



# Indigenous phyto-therapy of Kandha tribe for primary healthcare in Kandhamal district, Odisha

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## ABSTRACT

Kandhamal district (formerly named as Phulbani) in Odisha is the homeland of various tribal and nontribal communities out of which Kandha as predominant and the name of the district is derived from it. The medicinal plants used traditionally by Kandha tribe for healthcare needs in their day-to-day life was studied during the year 2014-2016, which records a total of 68 species belonging to 63 genera and 41 botanical families. The paper enumerates these species in alphabetic order with notes on their local names, parts used and their traditional practices.

**Key words:** Healthcare, Kandha tribe, Kandhamal district, medicinal plants

## INTRODUCTION

Since the time immemorial, the history of plant use as cure for human ailments has been a tradition in the tribal healthcare system. These plants are integral components acting as life support system in the lives of the tribes including the landless, orphaned, aged and infirm. With an ideal combination of rich forest resources, mountainous terrain and a number of tribes living therein and their much dependence on forest for indigenous plants, Kandhamal district in Odisha offers an ample scope for study of medicinal plants. Basically, the tribal and other forest dwelling communities reside in remote areas where communication and life system including healthcare are far from their reach. Through the process of trial and error, these tribes identify and use plant parts such as roots, tubers, rhizomes, leaves, bark, and fruits as medicines for treatment of various diseases and further, several of them have been domesticated in their homesteads. They have experienced and learnt the herbal medicinal knowledge out of their sufferings from diseases through use, continuous observation and experimentation at their level and this practice is

carried forward to the next generation orally or learning from the traditional healers/ medicine men or from the elders. The Kandha medicine man locally called as 'Dishari' possesses a special position in the tribal community and served people with satisfaction against a token support for their livelihood.

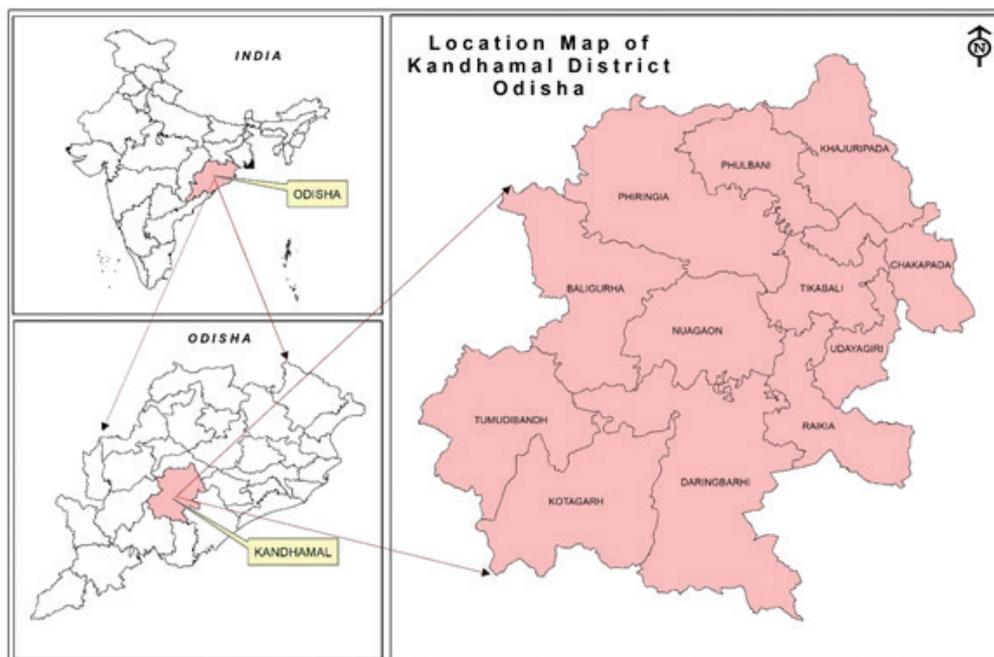
Information on indigenous knowledge of the traditional healthcare system is very poorly reported in this region except very sporadic surveys (Sahoo and Mudgal, 1995; Sahoo, 1995; Mohanty et al., 1996; Panda and Das, 1999; Sahoo and Bahali, 2003). However, scanty information on tribe-wise ethnographic explorations is available in the state (Jain and Banerjee, 1973). This study aims at to record the indigenous medicinal plant resources used by Kandha tribe of Kandhamal district of Odisha and to provide first hand information on vascular plants of 68 species.

