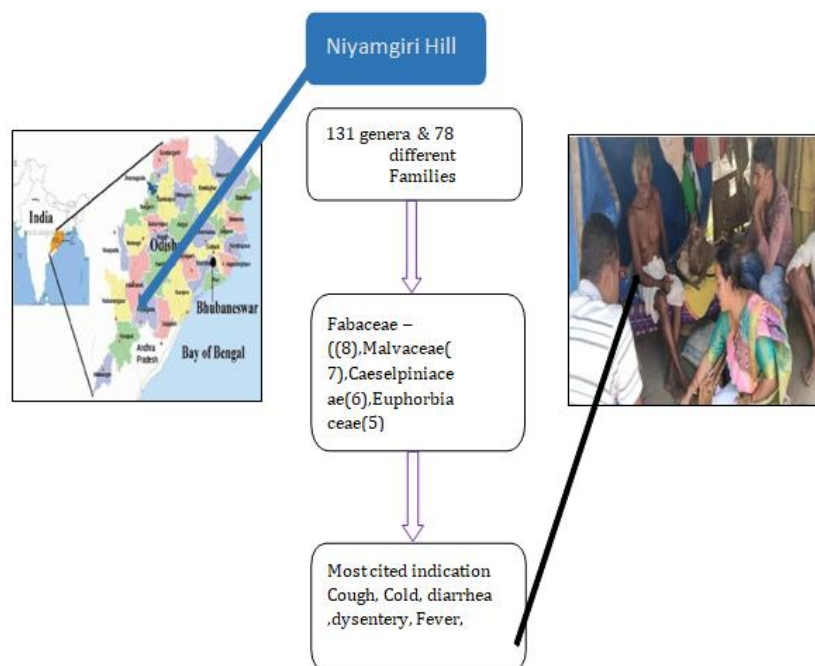


Fig. 1. Ethnobotanical study of Niyamgiri Hill region, Kalahandi

Table 1. Ethnomedicinal information of plants of Niyamagiri hill

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
1.	<i>Abroma augusta</i> (L.) L.F.	Malvaceae	Devil's cotton	Olatakamala	Bark ,leaves	Decoction of 5 gm and 1 gm of bark powder, black pepper is used respectively by adding water and is used 7 days to get rid from menstrual disorder. ½ tsp of leaf powder is taken once per a day to cure gonorrhoea.
2.	<i>Abrus precatorius</i> Linn.	Fabaceae	Rosary pea	Kaincha	Leaves, Root	Prepare a leaf paste and is eaten to cure cuts and swellings. Root pounded with water is sprinkled on head and unripe seed juice is rubbed on scalp to get recovery from baldness.
3.	<i>Abutilon indicum</i> Linn.	Malvaceae	Country mallow	Pedipedika	Leaves	Paste of one leaf along seven numbers of <i>Piper longum</i> and is used to prevent jaundice, If needed second dose is given after 72 hrs. Prepare infusion of the leaves, drink it two times per day to prevent fever.
4.	<i>Acacia nilotica</i> Linn.	Mimosaceae	Gum arabic	Bamur babul	Leaves	Tender leaves paste is applied to heal wounds. Prepare a Decoction of 1 table spoon of tender leaves with half glass of water and is used to gargle to prevent gum diseases.
5.	<i>Acalypha indica</i> L.	Euphorbiaceae	Indian acalypha	Indramaris	Leaves	Petiole of leaves is immersed in castor oil and injected in anus of a kid. Keep it for 3 min to cure constipation. Leaf juice is used against cough and cold of children.
6.	<i>Achyranthes aspera</i>	Amaranthaceae	Chaff flower	Apamarga	Whole plant	Whole plant powder is used to cure from gums and teeth problems. Prepare a Powder of 1 to 2 tsp of leaves, pepper with jiggery taking equal proportion and is eaten to cure fever.
7.	<i>Aerva lanata</i> Juss-ex-schultz	Amaranthaceae	Mountain knotgrass	Kukrabocha	Whole plant	Whole plant paste is used vocally twice a day to treat spermatorrhoea. Prepare 60 ml of whole plant decoction and use twice a day to get relief from urinary tract infection.
8.	<i>Alangium salvifolium</i>	Alangiaceae	Sage-leaved	Ankle	Seed ,bark	Small capsules are prepared from paste of equal

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
	(L.F.) Wang		alangium			amount of seed and bark and 1 capsule is given to cure constipation. 400 mg of root bark powder is mixed in a glass of Rice water and stirring properly and given daily to treat diarrhea.
9.	<i>Allium cepa</i> L.	Liliaceae	onion	Piaja	Bulb	Onion bulb is used for reducing blood sugars. Consumption of raw onions can improve useful in controlling Diabetes.
10.	<i>Allium sativum</i> L.	Amaryllidaceae	Garlic	Rasuna	Bulb (cloves)	Raw bulbets are chewed to suppress acidity and also to expel intestinal worm. Garlic cloves is crushed in a cup of boil water and is given to gargle which prevent cough.
11.	<i>Aloe vera</i> (L.) Burm.f.	Asphodelaceae	Aloevera	Ghee kuanri	Leaves	Leaf paste is applied for inflammatory swellings. 4 tsp of leaf juice is given daily for menstrual diseases.
12.	<i>Alpinia galangal</i> (L.) Wild	Zingiberaceae	Siamese ginger	Malayabacha	Rhizome	½ tsp of rhizome powder is added in 200 ml of water and kept for 5 hours. Then add 1 tsp of honey and is used two times per day to prevent asthma. 3 gm of rhizome powder along with sugarcandy is given at night with hot milk to prevent cough.
13.	<i>Alternanthera sessilis</i> (L.) R.Br.ex DC.	Amaranthaceae	Sessile joyweed	Madaranga	Whole plant, Flower	Decoction of whole plant is prepared and 2 tsp is used once per day in empty stomach to treat piles. Decoction of flowers with water and is used once per day to treat weak eye sight.
14.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Prickly amaranth	Kantabhaji	Seed, Root	Seeds of plant <i>Amaranthus spinosus</i> and leaves of Datura plants are heated in til oil and is used to prevent eczema. The Root juice is taken to treat dysentery and fevers.
15.	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Araceae	Elephant foot yam	Dhai	Tuber	A Powder of tubers is used to prevent digestive problems and Dysentery.
16.	<i>Andrographis paniculata</i> (Burm.f.) wall ex Nees	Acanthaceae	King of bitter	Bhuineema	Leaves	5 gm leaf paste is used orally with water two times daily to prevent dysentery and diarrhoea. The juice of the leaves is used orally to prevent constipation.
17.	<i>Annona squamosa</i>	Annonaceae	Sugar apple	Sitaphala	Leaves, Root	The root bark is given to chew for five minutes twice a

