

DOCUMENTATION OF TRIBAL CLAIMS FOR RHEUMATISM IN ODISHA, INDIA

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ABSTRACT

Objectives: Odisha has been known as a rich source of valuable medicinal plants. Present work enumerates the indigenous knowledge on plant utilized as a natural remedy for rheumatism by the local or native peoples of Odisha.

Methods: Information on curative values of different wild drug plant species has been gathered through personal interaction with tribal peoples. The study was conducted during the year 2010-2011 following standard ethno botanical methods.

Results: A total of 144 plant species belonging to 57 families and 130 genera has been documented. The dominant families are Fabaceae, Acacthaceae, Apocyaaceae, Euphorbiaceae, Malvaceae. Shrubs (34%) were the primary source of medicine, followed by herbs (32%) and trees (22%). High rate of frequency citation (Fc) of different medicinal plant species reveals that the current ethno botanical claims are strongly authenticated and needs to be further phytochemical and pharmacological investigation of herbal drug development program.

Conclusions: Immediate steps should be taken not only to protect the medicinal flora of the state, but also to conserve the valuable traditional knowledge prior to extinction.

Keywords: Frequency citation, Indigenous knowledge, Rheumatism, Traditional Knowledge, Odisha.

INTRODUCTION

Odisha is endowed with a variety of climates, ecological zones and topographical regions. The flora are extremely varied and diverse and highly fascinating. According to WHO, about 80% of the world's populations, especially in rural areas depending on herbal medicine for their healthcare needs. The ethnic people residing in different geographical belts of Odisha depend on wild plants to meet their basic requirements and all the ethnic communities have their own pool of secret ethno medication and Ethno pharmacological knowledge about the plants available in their surroundings, which has been serving rural people with its superiority. Due to changing lifestyle, extreme secrecy of traditional healers and the negligence of youngsters, the practice and dependence of ethnic societies in folk medicines is in rapid decline globally, therefore exploitation and documentation of indigenous knowledge are deliberately needed (Behera *et al.* 2005; Kumar *et al.* 2003; Longuefosse and the Nossin, 1996; Rajkumar and Shivanna, 2010; Saikia, 2006). Rheumatism is commonly known as 'Vat', 'Gathia', 'Arhang Vat' in Hindi as well as in Odiya. In general, rheumatism refers to various painful medical conditions, discomfort and disability, which affects the bones, joints, muscles, tendons, nerves, etc. The term 'rheumatism' is not frequently used in current medical text, but is more often found in historical medical text. Rheumatism is not a single disease. It pertains to a whole range of conditions, all of which cause pain. Rheumatism is more common among the middle aged and elderly people. The exact cause of most forms of rheumatism is not known. Exposure to wet and cold may aggravate the pain. Arthritis, which literally means joint inflammation, is just part of the rheumatic diseases. Arthritis primarily involves joint pains, joint stiffness, joint inflammation and joint damage. There are many common types of arthritis viz. Rheumatoid arthritis, osteoarthritis, juvenile arthritis, psoriatic arthritis, reactive arthritis, infectious arthritis, gout and pseudo gout.

Hence, the present investigation, focused on the survey of rich forest pockets of Odisha and documentation of tribal claims for the treatment of rheumatism.

MATERIALS AND METHODS

Study site: Field studies were conducted in different forest pockets of Odisha. Information on curative values of different wild drug plant species has been gathered through personal interaction with

tribal peoples. Four basic interview techniques were used; open-ended and semi structured interviews for qualitative data collection and structured interviews and questionnaires for quantitative analysis (Martin, 1995). Plant materials (annuals, flowers and fruits) were collected during different periods depending on its availability, flowering and fruiting season. Then the plant samples were dried and stored for further requirement as and when necessary.