## STUDY AREA

Lying between 83° 30' to 84° 35' E longitude and 19° 34' to 20° 34' N latitudes, Kandhamal district is located in the central part of Odisha and

delimited by Boudh district in the north, Gajapati and Rayagada in the south, Ganjam and Nayagarh in the east and Kalahandi and Bolangir in the west (Fig. 1). The topography of the district is irregular and undulating hilly terrain of Eastern Ghats and occupies an area of 5392 sq km forest cover which accounts for 67.22 per cent of total geographical area, estimating district-wise highest area in the state (FSI, 2017). The vegetation is dominantly of mixed moist deciduous and dry deciduous types with patches of bamboo brakes and scrub cover. The district has several remote locations for which access of transport and providing health services

are key challenges. The schedule tribes account for 53.58 per cent of the total district population (Census of India, 2011). Out of 62 notified scheduled tribes in Odisha, as many as 29 tribes are found in Kandhamal and among them Kandha, Saura, Ganda, Kandha-Gouda and Kutia Kandha constitute the major population. The predominant tribe, 'Kandha' or 'Khonds' identify themselves with their dialect as *Kuilaku* or *Kuinga*. Agriculture and horticultural cultivations and collection of forest products are major sources of livelihood in the district.



**Fig. 1.** Location map of Kandhamal district, Odisha, India

## MATERIALS AND METHODS

Intensive explorations were undertaken during 2014 to 2016 in the interior forest areas of different blocks viz. Raikia, K.Nuagaon, Daringbadi, Kotagarh, Tumudibandha, Baliguda, Phiringia, Phulbani, Khajuripada of the district Kandhamal, Odisha. Prior to the field work, a reconnaissance along with literature survey was made to get an idea about the vegetation of Kandhamal and the tribal populations reside within the forested areas. The methodological framework chosen for this study was followed as per the standard techniques

of qualitative and quantitative ethno-biological approaches in the interview technique, elicitation methods, data collection and further authentication (Martin, 1995; Cotton, 1996; Misra et al., 2013). During the field visit, village level medicine men and women were identified and a number of transect walks were made along with them in different landscapes of forest areas. The ethno-botanical information was gathered through interviews and discussions with traditional healers, village heads and elderly people having local knowledge about medicinal use of plants. Data were recorded on local

names, plant parts used and mode of administration as elaborated by Kandha tribe (Fig. 2). Voucher specimens were collected for authentication of information and for future reference. The plant species were identified on the spot and with the help of local floras to ensure correct identification



Fig. 2. Kandha tribal man elaborating the medicinal use of *Ceropegia hirsuta* Wt. & Arn.



Fig. 3. *Scindapsus officinalis* (Roxb.) Schott, a vulnerable medicinal plant

## RESULTS AND DISCUSSION

The practice of wild and domesticated plants as medicines to treat various diseases is still continuing among the Kandha inhabitants to complement the poor medical facilities in many parts of this district. Information on taxa having indigenous medicinal uses gathered from Kandha tribal inhabitants and practitioners was presented in Table 1. The information was verified by cross-questioning with informants of knowledgeable elderly persons of other villages. During this study, a total of 68 medicinal species were identified

of plants (Haines, 1921-25; Saxena and Brahmam, 1994-96). Plants were enumerated in alphabetic sequence of their botanical names followed by the local name used by Kandha tribe, family and mode of administration.



Fig. 4. *Biophytum sensitivum* (L.) DC..



Fig. 5. *Curculigo orchiioides* Gaertn.

and enumerated with their scientific names, along with local names, parts used and their mode of administration (Table 1). These species belong to 63 genera and 41 botanical families.

This study provides information on uses of different parts of plants like roots, rhizome, leaves, fruits, seeds, latex and bark for different diseases which include skin diseases, headache, stomach disorders, diarrhoea, dysentery, cold and cough, jaundice, snake bite, high blood pressure, diabetes etc. It is also observed that either a single plant species or a combination of more than one plant

is used to cure a particular disease. This report reveals that a maximum of seven plant species viz. *Scindapsus officinalis* (Fig. 3), *Ricinus communis*, *Hemidesmus indicus*, *Tinospora cordifolia*, *Datura metel*, *Abrus precatorius* and *Vitex negundo* are used against rheumatism. Similarly, the plant species used to cure diarrhoea and dysentery are *Syzygium cumini*, *Holarrhena antidysenterica*, *Celosia argentea*, *Justicia adhatoda*, *Elephantopus scaber*, *Mangifera indica*, *Michelia champaca* and *Phyllanthus fraternus*. The species like *Abutilon indicum*, *Phyllanthus emblica*, *Terminalia chebula*, *Terminalia bellerica*, *Datura metel*, *Biophytum sensitivum* (Fig. 4), *Cyperus rotundus*, *Mentha*

*viridis*, *Murraya koenigii* and *Cymbopogon flexuosus* are used to cure stomach disorders. Kondhs frequently use the plants like *Chromolaena odorata* and *Curculigo orchoides* (Fig. 5) to heal from minor injury and wounds. It was recorded that the traditional healers prescribe the paste of species like *Andrographis paniculata*, *Azadirachta indica* and *Naringi crenulata* to apply on the affected area for curing skin diseases. Further, there are also few plants identified which are administered to treat many ailments such as jaundice, skin infection, gynaecological and dental disorders, snake bites etc.