Sl. No.	Scientific name LINN.	Family	General name	Local name	Parts used	Mode of preparation
						day to cure toothache. Along with 500ml of water the leaves are boil until the water becomes half and is applied the thick decoction on the affected area to cure rheumatism.
18.	<i>Argemone mexicana L.</i>	Papaveraceae	Mexican poppy	Dragugach	Leaves	The juice of the leaf is mixed with salt and water (1:1) and applied externally to cure ringworm, scabies. Leaf decoction is used against cough.
19.	<i>Artocarpous integrifolia L.</i>	Moraceae	Jackfruit	Panas	Leaves ,fruit	Inhale the dry leaves smoke to cure cough. The pulp of fruit is used externally to prevent insect bites.
20.	<i>Aspidopterys tomentosa Roxb.</i>	Malpighiaceae	Yellow bauhinia	Alti laha	Root ,Whole plant	Boil the Roots in til oil and use externally to prevent eczema. Decoction of Whole plant is used to cure skin disease.
21.	<i>Asteracantha longifolia Nees.</i>	Acanthaceae	Hygrophila	Kikiri	Leaves, fruits	Fresh leaf juice is used to prevent jaundice. Ash of fruit along with castor oil is used locally on cuts for quick healing.
22.	<i>Averrhoa carambola L.</i>	Oxalidaceae	Star fruit	Karamanga	Flowers, leaves	Decoction is made with 1 to 2 flowers in half glass of water and is used two times per day to prevent malaria. The paste of 5 to 6 leaves is used locally, three times a day to prevent chickenpox.
23.	<i>Bacopa monnieri (L.)</i>	Plantaginaceae	Water hyssop	Bramhi	Leaves	Taking leaf extract is given for 5 months to prevents from epilepsy. Boiled mixture of leaf juice along ghee and is given to Drink 5 ml twice a day to cure fever.
24.	<i>Barleria prionitis L.</i>	Acanthaceae	Porcupine flower	Kantamalati	Leaves ,bark	Bark juice mixed with milk and is given to cure swelling. Leaf decoction is given to cure fever.
25.	<i>Barringtonia acutangula (L.) Gaertn</i>	Lecythidaceae	Indian putat	Hijjala	Leaves ,seed	12-15 ml juice of leaves along honey and is used to treat dysentery. Rub the seeds on stone and is used externally to cure chest colds.
26.	<i>Bauhinia purpuria linn.</i>	Caesalpinaceae	Orchid tree	Kanchana	Bark	Fresh bark paste is applied on anus and hold it tightly for few minutes for three days to cure piles. 5 ml of bark Decoction is used two times a day to

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
27.	<i>Bauhinia variegata</i> L.	Caesalpiniaceae	Butterfly tree	Kuler	Leaves	treat diarrhoea. Chew 3 to 4 fresh leaves before taking food to prevent stomach disorder. Root Decoction is used to cure snake poison or bites.
28.	<i>Biophytum sesnsitivum</i> (Linn) D.C.	Oxalidaceae	Little tree plant	Lajkuli	Whole plant	Boil Whole plant in a bucket of water and is used for bathing children suffering from fever.
29.	<i>Boerhavia diffusa</i> L. nom. cons.	Nyctaginaceae	Spreading hogweed	Punarnava	Root	Poultice cool root is applied on the affected part to prevent skin diseases. Root paste is used externally to prevent swelling.
30.	<i>Bombax malabaricum</i> L. (DC)	Bombaceae	Cotton tree	Semel	Root ,stem bark	Root paste and sugar is mixed and is used to cure leucorrhoea. Juice of stem bark is used against diarrhea.
31.	<i>Brassica campestris</i> Linn.	Brassicaceae	Mustard	Sorisa	Seed	Boiled Oil with <i>Allium sativum</i> and black cumin seed is rubbed over joints, feet, palm and neck to get relief from pain and cold.
32.	<i>Bryonia laciniosa</i> Linn.	Cucurbitaceae	Bryony	Shivalingi	Seed	The seed powder is used for increasing sperm count. After menstruation, 6-9 seeds are given to the woman for 5 days for increasing chances of conception, promoting fertility in women.
33.	<i>Bryophyllum pinnatum</i> (Lam.) Kurz	Crassulaceae	Cathedral Bells	Amarpoi	Leaves	5-10 ml of leaf juice is added to honey to prevent asthma and cough. Juice of the leaf is given in a dose of 10-15 ml to control bleeding in cases of piles and blood mixed diarrhea.
34.	<i>Bucchanania lanzan</i> Spreng.	Anacardiaceae	Charoli nut	Char	Stem bark	5 ml stem bark juice is used against diarrhoea
35.	<i>Butea monosperama</i> (lam) Kuntz	Fabaceae	Flame of forest	Phalsa	Flower	Soak flower for 5 -6 hours and filtered water is used against of genital part inflammation. Terminal bud paste with 3 seeds of black pepper added in water to prevent skin diseases.
36.	<i>Byttneria herbacea</i> Roxb.	Sterculiaceae	Common hog weed	Samarkhai	Root	Root paste is used against body pain
37.	<i>Caesalpinia bonduc</i> L.	Caesalpiniaceae	Yellow nicker	Gil	Seed	Prepare a paste of Endosperm and seeds of <i>Piper nigrum</i> along with honey to cure fever.
38.	<i>Capparis zeylancia</i>	Capparidaceae	Ceylon caper	Asadhua	Root ,Leaves	Root powder is applied over wounds.

