

LESS KNOWN ETHNOMEDICINAL USES OF SOME PLANTS FROM SUNDARGARH, MAYURBHANJ, ANGUL AND BALANGIR DISTRICTS OF ODISHA, INDIA

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ABSTRACT

The present paper enumerates ethnomedicinal uses of 68 plant species belonging to 63 genera and 40 families, collected from Sundargarh, Mayurbhanj, Angul and Balangir districts of Odisha that have not been reported earlier.

Keywords: Ethnomedicinal uses, Sundargarh, Mayurbhanj, Angul, Balangir, Odisha.

INTRODUCTION

The State of Odisha (erstwhile Orissa) is located in the eastern coast of India between 17°49' to 22°34' N and 81°29' to 87°29' E and surrounded by Andhra Pradesh on the South-East, Chhattisgarh on the West, Jharkhand in North, West Bengal in North-East and Bay of Bengal in the East. The State comprises 30 districts and covers an area of 1,55,707sq km with 480km long coastal line. Forests cover nearly 48,838sq km area which is 31.36 percent of the total area of the state including Biosphere Reserve, National Park and 19 Wildlife Sanctuaries. About 22.18% of the total population of the state comprises of tribal population.

Of the 62 notified Scheduled Tribes for Odisha, about 40 tribes are living in the district of Sundargarh, Balangir, Angul and Mayurbhanj. Some of the major tribes in these districts are Ahir, Bathudi, Binjhal, Bhumij, Bhunya, Dal, Gauda, Gond, Ho, Juang, Kharia, Khond, Kisan, Kolha (Kol), Kond, Lodha, Lohar, Matiya, Mirdha, Misan, Munda, Oraon, Paudi-Bhuinya, Puran, Rautia, Sabar (Sahara) and, Santhal. Mayurbhanj is the largest district of Odisha covering an area of 10,418sq.km while Sundargarh district covers 9712sq.km area. Angul district covers a geographical area of 6,232sq.km and supports a population of about 11.40 lakh. The district of Balangir is flanked in the northwest by the Gandhamardhan Hills, a name of Ramayana fame and the northeast by Mahanadi. The district covers a geographical area of 6,569sq.km and supports a population of about 13.35 lakh. These districts are considered ideal for ethnobotanical study as these are rich in flora as well as in ethnic diversity. A survey of literature revealed that a good number of valuable ethnobotanical contribution have been made during last few decades from Sundargarh, Mayurbhanj, and Balangir districts, viz., Aminuddin & Girach (1996), Bal (1942), Behera (2003, 2006), Behera & al. (2008a), Brahmam & Saxena (1990), Girach & al. (1998), Jain (1971), Kumar & al. (2006), Mishra (2004), Misra & Das (2003), Mohapatra & Sahoo (2008), Mudgal & Pal (1980), Mukherjee & Namhata (1990), Pandey & Rout (2001, 2006), Rout (2005, 2007), Rout & Pandey (2007), Sarkar & al. (1999), Satapathy (2008), Satapathy & Panda (1992), Satapathy & Brahmam (1996), Saxena & Brahmam (1989), Saxena & al. (1988), Singh & al. (2010a, 2010b, 2010c), Tripathi & Behera (2008) and Yoganarasimhan & Dutta (1972) but information pertaining to Angul district is scanty. Keeping this in view, efforts have been made to collect, document and preserve these centuries old precious traditional knowledge from these tribal dominated districts of Odisha before their complete depletion.