**Table 1.** Medicinal plants used by Kandha tribe of Kandhamal district

Sl.	Scientific name	Local name	Family	Part used	Mode of administration
1	<i>Abrus precatorius</i> L.	Dhalarunja mala/ Nalirunja mala	Fabaceae	Seed, root	Seed powder of white seeded variety along with 3-5 black peppers is taken to cure rheumatism. Root paste of red seeded variety is locally applied on piles. Root pounded with palm sugar and taken to improve eye sight.
2	<i>Abutilon indicum</i> (L.) Sweet	Pedipedika mara	Malvaceae	Leaf	Juice is administered twice a day for treatment of jaundice.
3	<i>Aegle marmelos</i> (L.) Corr.	Bela mara	Rutaceae	Leaf, fruit	Leaf juice or fruit pulp/ juice are consumed to increase digestion and cures stomach disorders.
4	<i>Aloe vera</i> (L.) Burm.f.	Ghia kuanri	Liliaceae	Leaf	Juice is used to cure headache and skin diseases. A cup of juice can supplement calorific strength of one day diet of an adult.
5	<i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees	Bhuinnimba	Acanthaceae	Root, leaf	Root paste with cold milk is given to cure acidity and applied for skin diseases. Leaf juice with 5-7 black peppers is taken 3 times daily for 3-5 days to cure malaria.
6	<i>Atylosia scarabaeoides</i> (L.) Benth.	Kartaaka	Fabaceae	Root	Decoction is given to pregnant women to reduce pain during child birth.
7	<i>Azadirachta indica</i> A. Juss.	Nimbamara	Meliaceae	Bark, leaf	Bark paste is applied for skin diseases. Leaves are half-burnt and diffused in a room to repel mosquitoes.
8	<i>Boerhavia diffusa</i> L.	Hatua kusa	Nyctaginaceae	Leaf	Juice is used to cure conjunctivitis. Paste with honey acts as blood purifier. Whole plant with paste of turmeric is applied on infected area of skin in case of children.

9	<i>Biophytum sensitivum</i> (L.) DC.	Hema sagara	Oxalidaceae	Leaf	Juice with 5-7 black peppers is taken 2-3 times a day to reduce pain due to stone in stomach.
10	<i>Calotropis gigantea</i> R. Br.	Jhilerimara/ Ludura	Asclepiadaceae	Root, latex	Root paste or latex applied on the affected parts of insect bites.
11	<i>Cassia fistula</i> L.	Alilknnga	Caesalpineaceae	Seed	Powder with 7 black peppers is taken to cure constipation.
12	<i>Cassia tora</i> L.	Adamemeri	Caesalpineaceae	Seed	Seed powder with cooked coconut oil is smeared on infected parts of skin.
13	<i>Celastrus paniculata</i> Willd.	Prengamala	Celastraceae	Seed	Seed oil is applied to heal skin infected areas.
14	<i>Celosia argentea</i> L.	Penamuksi	Amaranthaceae	Leaf	Juice with little water is prescribed against dysentery.
15	<i>Ceropegia hirsuta</i> Wight & Arn.	Patka plaberi	Asclepiadaceae	Tuber	Tuber is eaten raw in morning to maintain sound health and to enhance vigour.
16	<i>Chromolaena odorata</i> (L.) King & Robins.	Jahajapunga	Asteraceae	Leaf	Crushed leaf with juice is applied on fresh cuts/ wounds to stop bleeding.
17	<i>Cissampelos pareira</i> L.	Dindikidi mala	Menispermaceae	Root	Powder is taken with cold water to cure acidity, indigestion and stomach disorders.
18	<i>Cissus quadrangularis</i> L.	Hadajadi mala	Vitaceae	Whole plant	Crushed branches along with bark pieces of <i>Careya arborea</i> (Kumbha) are heated and tied tightly on affected parts for 3 weeks to join the fractured bones.
19	<i>Clitorea ternatea</i> L.	Aparajita	Fabaceae	Root	Paste is applied on affected parts of snake bite to remove poison.
20	<i>Costus speciosus</i> (Koenig) Sm.	Bambakunanga	Costaceae	Tuber	Tuber paste is smeared on forehead to keep cool and prevents headache.
21	<i>Curculigo orchoides</i> Gaertn.	Taalamuli/ Ghusurikuna	Hypoxidaceae	Root	Paste is applied for healing wounds. Decoction is given to weak patients for strength and vitality.
22	<i>Curcuma longa</i> L.	Singaanga	Zingiberaceae	Rhizome	Paste is taken twice daily to regulate periodic menstrual flow in women.
23	<i>Cymbopogon flexuosus</i> (Nees ex Steud.) Wats	Dhanbantari	Poaceae	Leaf	Decoction along with 4-5 black peppers is taken twice daily to cure flatulence and stomach-ache. Leaf oil also applied on joints to reduce pain.
24	<i>Cyperus rotundus</i> (L.) Pers.	Mutha	Cyperaceae	Root	Paste is taken in empty stomach three times a day to cure hyperacidity and flatulence of stomach.
25	<i>Datura metel</i> L.	Dudura	Solanaceae	Root, leaf, seed	Root powder is administered in empty stomach to cure gastritis. Leaf juice or seed powder mixed with cooked coconut oil is applied on scalp and hair for treatment of baldness, lice and early whitening of hair.
26	<i>Eclipta prostrata</i> (L.)	Kaijati	Asteraceae	Leaf	Leaf juice is applied to cure eye infection.