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
	<i>Linn.</i>					Paste of leaves is given with water for 7 days to prevent urination in bed.
39.	<i>Capsicum annum L.</i>	Solanaceae	Sweet paper	Lanka maricha	Fruit	Decoction of Fine pieces capsicum Boil in half litre of water along with lemon and salt and this soup is given once a day to cure yellow fever.
40.	<i>Careya arborea Roxb.</i>	Lecythidaceae	Wild guava	Kumbhi	Fruit ,stem bark	Decoction of young fruits is taken thrice daily for a month to cure rheumatism. A paste is prepared from Stem bark of <i>Careya arborea</i> and <i>Holarrhena antidysenterica</i> with water. Then filter it and it is used orally to prevent dysentery.
41.	<i>Cascabela thevetia (L.) Lippold</i>	Apocynaceae	Yellow oleander	Koniyar	Seed ,leaves	Mature seed paste is used to prevent rheumatism . Paste of leaves is added with castor oil and after little warming, apply three times for 2-3 days is used against pain alleviator.
42.	<i>Cassia fistula Linn.</i>	Casalpiniaceae	Golden shower	Sunari	Bark	Paste of Bark is applied externally for healing. Raw juice of fresh bark is used to treat dysentery.
43.	<i>Cassia tora Linn.</i>	Caesalpiniaceae	Sickle senna	Chakunda	Seed	Seed paste along with resin of sal, fermented rice water or curd is applied over infected skin disease.
44.	<i>Celastrus paniculatus Willd</i>	Celastraceae	Black oil tree	Pengu	Seed	Crush the seed by stone and is used to prevent ring worms. Extracted seed oil is massage on body to cure body pain and joint point.
45.	<i>Chlorophytum arundinaceum Baker</i>	Liliaceae	Indian spider plant	Bharat batuli	Root	Root decoction with turmeric is used in rheumatism.
46.	<i>Chloroxylon sweitenia DC</i>	Rutaceae	East Indian satinwood	Bherun	Leaves	Paste of the leaves is massaged on skin to prevent leucoderma.
47.	<i>Cipadessa baccifera (Rath) Mig.</i>	Meliaceae	Ranabili	Pitmari	Leaves	Tie the boiled leaves in a cloth and kept on forehead to treat headache.
48.	<i>Clerodandrum serratum (L.)</i>	Lamiaceae	Blue flower glory tree	Bharangi	Root	Paste of roots and leaves used in infected areas to prevent skin diseases. Paste of root is massaged on forehead relieves headache.
49.	<i>Coccinia grandis L.</i>	Cucurbitaceae	Ivy gourd	Kunduri	Root	The root juice is given three times a day to cure diabetes. Boil 2 tsp of root powder along with 150 ml of water is taken three times per day to prevent urine

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
50.	<i>Cocus nucifera</i> Linn	Arecaceae	Coconut palm	Nadia	Seed	blockage. Endocarp is burnt and covered with a metal pot while flaming. After few minutes it is opened . A thin layer of black , oily substances is smeared on the inner wall of the pot.This oily substance is collected and applied over ring worms and scabies.
51.	<i>Colocasia esculenta</i> (L.)	Araceae	Taro	Saru	Leaves	Leaf Juice is used to prevent fever. Leaves decoction is given to cure regular menstruation.
52.	<i>Convolvulus pluricaulis</i> <i>Choisy</i>	Convolvulaceae	English speed wheel	Sankhapuspi	Whole plant	The decoction of whole plant along with cumin and milk is used to cure fever and loss of memory. The decoction of whole plant is used to clean the piles and then paste of whole plant applied over it to cure piles.
53.	<i>Coriandrum sativum</i> L.	Apiaceae	Coriander	Dhania	Leaves, root	Juice of leaves (1/4 th cup) is used every one hours to cure vomiting. 10 gm of coriander seeds is dissolved in a glass of water overnight and taken it an empty stomach at morning time, for 3 weeks to prevent leucorrhoea.
54.	<i>Crataeva nurvala</i> Buch-Ham.	Capparaceae	Three leaved caper	Baruna	Leaves, Bark	The leaves decoction is used to treat wound healing, reduce stomachache . The decoction of bark is used to treat urinary Tract infections.
55.	<i>Curcuma amada</i> Roxb.	Zingiberaceae	Mango ginger	Amba ada	Rhizome	Prepare a paste of rhizome and 200 gm bark of <i>Moringa oleifera</i> is used to cure arthritis. The paste of rhizome is applied to reduce skin diseases.
56.	<i>Curcuma caesia</i> Roxb.	Zingiberaceae	Black turmeric	Kalahaldi, krusnakedar	Rhizome	Fresh rhizome decoction is used to cure stomachache. The paste of rhizome is used to cure rheumatic arthritis.
57.	<i>Cymbopogon citrates</i> (DC.) stapf.	Poaceae	Lemon grass	Dhantari	Whole plant,Root	The half cup juice of whole plant is given every morning in empty stomach for some days to prevent reproductive disorders. Spoonful roots powders is given twice a day to cure hysteria.