MATERIALS AND METHODS

The study was carried out during 2006-2011. Several field tours have been undertaken in remote tribal villages and forest areas of Bonaigarh and Rourkela divisions of Sundargarh district; Karanjia, Rairangpur, Baripada and Udala (Kaptipada) divisions of Mayurbhanj district; Satkosia, Athamallik, Pallahara and Chhendipada divisions of Angul district and Patnagarh division of Balangir district. Open-ended interviews were made with elderly persons, traditional medicine men 'Vaidya', 'Kaviraj' (between 40 to 90 years old) of these districts for the first hand information on ethnomedicinal uses of the plants. The informants were taken to

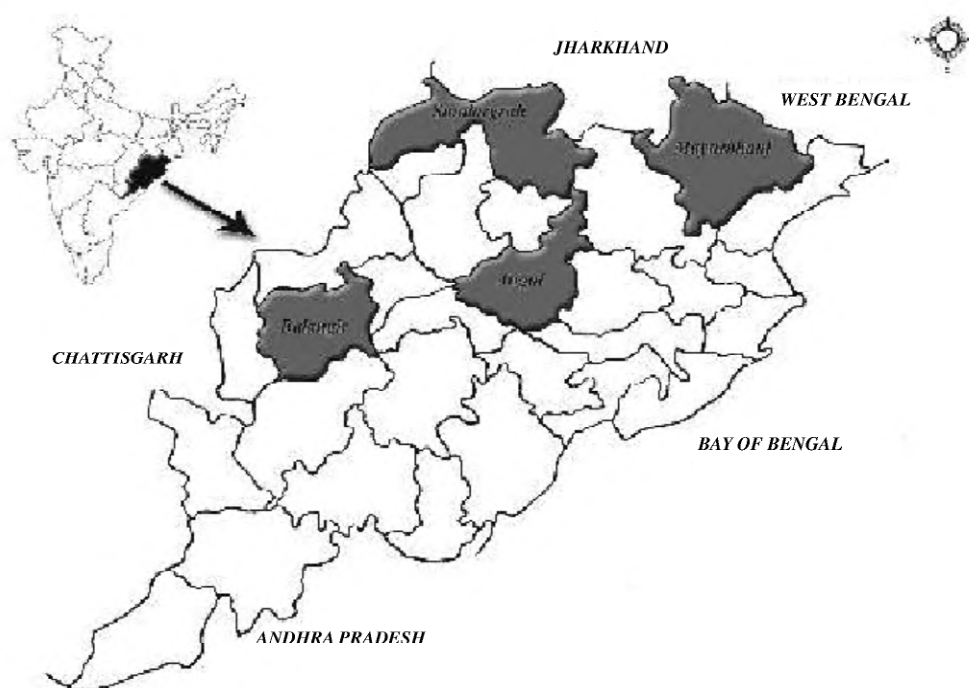


Fig. 1. Ethnobotanically Surveyed Districts of Odisha (Orissa)

forest for confirmation of the plant species. Care has been taken to record only those medicinal information whose curative potentialities have been confirmed by the informants. Plant specimens were identified with the help of regional floras like, Haines (1921 - 1925), Mooney (1941, 1950) and Saxena & Brahmam (1994 - 1996). The collected specimens were deposited in Ethnobotanical Herbarium of Central Botanical Laboratory (CBL), Howrah.

The present paper deals with 71 ethnomedicinal uses of 68 plant species that were selected and compared with well-known standard Indian medicinal/ethnomedicinal literatures (Chopra & al., 1956; Kirtikar & Basu, 1984) Jain, 1991. All these plant species were enumerated in alphabetical order with their family in parenthesis, followed by the local name(s), locality(ies), CBL voucher number(s), mode of preparation and method of ethnomedicinal uses. The abbreviations used are: LN = Local Name, Loc. = Locality.

ENUMERATION

Abelmoschus crinitus Wall. (Malvaceae); L.N.: Ban medhasingh; Loc.: Samala Gudapada CBL-30556.

Whole plant is boiled with leaves of *Dendrophthoe falcata* (Kumbhi malang) and *Abutilon indicum* (Ban kawnriya) and the decoction (1 spoonful) is given daily for 30 days in the treatment of epilepsy.

Abrus precatorius L. (Fabaceae); L.N.: Nali kaincho, Gunjo, Kencho, Kayacho-lal; Loc.: Purunakotc 34109, Golabandha Kerjang 30587, Kirbhanji CBL-30131.

Whole plant is made into paste and applied externally on female genitals for 7 days in the treatment of menorrhagia (Rakta pradar).