The voucher specimens were brought to the laboratory and processed for herbarium specimen (Rao and Sharma, 1990; Woodland; 1997) and identified with the help of available floras and literatures (Saxena and Brahmam, 1994-1996). The specimens were deposited in the Herbarium (RRL-B), Environment and Sustainability, Department of CSIR-Institute of Minerals & Materials Technology, Bhubaneswar for future references. The botanical identities of collecting specimens were confirmed in the Herbarium, Environment and Sustainability, Department of CSIR-Institute of Minerals & Materials Technology, Bhubaneswar. The data were spread on an excel sheet to summarize and to identify various proportions like plant families, habit and availability of the plant in a particular month, plant parts used as medicine and frequency of citation. Frequency of citation was calculated by following formula-

Survey and discussions

The local community mostly depends on the medicinal plants available in their environment for their health care. The district is rich in medicinal plants and ethno medicinal knowledge. Information gathered during the present investigation are enumerated with their botanical names followed by family names, local names, parts used, life forms, flowering and fruiting season (Table 1).

In the present study, ethno medicinal data on 144 plant species belonging to 57 families and 130 genera were collected (Table 2). Out of 57 families, few dominant families are Fabaceae, Acacthaceae, Apocyaaceae, Euphorbiaceae, Malvaceae. Out of 144 species used, shrubs represented a maximum of 50 species followed by herb (47), trees (32) and climbers or twiners (17) as shown in fig. 1. *Trigonella foenum-gruecum* Linn. 57, 71 (89%), *Leontis hepeticifolia* R. Br. 126,115 (88%) are the most frequently and popularly used as medicinal plants for the treatment of rheumatism in the study area (Table 2).

$$\text{Frequency of citation (\%)} = \frac{\text{No. of informants who cited the species} \times 100}{\text{Total no. of informants interviewed}}$$

Table 1: Detail of informants interviewed in the survey forest of Odisha

S. No.	Name	Age	Sex	Location	Occupation
1	ABB	48	M	Gandhamardan	Local healer & Plant collector
2	ABE	51	M	Malyagiri	Kabiray
3	ANA	58	M	Deogarh	Local healer
4	BKP	60	M	Malyagiri	Kabiray
5	BDA	55	M	Mahendragiri	Local Healer & Farmer
6	BMA	48	M	Deomali	Farmer & Local Healer
7	CDA	37	M	Deogarh	Medicine Seller
8	DBO	59	M	Malyagiri	Local Healer & Farmer
9	DSA	45	M	Gandhamardan	Health Assistant
10	DHA	72	M	Pradhanpat	Senior citizen
11	GMU	56	F	Nrusiganath	Social worker & Local healer
12	GNA	66	F	Pradhanpat	Social worker & Local healer
13	GDE	49	F	Deogarh	School Teacher
14	GHA	55	M	Gandhamardan	Farmer
15	HDA	53	M	Deomali	Farmer & Local Healer
16	HMA	67	M	Malyagiri	Farmer
17	IMU	71	F	Manamunda	Knowledgeable person
18	JGO	55	M	Pradhanpat	Kabiray
19	KJA	70	F	Manamunda	Senior citizen
20	KGO	58	F	Gandhamardan	Social worker & Local healer
21	KGC	48	M	Pradhanpat	Local Healer & Farmer
22	LNA	65	F	Deogarh	Knowledgeable person
23	NLA	64	M	Manamunda	
24	MMU	57	M	Gandhamardan	Social worker
25	MGO	56	M	Malyagiri	Plant collector
26	MHA	70	M	Nrusiganath	Knowledgeable person
27	MNA	58	M	Deomali	Farmer & Local Healer
28	MJA	57	F	Gandhamardan	Ex Headmaster
29	MPA	41	M	Mahendragiri	Local Healer & Farmer
30	NBE	61	M	Deogarh	Tribal healer
31	NPA	52	M	Mahendragiri	Kabiray
32	NGO	49	M	Pradhanpat	Local Healer & Farmer
33	PSA	65	F	Nrusiganath	Local healer & Plant collector
34	RNA	64	F	Nrusiganath	Plant collector & Farmer
35	RJA	68	M	Nrusiganath	Local healer & Plant collector
36	RKN	49	F	Manamunda	Farmer & Knowledgeable women
37	RMU	52	M	Pradhanpat	Kabiray
38	RSA	59	M	Gandhamardan	Social worker & Local healer
39	SMA	52	F	Deogarh	Active woman farmer
40	SPA	48	M	Mahendragiri	Local Healer & Farmer
41	SDA	45	M	Mahendragiri	Local Healer & Farmer
42	SSA	42	M	Malyagiri	Farmer
43	SMA	55	F	Manamunda	Plant collector
44	TMA	47	M	Deomali	Farmer & Local Healer
45	TMU	69	M	Manamunda	Knowledgeable person & senior citizen