SI. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
58.	<i>Dillenia indica L.</i>	Dilleniaceae	Elephant apple	Oau	Fruit	Mix the fresh fruit juice with honey or sugar candy and is used for treatment against cough. Mix the fruit pulp with water and is used as shampoo for cleaning the scalp hair.
59.	<i>Dioscorea bulbifera L.</i>	Dioscoreaceae	Air potato	Pitakanda	Root, Tuber	Apply the root powder externally to cure hernia and hydrocele. Apply the tuber powder over scorpion bite wound.
60.	<i>Diospyros melanoxylon Roxb.</i>	Ebenaceae	Coromandel ebay	Kendu	Fruit	Take 2 tablespoon of heat fruit pulp to cure dysentery. Squeeze the fruit juice and Apply on the affected areas three times per day.
61.	<i>Elephantopus scaber Linn.</i>	Asteraceae	Tutu bumi	Mayurchulia	Root	Paste of root is added to raw milk and is used as laxative. Paste of root is added to rice washed water is taken before taking food for 4-5 days to treat irregular menstruation.
62.	<i>Euphorbia hirta Linn.</i>	Euphorbiaceae	Garden spurge	Chitakuti	Whole plant	Whole plant juice is given for three days to enhance lactation.
63.	<i>Feronia limonia L.</i>	Rutaceae	Elephant apple	Kaitha	Leaves	Take 10-12 ml leaves juice, two times per day for a month to treat kidney stone. 3-5 gm powder of dried tender leaves is taken two times a day to prevent diarrhoea.
64.	<i>Ficus racemose Linn.</i>	Moraceae	Cluster fig	Dimiri	Bark	12-14 gm of bark is cooked with 250 ml water. Add 1 tsp of sugar and 2 gm of white cumin seed powder and is taken two times per day to treat metrorrhagia.
65.	<i>Ficus religiosa L.</i>	Moraceae	Sacred fig	Ashwattha	Leaves,bark	Bark latex is used externally to cure cracked heels. A little warm leaf juice is given as ear drop to prevent ear infection.
66.	<i>Gardenia gummifera L.</i>	Rubiaceae	Cumbi-gum tree	Kurudu	Stem bark	2 tsp of paste of stem bark is used to remove intestinal worm. Powder is made in Resin that obtained from stem. sprinkle it on wounds of cattle to keep flies away
67.	<i>Glinus oppositifolius L.</i>	Molluginaceae	Bitter cumin	Pita gaham	Root, flower	Root paste is used against the white discharge. The flower paste mixing with wood paste of <i>S. album</i> is given to cure dysentery.

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
68.	<i>Gloriosa superba L.</i>	Liliaceae	Glory lily	Kulhiakanda	Rhizome	Paste of Rhizome is used on anus to treat piles. Rhizome juice is massaged on joints to reduce joint pain.
69.	<i>Gmelina arborea Roxb.</i>	Lamiaceae	Beechwood	Gamber	Fruit ,leaves	Ripe fruit juice along honey and is used to treat strangury. Boiled leaves and knot it in a cotton and apply on joint pain.
70.	<i>Gossypium arboreum L.</i>	Malvaceae	Tree cotton	Kappa	leaves, seed	Make a paste of leaves, Apply it on the affected part to cure skin diseases. Prepare a Seed paste along with honey and take one time per day for 7 days to prevent diarrhoea.
71.	<i>Grewia abutilifolia W. Vent ex Juss.</i>	Tiliaceae	Mallow-leaved	Dhamana	Bark	The bark decoction is used for to reduce cholesterol.
72.	<i>Guizotia abyssinica (L.F.) Cass</i>	Asteraceae	Niger seed	Alsi	Leaves,seed	2 tsp leaf juice is given to treat vermifuge at seven day intervals. Paste of Seeds with tubers of <i>Cyperus rotundus</i> and roots of <i>Acorus calamus</i> are taken using honey to cure diarrhoea.
73.	<i>Gymnema sylvestre R. Br.</i>	Apocynaceae	Cowplant	Gudamari	Leaves	1 tsp leaf juice or powder taken daily to cure diabetes. 1 tsp of each leaf powder and jamun seed is taken to cure urinary infection.
74.	<i>Helicteres isora L.</i>	Malvaceae	Indian screw tree	Murian Anthei	Fruits	Fruits decoction is taken orally to get rid of waist pain instantly after birth of child. A paste of fruits and 3 black pepper seeds is used for development of child.
75.	<i>Heliotropium supinum L.</i>	Boraginaceae	Turnsole	Pana airi	Leaves	Plant juice with leaf juice of <i>Butea monosperma</i> is taken for 2-3 days in the morning to cure worms. Young leaves and stem is used to treat the ulcer of throat.
76.	<i>Hemidesmus indicus (L.) R.Br</i>	Asclepiadaceae	Indian sarsaparilla	Sugandhi	Root	Dry root powder is added to cow milk and is used to tackle sexual debility. Paste of roots is added cow milk and is given two times upto 7 days to arrest piles.
77.	<i>Hibiscus cannabinus L.</i>	Malvaceae	kenaf	Kaunria	Seed	Seeds are feed to cows for better lactation.
78.	<i>Holarrhena</i>	Apocynaceae	kurchi	Kurei	Root ,stem	Powder of roots is given after giving tea at morning

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
	<i>antidysenterica</i> (L.) Wall.ex A. DC.				bark	time as vermifuge. Juice is prepared from Stem bark and roots of <i>Aristolochia bractiata</i> , 2 tsp of juice is given to toddlers to prevent diarrhoea.
79.	<i>Ipomoea nil</i> (L.) Roth	Convolvulaceae	Picotee morning glory	Khatkhatia	Seed	Seed powder is given with stale-rice water to prevent diarrhoea.
80.	<i>Jasminum grandiflorum</i> L.	Oleaceae	Spanish jasmine	Chameli	flower, leaves	The leaf paste, root and flower is used on the affected part to cure scabies and itching. 40-50 ml of cold infusion of flowers is given to cure fever.
81.	<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Bellyache bush	Ramjada	Root, leaves	Prepare a root paste by adding 5 ml of milk and is added to stem bark powder of <i>A. catechu</i> and prepared into capsules. Take each capsule to prevent gonorrhoea. Sprinkle the leaf powder to cure wounds.
82.	<i>Justicia adhatoda</i> L.	Acanthaceae	Malabar nut	Basanga	Leaves, root	50 g of boiled root is added with cow milk (125 ml) and is given once per day to prevent diabetes. Apply the leaves paste on affected areas to prevent swelling.
83.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Indian ash tree	Mohi	Stem bark	Prepare a juice of Equal amount of stem bark and <i>E. variegata</i> and 100-150 ml of juice is given to arrest dysentery and diarrhoea.
84.	<i>Leonotis nepetifolia</i> (L.) R. Br.	Lamiaceae	Christmas candlestick	Kantasido	Leaves ,whole plant	Plant paste is used to prevent skin diseases. Leave paste is used to cure joint pain.
85.	<i>Litsea glutinosa</i> (Lour.) C.B.Rob	Lauraceae	Soft bollygum	Medha	Stem bark	Stem bark is added to raw culms of bamboo paste and apply the paste locally to heal the cracked bone.
86.	<i>Loranthus longiflorus</i> Desr.	Loranthaceae	Showy mistletoes	Mahulmadang	Leaves ,Whole plant	Pour the leaf juice into the ear to prevent earache. Whole plant paste is used to cure skin-inflammation.
87.	<i>Ludwigia perennis</i> Linn.	Onagraceae	Water primrose	Jaljali	Leaves	Leaf paste with salt is applied locally at infected skin parts to cure scabies and ring worms.
88.	<i>Madhuca indica</i> J.F.Gmel	Sapotaceae	Honey tree	Mahua	flower ,seed	The juice of flower is massaged to cure skin diseases. Massaging of seed oil is very effective to reducing pain.
89.	<i>Mallotus philippencis</i> (Lam.) Muell.Arg	Euphorbiaceae	Kumkum tree	Sundari	Leaves,Root	Decoction of the leaves is very effective against diarrhoea.