Achyranthes aspera L. (Amaranthaceae); L.N.: Aphamarga, Kukurdanti; Loc.: Banka Bihar, Rampali CBL-30006.

Roots are pasted along with whole plant of *Solanum surattense* (Akranti), *Andrographis paniculata* (Bhulimb), leaves of *Justicia adhatoda* (Basang) and *Vitex negundo* (Baiguniya) and boiled with water. The decoction (100 ml.) is taken in morning and evening with honey for 3 days in the treatment of malaria (Palijar).

Aegle marmelos (L.) Correa (Rutaceae); L.N.: Belo, Bel; Loc.: Kendu Mundia, Kumbhia, Mangalpur CBL-34178, Golabandha Kerjang, Bhurkibhora, Chhendipada CBL-30583, Harishankar CBL-30056.

Twenty - one pieces (2.5cm long) of roots are ground along with black pepper (21) and rice water (Chawal dhowan)

and made three doses. Each dose is given once in a week for three weeks in the treatment of spermatorrhoea (Dhat) for complete cure. During the treatment meat, egg and sour food should be restricted.

Tender leaves (4 - 5) are chewed in empty stomach daily in the morning in the treatment of fistula.

Aerva sanguinolenta (L.) Blume (Amaranthaceae); L.N.: Chawad dhuwa; Loc.: Kerjenga, Pallahara 30401.

Leaves are cooked as vegetable and given continuously for one week to the patient in the treatment of leucorrhoea.

Ageratum conyzoides (L.) L. (Asteraceae); L.N.: Gandhri, Pukhu sungha, Udasmari; Loc.: Khuludi, Jamardihi, Nizgarh CBL-30455, Harishankar, CBL-30025.

Leaf extract or decoction (1 spoonful) is given with honey (Mahu) for five days in the treatment of brain malaria and common malaria.

Alstonia scholaris (L.) R. Br. (Apocynaceae); L.N.: Chhatiyona; Loc.: Harishankar 30066.

Stem bark powder (10 g) is mixed with a glass of water and taken orally for 30 days in the treatment of premature ejaculation.

Andrographis paniculata (Burm.f.) Nees (Acanthaceae); L.N.: Bhuin neem, Kari bahu, Kalamegh, Kali-bahu, Bhuin-limba, Chiraita; Loc.: Ramtirtha Badam Pahar Hathikote CBL-11770, Purunakote, Mangalpur, Parwatipur 34123, Kerjenga, Jamardihi, Nizgarh, Chhendipada CBL-30420.

Roots are pasted with the roots of *Pygmaeopremna herbacea* (Ganthi) and applied externally on rheumatic and gout affected parts of the body. It is also pasted with soaked rice and made half-baked chapattis and taken internally for one week for quick recovery.

Annona squamosa L. (Annonaceae); L.N.: Atto, Mandargam, Sharifa; Loc.: Badampahar 11800.

Green leaves are boiled, and after cooling the decoction is given to gargle for a week in the treatment of toothache.

Anogeissus acuminata (Roxb. ex DC.) Guill. (Combretaceae); L.N.: Phasi; Loc.: Hathigirija CBL-34171.

Leaves are ground with the leaves of *Limonia elephantum* (Kentho patra) and black carbon dust (Andho), collected from inverted iron disc (Tawa) and given to domestic cattle to check any type of diarrhoea (Jhada).

Argyrea nervosa (Burm.f.) Bojer (Convolvulaceae); L.N.: Budha dharak; Loc.: Harishankar CBL-30023.

Whole plant/leaves/seeds are powdered and taken (10 g) with honey and water obtained after washing rice (Chawal dhua pani) two times in empty stomach for one week in the treatment of leucorrhoea (Pradar).

Seed powder (10 g) is taken with cow ghee and sugar crystal (Misri) in equal quantity and milk (200 ml) for one month to increase concentration and quality of semen.

Barleria prionitis L. (Acanthaceae); L.N.: Kanta malti; Loc.: Barhampura, Patnagarh CBL-30003.