Table 2: List of medicinal plants and their uses

S. No.	Name	Frequency of citation (F)	Family	Local Name	Parts used	Fl and Fr season	Life form
1	<i>Abrus precatorius</i> (L.) W. F. Wight	11	Fabaceae	Kainch, Kaincho	Leaves	Aug-March	Shrub
2	<i>Acacia catechu</i> Willd.	22	Mimosaceae	Khair, Khairo	Root	July-Dec	Tree
4	<i>Acampe wightiana</i> Lindl.	16	Orchidaceae	Kano-Kato	Decoction	April-Dec	Epiphyte
5	<i>Acanthus ilicifolius</i> L.	20	Acanthaceae	Harakancha	Leaves	Mar-April	Shrub
6	<i>Achyranthes aspera</i> L.	55	Amaranthaceae	Apamaranga	Herb	Oct-Feb	Herb
7	<i>Adhatoda vasica</i> Nees.	66	Acacthaceae	Basango	Leaves	Oct-Feb	Shrub
8	<i>Alangium salvifolium</i> (L. f) Wang.	10	Alangiaceae	Ankula/ Ankola	Roots, Leaves	Mar-July	Tree
9	<i>Aloe vera</i> L.	13	Liliaceae	Ghee-kunvar	Plant	Sept.- Dec	Shrub
10	<i>Althaea rosea</i> Cav. Diss	18	Malvaceae	Gulphaira	Flower	Mar-Sept	Herb
11	<i>Amarathus tricolor</i>	15	Amarathaceae	Nautia	Seed	Most part of the year	Weed (herb)
12	<i>Anagallis arvensis</i> L.	11	Primulaceae	Jankomari	Whole plant	Jun- March	Weed (herb)
13	<i>Arisaema tortuosum</i>	29	Araceae	Kushnopeni	Tuber	July-Nov	Herb