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
						Chew root scrapings with a betel mixture as a contraceptive for women.
90.	<i>Marsilea quadrifolia L.</i>	Marsileaceae	Pepperwort	Sunsunia saga	Leaves	2 drops of young leaves juice is poured in the nostrils two times per day to prevent migraine.
91.	<i>Martynia annua L.</i>	Martyniaceae	Cat's claw	Baghnakhi	Seed	Seed oil is used for curing skin infection. The leaf juice is used to gargle for treating sore throat.
92.	<i>Mentha spicata L.</i>	Lamiaceae	Spearmint	Podina	Leaves	The leaf is taken as chutney for indigestion. 4 tsp of leaves decoction is used two times a day to prevent cough.
93.	<i>Merremia gangetica (L.)</i>	Convolvulaceae	Woodroses	Musakani	Whole plant	Apply the whole plant paste on foot to treat inflammation.
94.	<i>Milletia auriculata Baker.ex .Bran</i>	Fabaceae	Large leaf pongam creeper	Mankadmal	Leaves	Leaf juice is used as vermifuge.
95.	<i>Mimosa pudica L.</i>	Mimosaceae	Touch-me-not	Lajkuli	Leaves, seed	Leaf paste is used externally to prevent eczema. Prepare a paste of root and <i>Piper nigrum</i> seed and is poured with curd and is given orally before taking meal for 7 days to arrest piles.
96.	<i>Momordica charantia Linn.</i>	Cucurbitaceae	Bitter gourd	Karla	Leaves	Half to one cup of leaf juice is eaten in empty stomach for seven day prevent chicken pox, measles and Fever.
97.	<i>Morinda tinctoria Roxb.</i>	Rubiaceae	Indian mulberry	Achhu	Root bark ,leaves	Mix the root bark decoction with sugar and is used upto 7 day to prevent biliousness. Mix the Leaf juice with rhizome juice of <i>Cyperus rotundus</i> . It is used to cure dysentery.
98.	<i>Moringa oleifera Lam.</i>	Moringaceae	Drumstick tree	Sajana	Stem bark, flower	1 to 2 drops of stem bark juice is poured in ear to prevent Earache. Prepare juice of drumstick flowers along with lemon juice or honey to cure urinary tract infection.
99.	<i>Mucuna pruriens (L.) DC.</i>	Fabaceae	Monkey tamarind	Baikhujen	Seed , root	Mix the seed powder with water to prevent stranguary. The root decoction is added to honey and used orally to prevent cholera.
100.	<i>Murraya koenigii (L.) Sprengel</i>	Rutaceae	Curry leaf tree	Versunga	Leaves	1 tsp of curry leaf powder and buttermilk is consumed to get relief from gastro-intestinal troubles. 2 tsp of leaf juice with honey is taken to cure jaundice.

SI. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
101.	<i>Operculina turpethum</i> (L.) Silva Manso	Convolvulaceae	Indian jalap	Tihudi	Root	Wash the root with water and then cooked with cow's milk, this is taken in the dose of 20-30 ml in adults and 5-10 ml to children to cure abdominal disorders and skin diseases. Prepare a root decoction and Drink 10 ml of it twice a day to cure liver diseases.
102.	<i>Oroxylum indicum</i> (L.) Benth. Ex Kurz	Bigoniaceae	Indian trumpet tree	Phapen	Bark, Root	Paste of 1 tsp of bark is eaten with water to prevent measles. Root paste is eaten to remove intestinal worms.
103.	<i>Pergularia daemia</i> (Forssk.) Chiov.	Asclepiadaceae	Trellis-vine	Uturudi	Leaves	Take leaves juice with lime juice and is applied to the affected area to prevent skin diseases. Decoction of leave is prepared, and is given two times per day to prevent cough.
104.	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Indian gooseberry	Amla	Fruit, leaves	2 to 3 g of plant powder, dry fruit is consumed daily in 30 ml water upto 21 days for preventing diabetes. Leaves of amla is crushed and is mixed with curd is taken before food is improve good digestion.
105.	<i>Piper betel</i> L.	Piperaceae	Betel	Pana	Leaves	Apply paste of leaves on wounds. Juice of piper betle with honey is used to cure cough and indigestion.
106.	<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Ceylon leadwort	Chitapar	Leaves, root	The paste is eaten with banana for curing spleen diseases. Leaf Paste is used to reduce muscular pain.
107.	<i>Psidium guajava</i> L.	Myrtaceae	Guava	Jamu	Leaves , seeds	Seed powder is mixed with leaf powder of <i>Gymnema sylvestre</i> is taken three times daily for a month to prevent diabetes. Boil the infusion of guava leaves and roots and drink 2 to 3 times per day to prevent dysentery.
108.	<i>Pueraria tuberosa</i> (Wild.) DC.	Fabaceae	Indian kudzu	Pataalkumda	Tubers	Tuber paste is used on forehead to reduce headache. Tuber juice is given orally to prevent strangury.
109.	<i>Punica granatum</i> L.	Punicaceae	pomegranate	Dalimba	Fruit, flower	Paste of unripe fruit with fermented rice water is taken for 4-5 days for amenorrhoea. 2 to 3 tsp flower juice and sugar is used to cure jaundice, cough.
110.	<i>Ricinus communis</i> L.	Euphorbiaceae	Castor oil plant	Jada	Seed, leaves	Seed oil is applied locally to relief pain and swelling after insect bite.