27	<i>Elephantopus scaber</i> L.	Benga Padai	Asteraceae	Root	Paste along with turmeric and jaggery is prescribed for blood dysentery and gynaecological disorders.
28	<i>Hemidesmus indicus</i> (L.) R. Br.	Sugandhi mala	Periplocaceae	Root	Powder with honey is prescribed to provide strength and vitality for weak persons. It is also useful for rheumatism.
29	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don.	Kulchimrahanu	Apocynaceae	Bark, root	Pieces are fermented in water for 3-4 days and added in <i>handia</i> for intoxication. Paste with water is taken to cure dysentery.
30	<i>Indigofera cassioides</i> Rott. ex DC.	Ganjeri punga	Fabaceae	Flower	Flowers eaten as curry to cure piles.
31	<i>Justicia adhatoda</i> L.	Baasadedi	Acanthaceae	Leaf	Half spoon juice is swallowed to cure asthma, cough and rheumatism.
32	<i>Lawsonia inermis</i> L.	Menjuaatimrahanu	Lythraceae	Root	Pieces along with seven black peppers are made into a paste and given to patients suffering from jaundice. Leaves are pounded and made into a paste used as dye ( <i>mehendi</i> ).
33	<i>Litsea glutinosa</i> (Lour.) Robins.	Masnia	Lauraceae	Bark	Crushed bark applied for healing the fractured bone.
34	<i>Madhuca indica</i> Gmel.	Lerpi	Sapotaceae	Twig	Used as tooth brush to cure pyorrhoea.
35	<i>Mangifera indica</i> L.	Maska	Anacardiaceae	Twig	Tender leaves are chewed to cure diarrhoea.
36	<i>Mentha viridis</i> L.	Podina	Lamiaceae	Leaf	Pounded with salt and dry ginger and taken to cure hyperacidity.
37	<i>Michelia champaca</i> L.	Sapadedi	Magnoliaceae	Leaf	Leaf juice is taken three times a day to cure dysentery.
38	<i>Mimosa pudica</i> L.	Lajja	Mimosaceae	Root	Paste is slightly warmed and applied on boils for early healing. Also smeared on the affected parts of snake-bite or scorpion stings.
39	<i>Murraya koenigii</i> (L.) Spreng.	Brusunga	Rutaceae	Leaf	Crushed with 5-7 black peppers and taken to cure stomachache.
40	<i>Naringi crenulate</i> (Roxb.) Nicol.	Narangimrahanu	Rutaceae	Bark	Paste is applied to cure skin infection.
41	<i>Nyctanthes arbortristis</i> L.	Daanimara	Oleaceae	Leaf	Juice with small pieces of ginger is consumed to treat malaria/ intermittent fever.
42	<i>Ocimum sanctum</i> L.	Tulasi	Lamiaceae	Leaf	Juice is given for treating cough and cold and to enhance memory in children.
43	<i>Phoenix acaulis</i> Buch-Ham ex Roxb.	Sitaa	Arecaceae	leaf	Juice is taken with little water for 4-5 times to cure urine infection.
44	<i>Phyllanthus emblica</i> L.	Juruanmara	Euphorbiaceae	Fruit	Dry or roasted fruits are taken to cure stomach-ache and indigestion.