14	(Wall.) <i>Asparagus racemosus</i> willd.	27	Liliaceae	Satawari, Chhataori	Root	May- June	Under Shrub
15	<i>Azadirachta indica</i> A. Juss	20	Meliaceae	Nima(Limba)	Decoction of leaves	Mar-July	Tree
16	<i>Azima tetracantha</i> Lam.	33	Salvadoraceae	Sukkkapat	Root and Root bark	March-May	Shrub
17	<i>Baliospermum</i> <i>montanum</i> Muell.	35	Euphorbiaceae	Danti, Dumbojoda	Root	Oct-April	Undershrub
18	<i>Barleria prionitis</i> L.	32	Acanthaceae	Dasakeranta	Leaf	Oct-Feb	Shrub
19	<i>Boerhavia diffusa</i> L.	38	Nyctaginaceae	Punarnova	Root	Most part of the year	Herb
20	<i>Brassica nigta</i> L.	38	Cruciferae	Sorisha	Paste	Sept-Feb	Herb
21	<i>Bridelia retusa</i> L.	15	Euphorbiaceae	Kasi	Bark	Aug- Jan	Tree
22	<i>Butea frondosa</i> Koex-ex Roxb	18	Fabaceae	Palas	Flower	Feb-July	Tree
23	<i>Caesalpinia crista</i> L.	29	Caesalpinaceae	Dasakeranta	Leaves	Feb- May	Climber
24	<i>Callicarpa macrophylla</i> Vahl.	49	Verbenaceae	Daiya	Fruits, leaves	Aug-Jan	Shrub
25	<i>Calotropis gigantea</i> R. Br.	29	Asclepiadaceae	Aak, Arko	Leaf	Dec-June	Shrub
26	<i>Capparis zeylanica</i> Linn.	36	Capparaceae	Hatiankul	Fruits	Feb-Oct	Shrub
27	<i>Cardiospermum</i> <i>halicacabum</i> L.	18	Sapindaceae	Kanpheta	Leaves, plant	April-Nov	Climber
28	<i>Carissa spinarum</i> L.	31	Apocynaceae	Phampham mali	Root	Mar-Dec	Shrub
29	<i>Cascabela thevetia</i> L.	16	Apocynaceae	Lucky Nut tree, Kuniyari	Seeds	Whole year	Tree
30	<i>Casearia elliptica</i> willd.	19	Flacourtiaceae	Khokhoda, Benimonj	Leaf juice	Feb-May	Shrub or small tree
31	<i>Cassia fistula</i> Linn.	11	Caesalpinaceae	Bahenga, Argavado	Seed	April-June	Tree
32	<i>Catunaregam spinosa</i> (Thumb.)	13	Rubiaceae	Kaliakanta, Salara	Stem	March-Jan	Shrub or Tree
33	<i>Celastrus paniculatas</i> Willd.	15	Celastraceae	Pengu	Seed	April-Jan	Climbing
34	<i>Centella asiatica</i> L.	76	Apiaceae	Penny wort, Thalkuni	Plant	Whole year	Herb
35	<i>Chloris virgata</i> sw.	17	Gramineae	Gharaniagas	Decoction	Oct- Dec	Grass