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
						Paste of the leaf is used for massaging to reduce body swelling and joint pain.
111.	<i>Schleichera oleosa</i> (Lour) Oken	Sapindaceae	Malaya lac tree	Kusum	Seed	Massage the seed oil on joints to prevent rheumatism.
112.	<i>Selaginella rupestris</i> (L.) Spreng	Selaginellaceae	Rock spike- moss	Tirupati	Whole plant	Prepare the whole plant paste with rice water and is used to prevent leucorrhoea.
113.	<i>Sesamum indicum</i> L.	Pedaliaceae	Sesame	Rasi	Seed	Sesame oil massage on your scalp and hair to help reduce dandruff. The oil is also helps to reduce pain relief.
114.	<i>Sesbania sesban</i> (L.) Merr.	Fabaceae	Sesban	Jayanti	Bark	A cup of bark decoction or leaf decoction is given thrice daily for a month.
115.	<i>Shorea robusta</i> Roth.	Dipterocarpaceae	Sal tree	Shargi	Resin	This plant resin is mixed oil of <i>Ricinus communis</i> and apply on cuts to prevent foot crack.
116.	<i>Sida cordifolia</i> L.	Malvaceae	Great leaved sida	Bajramuli	Whole plant ,Root	Whole plant of <i>Sida cordifolia</i> and <i>Withania somnifera</i> oil is mixed and massaged on affected area to prevent paraplegia. 4 to 6 gm of root powder of both <i>Asparagus racemosus</i> and <i>Sida cordifolia</i> used three times per day to prevent throat disorder.
117.	<i>Smilax zeylanica</i> L.	Smilacaceae	Kumarika	Mutri	Twig	Prepare a powder of Dry root, <i>Piper longum</i> and <i>Piper nigrum</i> and is used two times daily to prevent infertility.
118.	<i>Solanum indicum</i> Linn.	Solanaceae	Poison berry	Dengabhejri	Root, Leaf	Mix 2 gm of root powder along curd for 9 to 10 day to treat sprue. Mix 2 tsp of leaf juice along a tsp of honey is used to prevent fever.
119.	<i>Solanum nigrum</i> L.	Solanaceae	Black nightshade	Bhejri	Whole plant	Paste of whole plant is used to reduce chest pain.
120.	<i>Solanum surattense</i> Burm F.	Solanaceae	Wild eggplant	Kantabhejri	Whole plant	crushed plant juice along honey to prevent fever. The paste of 6 gm of root and 3 seed black pepper is used to prevent measles.
121.	<i>Solanum virginianum</i> L.	Solanaceae	Surrattense nightshade	Bhejibaigan	Whole plant	Smoke the dried plant powder to prevent toothache. Mix the dried plant powder with turmeric and is eaten to reduce cough.
122.	<i>Soymida febrifuga</i> (Roxb) A. Juss	Meliaceae	Indian redwood	Raen	Stem bark	Boil stem bark paste in coconut oil till it looks black, filtrate oil after cooling and massage on forehead to

SI. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
						reduce insanity. Knot the boiled stem bark in a cotton and apply externally to prevent rheumatism.
123.	<i>Sphaeranthus indicus L.</i>	Asteraceae	East Indian globe thistle	Bhuikadam	Bark	Powder of bark is eaten and also applied to prevent piles. Seed and root powder is eaten to destroy worms in children.
124.	<i>Streblus asper Lours</i>	Moraceae	Toothbrush tree	Sahada	Stem bark, Root	Paste of root mixed with curd and is eaten to reduce stomach pain.
125.	<i>Strychnos nux-vomica L.</i>	Loganiaceae	Poison nut	Kochila	Root, bark	Paste of root is applied externally in snakebite. Infusion of bark is taken in epilepsy.
126.	<i>Syzygium cumini (L.)</i>	Myrtaceae	Java plum	Jambakoli	Fruit, stem bark	Stomach ache and digestive troubles are cured by using ripe fruit juice Mix 35-40 ml of stem bark juice with curd (1:2) and eaten for curing diarrhoea.
127.	<i>Tagetes erecta L.</i>	Asteraceae	African marigold	Mandaful	Leaves ,inflorescence	Apply the leaf juice on boils and carbuncles to reduce pain. Inflorescence decoction is used as an antipyretic drug.
128.	<i>Tamarindus indica L.</i>	Caesalpiaceae	Tamarind	Tetli	Fruit, Leaves	Mix the fruit pulp with water and salt then give it to cattle to prevent fever and dysentery. The paste of leaves is used as poultice and applied on boils for easy bursting.
129.	<i>Tephrosia purpurea (L.) Pers.</i>	Fabaceae	Common tephrosia	Paharagacha	Whole plant, Root	Plant juice is eaten to treat acidity and joint pain. Crush a piece of root with teeth and kept for some time to reduce toothache.
130.	<i>Terminalia alata Heyne ex Rath.</i>	Combretaceae	Indian laurel	sahaju	Bark, leaves	Mix the Bark ash with sesamum oil and is applied to prevent itches. Paste 2-3 fresh leaves and eat three times per day to prevent vomiting and loose motion.
131.	<i>Terminalia arjuna (Roxb.) Wight & Arn.</i>	Combretaceae	Arjun tree	Asna	Bark ,Leaves	Pour the leaf juice into the nostril to reduce headache. Prepare a paste of Stem bark with black pepper powder is to cure dysentery.
132.	<i>Terminalia bellerica (Gaertn.) Roxb.</i>	Combretaceae	Beech almond	Beheda	Seed, fruit	Prepare Paste of seed along honey to prevent eye disease.