Seeds or leaves are pasted and taken with milk or honey in early morning for increase quality and concentration of semen.

Barringtonia acutangula (L.) Gaertn. (Barringtoniaceae); L.N.: Hinjado, Hinjau; Loc.: Hathigirija CBL-34165, Jamardihi CBL-30475.

Fresh leaves are cooked with rectified butter (Ghee) and given 2 - 3 times per day in the treatment of piles till cure.

Bauhinia vahlii Wight & Arn. (Caesalpiniaceae); L.N.: Siali lata; Loc.: Kendu Mundia CBL - 34189.

Leaf powder is mixed with mustard oil and applied externally on a fungal infection, behind the ear.

Bixa orellana L. (Bixaceae), L.N.: Jhapra, Kumkum; Loc.: Harishankar CBL - 30013.

Seed powder (1 g) is given with milk (1 glassful) in the morning for 7 days in the treatment of leucorrhoea (Pradar).

Borassus flabellifer L. (Arecaceae); L.N.: Tad, Tad gachh; Loc.: Jamardihi, Kumbhia, Parwatipur, Mangalpur CBL-34271.

Inflorescence of male plant is ground and given (50 g) to woman in empty stomach at the end of menstruation cycle as a contraceptive for next few months. She will become complete infertile after consuming second or third dose. Ash after burning of male inflorescence is also given for the same purpose.

Caesalpinia bonduc (L.) Roxb. (Caesalpiniaceae); L.N.: Gilo, Gila; Loc.: Nizgarh, Pallahara CBL - 30541.

Seeds are powdered and one tea spoonful is given with milk for 21 days to increase quality and concentration of semen.

Cajanus scarabaeoides (L.) Thouars Syn. *Atylosia scarabaeoides* (L.) Benth. (Fabaceae); L.N.: Kurthia, Kulthia, Sarpunkha; Loc.: Purunakote 34114, Nizgarh, Pallahara 30513.

Seed extract (one drop) is poured into eyes regularly for 2 months in the treatment of poor vision due to cataract (Jala/Palado-nemopet).

Calotropis procera (W.T. Aiton) Dryand. (Asclepiadaceae); L.N.: Arak gachh, Sweto arkho, Araka, Atang; Loc.: Mangalpur, Parwatipur, Kerjenga CBL-34260, Gurguria, Badam Pahar, Manchabanda, Hathikote CBL - 11801.

Leaves are ground with the leaves of *Ricinus cummunis*, *Datura metel* and alum (after exude out water by heating on hot iron) in equal quantity and made pills. Each pill (3 g) is given in the morning and evening with hot water for 15 - 20 days in the treatment of joint pains.

Fresh latex is collected, dried and made pills and 1 pill per day is given for 7 days before sleeping at night in the treatment of fistula.

Canavalia gladiata (Jacq.) DC. (Fabaceae); L.N.: Taurango; Loc.: Jamardihi CBL-30478.

Fresh extract of leaf is applied externally on scorpion stung part to get relief from pain and also employed on forehead in the treatment of half portion headache (Ardha kapali).

Capparis zeylanica L. (Capparaceae); L.N.: Asaduwa; Loc.: Hathigirija CBL-34158.

Stem bark made into paste with water and the prepared paste (½ spoonful) is given with milk (50 ml) for 7 days in the treatment of gout (Amba - vato). During the treatment consumption of fish and meat is restricted.

Cassia fistula L. (Caesalpiniaceae); L.N.: Sunari, Sonari; Loc.: Purunakote CBL-34115, Kerjenga, Jamardihi, Samala Gudapada, Pallahara, Chhendipada CBL - 30411.

Roots are ground with water and the paste is kept inside the folded leaves of *Shorea robusta* and warmed on a hot iron disc (Tawa). Then this tepid paste is applied 2 or 3 times in the treatment of lumbago. Bark powder along with dried ginger powder is also taken orally twice a day for the same.