36	<i>Cissampelos pareira</i> L.	22	Menispermaceae	Akanabindi	Root	June-Jan	Climber
37	<i>Cissus quadrangularis</i> L.	28	Vitaceae	Had bhanga	Whole plant	April-Jan	Shrub
38	<i>Cissus repens</i> Lam.	27	Vitaceae	Panibel, Pandhu	Root	July-Nov	Trailer(Shrub)
39	<i>Clerodendrum inerme</i> (L.) Gaerth	31	Verbenaceae	Phuljholi, Nutunga	Root	Most of the year	Shrub
40	<i>Clerodendrum</i> <i>infortunatum</i> Gaertn.	26	Verbenaceae	Kunti, Madhri	Roots	Jan-July	Shrub orUndershrub
41	<i>Cocculus hirsutus</i> (L.) Diels	31	Menispermaceae	Musakani	Root	March-May	Climber
42	<i>Colocasia esculenta</i> L.	73	Araceae	Banasaru	Tuber Rhizome	June-Nov	Herb
43	<i>Coriandrum sativum</i> L.	68	Umbelliferae	Dhaniya, Dhanyak	Seeds	Nov-March	Herb
44	<i>Costus speciosus</i> sm.	57	Zingiberaceae	Keo	Root	July-Dec	Herb
45	<i>Cratera hurvala</i> Ham.	48	Capparidaceae	Barna, Barun	Leavea	Jan-March	Tree
46	<i>Cryptolepis buchananii</i> Roem and Schult.	52	Asclepiadaceae	Dudhi	Latex, Leaves	Apr-June	Shrub
47	<i>Cymbopogon martini</i> (Roxb.) Wats.	37	Poaceae	Magarlata, Rosa grass	Oil, Whole plant	Oct-Dec	Grass
48	<i>Cynodon dactylon</i> (Pers.)	12	poaceae	Dubylhus	Plant, Rhizome	Throughout the year	Creeper
49	<i>Dalbergia lanceolaria</i> L.	32	Fabaceae	Puradobi	Oil	Sept-Jan	Tree
50	<i>Datura metel</i> L.	29	Solanaceae	Dudura, K aladudura	Roots part	Most part of the year	Shrubs or Under shrub
51	<i>Datura stramonium</i> Linn	37	Solanaceae	Datura	Leaf	Nov	Herb
52	<i>Derris indica</i> (Lamk.)Bennet	25	Fabaceae	Karanja	Oil from	Sep-Feb	Tree
53	<i>Dichrostachys cinerea</i>	23	Leguminosae	Koiridgo	Roots	April-Feb	Shrub
54	<i>Ecobolium Linneanum</i> Kurz.	17	Acanthaceae	Udajati	Roots	Aug-Mar	Undershrub
56	<i>Elephantopus scaber</i> Linn.	56	Asteraceae	Mayurchulia, Mayurchandrika	Root	Aug-Dec	Herb
57	<i>Embllica officinalis</i> Gaertn.	18	Euphorbiaceae	Amla, Anola	Herb	Feb-April	Tree
58	<i>Erythrina resupinata</i>	38	Fabaceae	Badokanda	Root	March-April	Undershrub