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
						The fruit juice is used with honey to prevent diarrhoea.
133.	<i>Terminalia chebula Retz.</i>	Combretaceae	Chebulic myrobalan	Harda	Fruit	Chew 2 gm dried fruit of <i>Terminalia chebula</i> at night to cure asthma. Consume 1 fruit per a day with salt to cure constipation.
134.	<i>Terminalia tomentosa(Dc)W& A</i>	Combretaceae	Crocodile bark tree	Sahaja	Bark	Aliquots of 20-30 ml of bark juice is taken three times till the symptom disappears to prevent epilepsy. Extracted seed oil is used to reduce joint pain.
135.	<i>Thysanolaena maxima (Roxb.) Kuntze</i>	Poaceae	Tiger grass	Phulachanchuni	Root	Apply the root paste on boils to dry the pus and quick healing.
136.	<i>Tinospora cordifolia (Thunb.) Miers</i>	Menispermaceae	Herat leaved moonseed	Gulchi lata	Root, Leaves	Root powder is used to prevent dysmenorrhoea. Leaf juice is used to prevent jaundice.
137.	<i>Trachyspermum ammi (L.) Sprague ex Turrill</i>	Apiaceae	Ajwain	Juani	Leaf, Seed	Leaf juice with honey is consumed by children and infants weekly to boost their resistance power against illness and also helps to cure cold cough. Carom seeds is mixed with a pinch of common salt. Take 1 tsp of this mixture with cup of lukewarm water sip by sip to reduce stomach ache.
138.	<i>Tribulus terrestris L.</i>	Zygophyllaceae	Puncture vine	Gokhur	whole plant,root	Prepare a paste of Same amount of whole plant of <i>Tribulus terrestris</i> , <i>Solanum surrantense</i> and <i>Coleus aromaticus</i> along with milk and the paste is eaten to check miscarriage. Same amount of Roots with rhizomes of <i>Zingiber officinalis</i> are crushed to powder and 5gm of the powder is given two times daily to reduce waist pain.
139.	<i>Trichodesma indicum L.</i>	Boraginaceae	Indian borage	Hetamund	Leaves	leaf paste is applied to prevent skin disease. A paste of leaves and coconut oil is prepared and is applied on the affected areas to prevent insect bites.
140.	<i>Trichosanthes bracteata Lam.</i>	Cucurbitaceae	Redball snake gourd	Mahakal	Root, leaves	leaf smoke is inhaled to prevent asthma. Root paste processed in cow urine is used for hair falling due to infection and regeneration of new hair.
141.	<i>Tridax procumbens L.</i>	Asteraceae	Tridax daisy	Bishalya karani	Root	Decoction of root is used in diarrhoea and stomachache. Leaves are applied externally in ringworm.
142.	<i>Trigonella foenum-</i>	Fabaceae	fenugreek	Methi	Seed	½ tsp of seed is boiled in cup of water, strain, drink

Sl. No.	Scientific name	Family	General name	Local name	Parts used	Mode of preparation
	<i>granum L.</i>					every day to prevent indigestion problems. Prepare a paste of Soaked 2 tablespoons seeds of overnight and is applied it on the roots of hair and for 20 minutes for hair growth.
143.	<i>Vitex negundo L.</i>	Verbrenaceae	Chinese chaste tree	Nirgundi	Leaves, Whole plant	Knot the Fried Leaves in a cotton and give a warm massage on joint to reduce rheumatism. Whole plant decoction is used as three times per day to prevent asthma.
144.	<i>Vitis auriculata (Roxb.) Wall.</i>	Vitaceae	Fox grape	Dumalaha	Rhizome	A paste of Rhizome with rhizome of <i>costus speciosus</i> is prepared and eaten to reduce rheumatism.
145.	<i>Vitis quadrangularis wall cat.</i>	Vitaceae	Veldt grape	Hadasangad	Stem, leaves	Paste of Stem is eaten with cow milk to prevent piles. 20 ml of juice of stems and leaf, along with honey is used two times per day to prevent menstrual disorders.
146.	<i>Woodfordia fruticose (L.) Kurz</i>	Lythraceae	Fire-flame bush	Dhatu	Flower, seed	Prepare a powder of 2 gm of sun dried flowers and is eaten with honey for curing cough. Take 2 to 3 pinches of dried seed powder with milk twice a day to cure menstrual disorders.
147.	<i>Zingiber officinale Roscoe.</i>	Zingiberaceae	Ginger	Ada	Rhizome	Ginger is used nutritionally in cooking and treatment of nausea and vomiting. The combination of hot water, slices of ginger, lemon and honey remedy is used to cure cough.
148.	<i>Ziziphus mauritiana Lam.</i>	Rhamnaceae	Indian jujube	Barakoli	Leaf	2 to 3 young leaf with leaf bud is given thrice daily for 5 days to cure cough.
149.	<i>Ziziphus oenoplia (L.) Mill</i>	Rhamnaceae	Jackel jujube	Kantekoli	Leaves , Root	2 cm long root with 21 black peppers is eaten to prevent rheumatism.
150.	<i>Withania somnifera</i>	Solanaceae	Indian ginseng	Ashwagandha	Root	Take ¼ - ½ teaspoon of ashwagandha root powder along with ghee, sugar and honey daily for a month once or twice a day to improve sperm quality