Cassytha filiformis L. (Lauraceae); L.N.: Nirmuli; Loc.: Golabandha Kerjang, Bhurkibhora CBL - 30585.

Whole plant is made into paste with water and applied externally on glandular swellings due to hurt.

Celastrus paniculatus Willd. (Celastraceae); L.N.: Pingu, Kujri, Malkangini, Grismsundari, Gudtaklata; Loc.: Beldihi, Lipighutu, Manchabanda, Divyasingh Nagar 19652, Kirbhanji CBL - 30127.

Root bark is powdered with root of *Withania somnifera* (Aswagandha), crystal sugar (Misri) and clove. The powder (15 g) is given daily for 15 days to increase the number of sperms in semen.

Cheilanthes farinosa (Forssk.) Kaulf. (Cheilanthaceae); L.N.: Chabol, Indrajai; Loc.: Kerjenga, Nizgarh CBL - 30421.

Soft leaves are ground with water and the paste is applied gently on the arms of children, suffering from stiffness of arms with pain (Kada-vat) for 7 days.

Cheilocostus speciosus (J. König) C. Specht Syn. *Costus speciosus* (J. König) Sm. (Costaceae); L.N.: Gai-gendaliya, Kewu, Kou, Koukouka; Loc.: Purunakote CBL - 34112, Kendu Mundia, Takoba CBL - 34193, Jamardihi, Pallahara CBL - 30481.

Rhizomes are dried, powdered and given with honey (1:2 ratios) in stomach pain. It is also given orally in the treatment of hydrocoel (Eksira) for 3 weeks.

Cissampelos pareira L. (Menispermaceae); L.N.: Akand bindu, Moch kundo; Loc.: Hathigirija CBL - 34157, Kerjenga, Nizgarh, Pallahara, Sankerjang Pansai CBL - 30445.

Leaves (7) are pasted with black pepper (7) and given to woman at the end of menstruation cycle as oral contraceptive. The same prescription is also given to woman for abortion of 3 months old foetus.

Combretum decandrum Jacq. (Combretaceae); L.N.: Kada atundi; Loc.: Hathigirija CBL - 34153.

Fresh tender leaves are made into paste with fresh raw turmeric and the paste is applied externally on fungal infection between the toes for 5 - 7 days.

Commelina benghalensis L. (Commelinaceae); L.N.: Kena-suri; Loc.: Purunakote CBL - 34131.

Roots are pasted with fresh turmeric and water. The prepared paste is applied gently over stomach of infants (below 6 months) in stiffness of arms and legs (Kada-vato) for 2 - 3 days.

Crotalaria prostrata Willd. (Fabaceae); L.N.: Jhumka; Loc.: Sundivilla, Ramatirtha CBL-11704.

Fresh plants are pasted with water and applied externally on rheumatic pains for 30 days.

Curcuma amada Roxb. (Zingiberaceae); L.N.: Amba-ada, Amoda; Loc.: Manchabanda CBL-19681.

Rhizomes are pasted with bulbs of *Urginea indica* (Jangli piyaz) and mixed with warm oil and applied 2 - 3 times daily for 5 days on half portion gout (Ardhang-vat).

Dalbergia sissoo DC. (Fabaceae); L.N.: Sisu; Loc.: Ramatirtha, Sundivilla, Hathikote CBL - 11749.

Fresh stem bark is pasted with water and the paste is applied externally on the waist for 15 days to cure lumbago.

Dendrocalamus strictus (Roxb.) Nees (Poaceae); L.N.: Bans, Baunsa; Loc.: Hathigirija, Kumbhia, Takoba CBL - 34168.

Green tender leaves are pasted with a little black carbon dust (Andho), collected from lower side of iron disc (Tawa). It is fed to domestic animals for once only to check acute diarrhea.

Diplocyclos palmatus (L.) C. Jeffrey (Cucurbitaceae); L.N.: Shivlingi; Loc.: Motho Pahad CBL - 34213.

Roots are dried and burnt. The smoke is inhaled once only to domestic cattle in any type of disease related to skull including madness.