	Roxb.						
59	<i>Erythrina stricta</i> Roxb.	49	Fabaceae	Chaldua	Bark	Jan-Feb	Tree
60	<i>Erythrina variegata</i> L.	26	Fabaceae	Paladhua	Leaf	March- July	Tree
61	<i>Euphorbia tirucalli</i> L.	38	Euphorbiaceae	Khadisiju	Stem	July-Oct	Shrub
62	<i>Evolvulus alsinoides</i> L.	43	Convolvulaceae	Bichhamalia, Krishna ankaranti	Leaf and roots	July-Feb	Herb
63	<i>Ficus bonghalensis</i> L.	22	Moraceae	Bada	Milky juice	Year	Tree
64	<i>Gendrarussa vulgaris</i> Nees.	18	Acanthaceae	Kikurodanti	Leaves	Feb-May	Shrub or undershrubs
65	<i>Globba marantina</i> L.	21	Zingiberaceae	Chhota rasna	Root	Sept- Nov	Herb
66	<i>Glossogyne bidens</i> (Retz.)	36	Asteraceae	Buthi-tejraj	Root	Sept- Jan	Herb
67	<i>Gmelina asiatica</i> Linn.	11	Verbenaceae	Gopogombhari, salagusi	Roots	April-June	Shrub
68	<i>Hemidesmus indicus</i> (L.) R. Br.	26	Periplocaeae	Anantmul	Roots	Aug-Feb	Twinner
69	<i>Heteropogon contortus</i> (Linn.)	16	Graminae	Sukla, Sinkola, Dauria	Roots	Sept.-Jan	Grass
70	<i>Hibiscus tiliaceus</i> (Linn.)	23	Malvaceae	Baniya, Halbai	Roots	March-April	Tree
71	<i>Holarrhena</i> <i>antidysenterica</i> (Roth)	26	Apocynaceae	Indrajalu, Kherwa	Bark	May-Feb	Shrub or small tree
72	<i>Holarrhena</i> <i>pubescens</i> (Buch. - Ham) Wall. ex G. Don.	31	Apocynaceae	Kherwa, Indrajalo	Leaf	May-Feb	Shrub
73	<i>Ipomea pes-carprae</i> (L.) R. Br.	55	Convolvulaceae	Kansarilata	Leaves	Most of the year	herb
74	<i>Jatropha curcas</i> L.	29	Euphorbiaceae	Dhumajara	Seed	Year	Shrub
75	<i>Justicia adhutoda</i> Linn.	31	Acanthaceae	Basongo	Leaves	June-Feb	Shrub
76	<i>Justicia gendarusa</i> Burm. f.	34	Acanthaceae	Kukurdanti	Root, Leaves	Feb-May	Shrub, Undershrub
77	<i>Kydia calycina</i> Roxb.	14	Malvaceae	Puli, Boranga Bankapasia (o)	Leaves	Sept-Dec	Tree
78	<i>Lantana camara</i> L.	17	Verbenaceae	Nagaairi	Decoction	Most of the year	Shrub
79	<i>Launea sarmentosa</i> (Willd) Suhultz-Bip. Ex kuntze	67	Asteraceae	Banapatri	Juice	Mar-Nov	Herb
80	<i>Lax Procumbens</i> L.	74	Asteraceae	Bishalkarani	Root	All the year round	Herb
81	<i>Leea compactiflora</i> Kurz.	53	Leeaceae	Hansia dabar	Whole plant	July-Dec	Shrub
82	<i>Leontis hepitifolia</i> R. Br.	88	Lamiaceae	Baroh	Leaves	Oct-Jan	Herb
83	<i>Lepidium sativum</i> L.	85	Crucifera	Halim	Seed	Jan-Feb	Herb
84	<i>Lygodium flexuosum</i> (Linn) Sw.	73	Lycodiaceae	Kalamahajal	Roots	Aug-Feb	Climbing Fern
85	<i>Madhua indica</i> J. P	32	Saputaceae	Mahula, Madhula	Oil From Leaves	Feb-Apr	Tree
86	<i>Madhuca longifolia</i> (Koenig) Machr	27	Sapotaceae	Mahula	Bark	Feb-July	Tree
87	<i>Malachra capitata</i> Linn.	84	Malvaceae	Banbhindi	Roots	April-Dec	Herb
88	<i>Mallotus philippensis</i> Muell. Arg.	18	Euphorbiaceae	Kamila	Root	Oct-Nov	Tree
89	<i>Mangifera indica</i> L.	21	Anacardiaceae	Amba	Bark	Jan-May	Tree
90	<i>Medicago sativa</i> L.	87	Fabaceae	Lasumghas	Leaves and flowering taps		Herb
91	<i>Melia azadirachata</i> L.	11	Meliaceae	Limba	Seed	Feb-July	Tree
92	<i>Merremia tridentate</i> Linn. Hallie f	82	Convolvulaceae	Musakani	Roots	Aug-March	Herb
93	<i>Millettia pinnata</i> L.	44	Fabaceae	Karanja	Bark, seed	March-March	Shrub
94	<i>Momordica charantia</i> L.	21	Cucurbitaceae	Kalra	Fruit	June-Feb	Climber
95	<i>Moringa oleifera</i> Lamk.	25	Moringaceae	Sajana	Fruits	Jan-june	Tree
96	<i>Moringa pteridosperma</i> Gaertn.	18	Moringaceae	Sajana	Roots	Jan-June	Tree
97	<i>Murraya paniculata</i> (Linn.) Jack	27	Rutaceae	Hadkinkali, Ban Malika	Roots	April-Jan	Shrub
98	<i>Nasturtium officinale</i> R. Br	66	Cruciferae	Water- Cress	Seeds	Oct- April	Herb
99	<i>Nyctanthes arbor-tritis</i> Linn	31	Nyctaginaceae	Gangaseoli, Singadahara	Leaves	Sept-Jan	Shrubs or small trees
100	<i>Opuntia elator</i> Mill.	28	Cactaceae	Nagphani	Mucilaginous	March-April	Shrub