45	<i>Phyllanthus fraternus</i> Webst.	Bhuinjurun	Euphorbiaceae	Root	Paste with black salt is given orally to cure diarrhoea and jaundice.
46	<i>Phyllanthus urinaria</i> L.	Badiaanla	Euphorbiaceae	Root	Paste is prescribed against dysentery and vomiting.
47	<i>Piper longum</i> L.	Pippali	Piperaceae	Fruit	Half-burnt or roasted with honey is given to patients suffering from cough and cold.
48	<i>Piper trioicum</i> Roxb.	Bana pippali	Piperaceae	Root	Powder with dry-ginger is given twice a day for a week to cure rheumatism.
49	<i>Plumbago zeylanica</i> L.	Dhalachita	Plumbaginaceae	Root	Root paste along with black pepper is taken two times for 2-3 days for abortion.
50	<i>Pongamia pinnata</i> (L.) Pierre	Karanja	Fabaceae	Twig, leaf, seed	Twigs are frequently used as tooth brush to strengthen gum. Seed powder taken with water every morning to check diabetes. Seed oil used as message to prevent malaria.
51	<i>Premna latifolia</i> Roxb.	Gandhri	Verbenaceae	Leaf	Decoction is taken to reduce joint pain; paste is also applied on affected areas of pain.
52	<i>Psidium guajava</i> L.	Jam, Pijuli	Myrtaceae	Leaf	Tender leaf juice is taken to prevent blood dysentery.
53	<i>Pueraria tuberosa</i> (Wild.) DC.	Mardimala	Fabaceae	Tuber	Powder mixed with honey is taken orally once daily as health tonic.
54	<i>Quisqualis indica</i> L.	Malati	Combretaceae	Root	Paste is applied to cure eczema, scabies and allied skin diseases.
55	<i>Ricinus communis</i> L.	Kalo	Euphorbiaceae	Leaf	Paste is slightly warmed and applied to sores and boils.
56	<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Usabsul	Apocynaceae	Root	Paste is applied to affected parts of snake-bite and also taken orally with little water to neutralise poisonous effect. Intake of paste in empty stomach helps to check diabetes.
57	<i>Scindapsus officinalis</i> (Roxb.) Sch.	Gajapippali	Araceae	Fruit	Intake of half-burnt fruit and ash with dry ginger and honey cures joint pain and rheumatism.
58	<i>Semecarpus anacardium</i> L. f.	Kala bhalia	Anacardiaceae	Kernel	Half-burnt hot kernels are applied to remove external warts and small swellings/tumours.
59	<i>Shorea robusta</i> Gaertn.f.	Jargi	Dipterocarpaceae	Bark	Bark paste applied on affected parts when bitten by domestic animals. Fruit powder with little water is taken against diarrhoea.
60	<i>Sida acuta</i> Burm. f.	Rupi	Malvaceae	Whole plant	Whole plant is boiled in water and allowed child to take bath after cooling to keep them healthy and free from skin diseases.
61	<i>Smilax zeylanica</i> L.	Muturi	Smilacaceae	Root	Paste of root and turmeric is taken in morning for 5-7 days to regularise menstrual problems of women.

62	<i>Solanum virginianum</i> L.	Bheji	Solanaceae	Root	Root paste along with black pepper is taken to cure cold, cough and fever.
63	<i>Syzygium cuminii</i> (L.) Skeels	Jam	Myrtaceae	Seed	Powder along with leaf powder of Nimbamara ( <i>Azadirachta indica</i> ) is taken once a day for a week to cure diabetes.
64	<i>Terminalia bellerica</i> (Gaertn.) Roxb.	Bahadamrahanu	Combretaceae	Fruit	Intake of powder along with 3-4 black peppers is useful for acidity and stomach disorders.
65	<i>Terminalia chebula</i> Retz.	Haridamrahanu	Combretaceae	Fruit	Tender fruit pulp is applied to dental infection and pain.
66	<i>Tinospora cordifolia</i> ((Willd.) Hook. f. & Thoms.	Guluchi	Menispermaceae	Twig	Decoction of dry twig and bark is given for muscular swellings, joint pain and rheumatism and also for fever.
67	<i>Tridax procumbens</i> L.	Bishalyakarani	Asteraceae	Leaf	Crushed leaves and juice is applied to heal fresh wounds and piles.
68	<i>Vitex negundo</i> L.	Nirgundi	Verbenaceae	Root, leaf	Paste of root and leaves is applied on joint pain and rheumatic affections.

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