Euphorbia fusiformis Buch.-Ham. ex D. Don (Euphorbiaceae); L.N.: Chedikani, Dudhkuduma; Loc.: Nizgarh, Pallahara CBL - 30539.

Root powder (1gm) is given along with milk of goat daily in the night for one month in the treatment of tuberculosis.

Ficus racemosa L. (Moraceae); L.N.: Dumer, Dimiri; Loc.: Harishankar, Banka Bihar CBL - 30075.

Water is obtained when the roots are cut obliquely. This water (200 ml) is given daily to victim suffering from madness for one month. This water is also poured on the head of patient for quick recovery.

Stem bark is ground and boiled with water and the resultant water (100 ml) is given before meals for 15 days in the treatment of leucorrhoea.

Flemingia strobilifera (L.) W.T. Aiton (Fabaceae); L.N.: Murgo sheera; Loc.: Samala Gudapada CBL-30543.

Roots are powdered and given with hot water in morning and evening for 3 days to check amoebiasis.

Gloriosa superba L. (Liliaceae); L.N.: Bandriya phool, Nahnugudia, Islagudia, Orga baha, Kalihari, Agnishika, Jhagdayee; Loc.: Ramatirtha, Gurguria, Jamda, Balia Patha, Manchabanda CBL - 11722.

Equal amount of rhizome, garlic and onion are made in to paste & boiled in mustard oil until it becomes foamless. The prepared lotion is used for massage on the body for 4 - 5 day for the treatment of arthritis.

Ixora pavetta Andr. (Rubiaceae); L.N.: Bhuen kurma, Telkui gachh, Tel kurma, Tel kurmi; Loc.: Kerjenga, Jarapada, Chhendipada, 30572, Kumbhia, Tentuli, Bhurkibhora CBL - 34194.

Fresh roots are ground with water and one spoonful is given for 2 days in the treatment of blood dysentery.

Kaempferia galanga L. (Zingiberaceae); L.N.: Saparkachu, Bada sarpunkha; Loc.: Manchabanda CBL - 19680.

Fresh tuber paste is applied externally on paining parts of the joints till complete cure.

Leea macrophylla Roxb. ex Hornem. (Leeaceae); L.N.: Hathikana, Hathkan; Loc.: Ramatirtha CBL - 11777.

Fresh roots paste applied externally on waist in the treatment of lumbago.

Leonotis nepetacfolia (L.) R. Br. (Lamiaceae); L.N.: Barchhi gawar; Loc.: Patnagarh 30089.

Roots (10 g) is pasted with water (50 ml) and taken orally for 5 days in the treatment of chest pain.

Leucas cephalotes (Roth) Spreng. (Lamiaceae); L.N.: Nadiya, Gobiful; Loc.: Rampali, Ghumpali CBL - 30157.

Fresh leaf paste is applied on forehead in headache.

Leucas mollissima Wall. ex Benth. (Lamiaceae); L.N.: Samar khayee; Loc.: Kendu Mundia CBL - 34188.

Roots are ground with water and the prepared paste is warmed and applied daily for twice on gout, rheumatism and paining part of the body.

Mimosa himalayana Gamble (Mimosaceae); L.N.: Kirkinchi; Loc.: Hathigirija 34162, Nizgarh, Pallahara CBL - 30512.

Dried roots are ground with dried ginger and black pepper and the powder (1 spoon) is given twice a day for 2 - 3 months in the treatment of rheumatism, gout and arthritis.

Morinda coreia Buch.-Ham. Syn. *Morinda tinctoria* Roxb. (Rubiaceae); L.N.: Chayalee, Chaily; Loc.: Ramatirtha, Sundivilla CBL - 11751.

Stem bark paste is applied locally on the paining part of the joints in case of animals as well as human beings.

Nerium oleander L. Syn. *N. indicum* Mill. (Apocynaceae); L.N.: Kanak champa; Loc.: Harishankar 30072.

Fruit is cut in such a shape and fitted around paining and infected nails of toes after slightly warmed. In next morning the pus will come out and pain will be reduced.