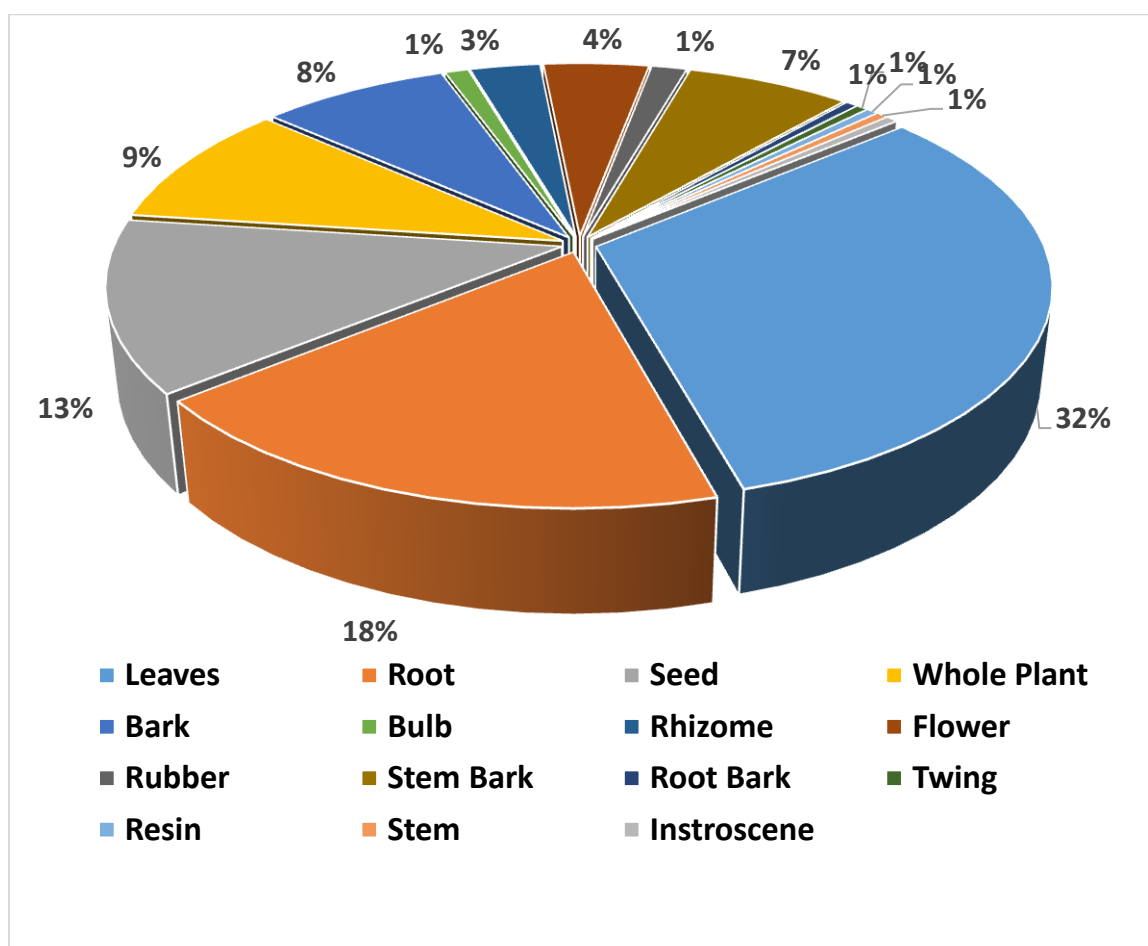


Fig. 2. Percentage of plants part used by Tribal people in Niyamgiri hill region

4. DISCUSSION

In the modern healthcare system ethnomedicinal plants plays a major role. All the drugs are produced directly or indirectly from plant parts. From root to leaves all parts of plants are equally important for drug synthesis. Niyamagiri hill is profoundly rich in its plants diversity. A large number of plant species are found here that helps the locale to cure their diseases. The current study of 150 plants are found to be frequently used for various ailments. These plants are easily available in Niyamagiri hill as the climatic condition favours to grow. The vegetation of the hill range in general falls under the category of tropical moist deciduous forest, dry deciduous forest, tropical semi evergreen forest, grass land, open scrub and many other species. Present study includes use of different plant parts like root, stem, leaves, rhizome, bark, flower, seed and also whole plant in some cases. Among all these plant parts, leaves has acquired the central position as it is used in

maximum drug synthesis. According to local healers leaves have more medicinal values and are easily available and can be used as raw by simple chewing as well as mix with other components.

From the accumulated knowledge on folk medicines of different sources, worldwide. 21,000 plant species available around the world according to WHO, which are used in the primary healthcare systems [18]. Among 60,000 flowering plants in India, in ethno medicine or folk-medicine 3,000 plants are to be used out of about 1,500 plants of Ayurveda, Unani and Siddho system. In Pharmacological studies More than Seven hundred plants are investigated and chemically used in modern remedial system [19]. It is a matter of concern that, regular incidences of terrifying natural and often induced devastation induced forest fire is the cause insurmountable of loss of vegetation at the forest-agriculture. Thus, on ex-situ preservation of rare plants it is needed to record the ethnobotanical

data of aged people. The forest-agriculture is need to develop a viable module of soil conservation and shifting cultivation in this nation. Especially that the Niyamagiri hill of Kalahandi district which is a huge store of bauxite ore with a promise for an initiated industrial development, which is rich in flora and fauna of the hill area along with unoccupied aborigines, they are fit together with nature in all aspect of their lives. Medicinal plants are present in many regions of Odisha and in India to supply the several plant-based pharmaceutical companies. The protection and preservation of forest possessions are essential due to so many unique plants of Odisha state are supplied for medicinal and other purposes. This document was recorded from aged and old aborigines for current rate of deforestation and the concerned loss of biodiversity. From the different parts of the world the first categories of plant-drugs are simple crude extracts and also recorded in the literature of folklore medicines. [20]. The scientists and elites collaboratively studied for appraisal but some are so popular and are used by the leading mass without any assessment, e.g. the use of clove (*Syzygium aromaticum*) as a anti-cough, which used in India. As we know that the benefits of making plant based medicines are relatively safe, cheaper having no side effects on body as compared to chemical one, as pure chemical medicines have bad side effects on health. None the less phytochemicals also have both known and unknown toxic effects on the human body. It could be noted that many similar plants and their uses against many diseases is frequently used by Indian rural Tribals, which must have been lost due to rapid modernisation. Anyhow ethnomedicinal study is the base of all further research work. There is the need of further pharmacological investigation of the traditional prescriptions used by the traditional healers to prove their safety and efficacy for the treatment of many ailments. It is required to develop sustainable conservation plan for the medicinal plants which are becoming threat because of the biological, ecological and social pressure. As per the literature from different parts of the world, the first categories of plant-drugs are simple crude extracts. Scientifically these extracts needs proper validation. Still there is a number of herbal drugs are in practice, which need scientific authentication through biochemical analysis, clinical trials and other laid down parameters [21].

5. CONCLUSION

The present study consists of 150 plants species were collected from Niyamagiri hill region of Kalahandi district, Odisha. All plants are rich in different medicinal properties like healing, therapeutic properties. It is found that still a large number of tribal people are using their traditional knowledge and culture and have adopted herbal therapy for most of the diseases because of strong belief on the local practitioners as they are far away from today's modern medical facilities. They use medicinal plants so intelligently with knowing their medicinal properties, their preparation, their storage and how to administer different dose with great efficiency against kinds of ailment. It is found from above discussion that the use of herbal therapy, their advantages, side effects and other details almost have traditional values with the previous workers with a little difference. The efficiency and safety of all the listed ethnomedicinal plants needs to be evaluated for phytochemical and pharmacological studies.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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