Ocimum basilicum L. (Lamiaceae); L.N.: Ban-tulsi, Tunag-tulsi, Londa-babuli; Loc.: Sundivilla, Badam Pahar, Manchabanda 19645, Kerjenga, Nizgarh, Pallahara CBL - 30412.

All parts including seeds are boiled with mustard oil and the prepared lotion is applied externally on joint pain for 2 - 4 days.

Seeds are powdered and given (1 g) daily with hot water for 1 year in the treatment of leprosy (Kusta-rog).

Oroxylum indicum (L.) Kurz (Bignoniaceae); L.N.: Fanfana; Loc.: Harishankar CBL - 30028.

Stem bark is ground with water and the preparation is given (10 g) daily for 3 days in the treatment of chicken pox (Milmila/ Hadfuti). The paste is also applied externally on the body for the same.

Passiflora foetida L. (Passifloraceae); L.N.: Sikakai; Loc.: Nizgarh, Pallahara CBL - 30524

Fresh fruit is ground with water and the prepared paste is applied externally once only on testicles in the treatment of hydrocoel.

Phyllanthus fraternus G.L. Webster (Phyllanthaceae); L.N.: Choti awala', Baadi aawanda ; Loc.: Handapa CBL-34242, Jamardihi, Pallahara CBL - 30462.

Whole plant is ground and the paste is given (1 spoonful) orally for 2 days to check excessive bleeding after delivery with stomach pain, lumbago and fever.

Plumeria alba L. (Apocynaceae); L.N.: Gulanchi, Kath champa; Loc.: Purunakote, Takoba CBL - 34164, 12413.

A piece of soft stem is warmed and used for hot fomentation on waist after wrapping a cloth and a leaf of banana around the part to allay pain.

Polyalthia longifolia (Sonn.) Thwaites (Annonaceae); L.N.: Devdaru; Loc.: Bhurudbani 19789.

Stem bark is dried, powdered and given with warm water orally in the treatment of gout for 7 days.

Pterospermum acerifolium (L.) Willd. (Sterculiaceae); L.N.: Banbasa phool; Loc.: Harishankar CBL - 30060.

Dried flowers are powdered with the flowers of *Mesua ferrea* (Nageshwar phool) and black pepper. The powder (10 g) is given in empty stomach for 3 days in the treatment of leucorrhoea (Pradar), bleeding and foul smell from genital of woman.

Sansevieria cylindrica Bojer *ex* Hook. (Liliaceae); L.N.: Ishwar jata, Ojhad gachh, Oghad gachh, Gokhura gad, Naga ahiri; Loc.: Parwatipur, Tridhara CBL-34252, Khuludi, Pallahara CBL - 30451.

Fresh plant is pasted without water and applied on the part bitten by snake and believes that poison will not spread further. The extract of the plant is also given simultaneously for quick relief.

Sida rhombifolia L. (Malvaceae); L.N.: Bazramuli; Loc.: Sundivilla CBL - 11819.

Roots are pasted with water and applied externally on the paining joints of human beings as well as cattle.

Smilax ovalifolia Roxb. *ex* D. Don (Smilacaceae); L.N.: Kumbhatua, Muturi, Muchudi, Kamaltua lata; Loc.: Majhikholi CBL - 34142, Kerjenga, Samala Gudapada, Pallahara CBL - 30417.

Dried roots are powdered with dried ginger (Sonth) and black pepper in (4:2:1 ratios) and given to men/women to reduce belly.

Tamarindus indica L. (Ceasalpinaceae); L.N.: Tentuli; Loc.: Hathigirija CBL - 34159, Mangalpur CBL - 34210

Leaf juice (½ spoon) is mixed with pomegranate fruit juice (½ spoon) and honey (¼ spoon) and given once only to check any kind of diarrhoea.

Terminalia chebula Retz. (Combretaceae); L.N.: Haritaki, Kasaphal; Loc.: Hathikote CBL - 19739.

Fruits are dried and powdered with the fruits of *Terminalia bellirica* and *Embelica officinalis* and taken for three weeks in the treatment of lumbago.

Tragia involucrata L. (Euphorbiaceae); L.N.: Bichha, Sengalsing, Itka; Loc.: Ramatirtha, Gurguria CBL - 11714.

Roots are grounded without water and made pills. The pills are inserted into decayed teeth for refilling and reduce the pain.

Turnera ulmifolia L. (Turneraceae); L.N.: Lohajhad; Loc.: Manchabandha CBL - 19754.

Leaves are made into paste with mustard oil and applied externally on the waist daily at night in the treatment of lumbago.

Viscum articulatum Burm.f. (Loranthaceae); L.N.: Mandirika-jhada, Kathkamjanga, Kakadagod; Loc.: Nebda, Kosigodia CBL - 19796.

Whole plant is grounded with water and the paste is applied externally on the part affected by gout.

Vitex altissima L.f. (Verbenaceae); L.N.: Chadaigudi; Loc.: Kendu Mundia CBL - 34180.

Equal amount of leaves of this plant with the leaves of *Phyllanthus fraternus*, *Andrographis paniculata* and seed of fenugreek and boiled with water. This decoction is given with honey thrice a day for 3 days in the treatment of malaria.

Vitex negundo L. (Verbenaceae); L.N.: Baigunia, Sinduri, Baigana, Sinduwar; Loc.: Ramatirtha, Gurguria, Manchabanda, Karatbasa CBL - 19691, 11728.

Roots are washed, shade-dried and grounded with honey and put in an earthen vessel (Handia). This vessel is kept under the heap of paddy seeds for 31 days. Pills (8 - 10 g) are made after proper mixing, and one pill per day is given in the treatment of rheumatism, gout, and other joint pains for 41 days.

Ziziphus mauritiana Lam. (Rhamnaceae); L.N.: Berkudi, Banro koli; Loc.: Pallahara CBL - 30491, Hathigirija CBL - 34151.

Leaves are crushed and the juice is smeared externally on palm, below feet and on the whole body during burning sensation (Jalan).

Tender leaves (2) are taken orally with a little salt for 2 days in the treatment of chicken pox.

Ziziphus nummularia (Burm.f.) Wight & Arn. (Rhamnaceae); L.N.: Kathkuceli, Kantkapali, Katphal; Loc.: Harishankar, CBL - 30052.

Whole plant (Panchang) is grind with *Piper longum* (Pipali) and made into powder. The powder (10 g) is taken daily for 3 weeks in the treatment of gout. A little honey must be consumed after taking this prescription.

DISCUSSION

The study revealed that underground parts (24) are mostly used for the preparation of ethnomedicine followed by leaves (20), whole plant (10), seed (7), stem-bark (6), fruit (3), flower (2) and latex (1). It is also observed that the common diseases for which people prefer to use ethnomedicines are gout, joint pain, lumbago, rheumatism, malaria, sperm deficiency followed by leucorrhoea, toothache, fungal infection, stomachpain, hydrocele, headache, arthritis, contraceptive, epilepsy, menorrhagia, spermatorrhoea, fistula, premature ejaculation, piles, fistula, diarrhoea, dysentery, chest pain, leprosy, chicken pox, fever, snake bite, cataract, swelling, stiffness of arm, abortion, tuberculosis, madness etc. Out of 66 plant species 4 are used for animal diseases and remaining for the treatment of human diseases.

The ethnomedicinal uses of these plants are incomparable to modern medicine and their efficacy is claimed to be high. Detailed clinical and experimental studies of these claims are necessary for better utilization of the traditional knowledge. Phytochemical and biological screening of these plant parts and isolation of active constituents responsible for their medicinal properties against these diseases should be done from various pharmaceutical industries and national laboratories for development of new herbal drug. Propagation of these herbal medicinal plants should be encourage in the area by using tribal skill and establishment of small herbal drug collection and processing units for the economic benefit of the country as a whole and for the tribal in particular.

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