101	<i>Oroxylum indicum</i> vent.	19	Bignuniaceae	Bhalu- Sakti, Phampan	part Roots	July-March	Tree
102	<i>Paederia foetida</i> L.	21	Rubiaceae	Prasarini	Plant	Aug-Oct	Shrub
103	<i>Pavonia odorata</i> Willd.	74	Malvaceae	Bala	Plant	Aug-Feb	Herb
104	<i>Pergularia daemia</i> (Fursk)Chior	47	Asclepiadaceae	Hunturi,Uturudi, Utrali	Plant	Aug-Apr	Climber
105	<i>Piper higrum</i> L.	42	Piperaceae	Golomarich	Fruits	April-May	Climber
106	<i>Plantago ovata</i> Forsk.	68	Plantaginaceae	Isabgol	Seed	Oct	Herb
107	<i>Platastoma africanum</i> Beauv.	72	Lamiaceae	-----	Decoction of root	Sept-Nov	Herb
108	<i>Plumbago zeylanica</i> L.	21	Plumbaginaceae	Oghi, Dhola, Chitapuru	Root	Sept-April	Under shrub
109	<i>Plumeria rubra</i> L.	27	Apocynaceae	Champa	Latex	Jan-Feb	Tree
110	<i>Pongamia pinnata</i> (L.) Pierre	23	Fabaceae	Karanja	Stem juice	April-Jan	Tree
111	<i>Premna corymbosa</i> (Burm. f)Rooyl. Ex Willd	18	Verbenaceae	Ganiari	Entire plant	April -June	Shrub
112	<i>Pseudarthria viscida</i> (L.) Wight & Arn.	17	Leguminosae	Asanasimba	Decoction of root	Nov-Feb	Under shrub
113	<i>Psoralea corylifolia</i> L.	69	Fabaceae	Bakuchi	Seed	Dec-Feb	Herb
114	<i>Pueraria tuberosa</i> De.	31	Fabaceae	Bhui-kurma	Root	Feb-June	Climber
115	<i>Rauvolfia canescense</i> Linn.	28	Apocynaceae	Barachandrika	Roots	Most part of the year	Shrubs or Under shrub
116	<i>Renusatia vivifera</i> (Roxb)	58	Araceae	Teliakand	Corm	April	Herb
117	<i>Rourea minor</i> (Gaertn) Alston.	54	Connaraceae	Kalavidhara	Roots		Shrub
118	<i>Rubia cordifolia</i> Linn.	68	Rubiaceae	Rangochireta kuramadu	Roots	Oct- Feb	Climbing herb
119	<i>Salacia reticulate</i> Wight.	72	Celastraceae	Batra	Roots	Feb-July	Climbing herb
120	<i>Schefflera venulosa</i> (Wight & Arn.) Harms	52	Araliaceae	Surungo	Twig	April-Sept	Climbing Shrubs
121	<i>Sesbania grandiflora</i> (L.) Poir. 57,118	31	Fabaceae	Shibamalli/ Agasti	Flower	Cold season	Tree
122	<i>Sida acuta</i> Burm.	76	Malvaceae	Bajar-muli	Root	Sept-May	Herb
123	<i>Sida rhombifolia</i> Linn.	68	Malvaceae	Bajramuli	Roots	Aug-Feb	Herb
124	<i>Smilax zeylanica</i> L.	21	Liliaceae	Ramdatuni, Mutri, Rajdantni	Root	Apr-Jan	Climber
125	<i>Solanum nigrum</i> Linn.	78	Solanaceae	Makoya, Jutguni (o)	Leaf, stem	Most part of the year	Herb
126	<i>Spermacoce hispida</i> L.	83	Rubiaceae	Jlbakuta, solaganthi, sanagha-podia	Leaves, Root and Seeds	Whole year	Herb
127	<i>Spondias pinnata</i> Kurtz.	21	Amarcardiaceae	Amta	Bark, Leaves	Feb-Mar	Tree
128	<i>Strychnos hux-vomica</i> L.	18	Strychaceae	Kochila	Seed	March-Jan	Tree
129	<i>Tephrosia purpurea</i> Linn.	32	Leguminosae	Saropokha	Decoction of roots	Most part of the year	Undershrub
130	<i>Trewia hudiflora</i> L.	11	Euphorbiaceae	Paniganbhari	Root	Oct-Jan	Tree
131	<i>Trigonella foenum-gruicum</i> Linn.	89	Fabaceae	Methi	Seeds	Dec-March	Herb
132	<i>Truhulus terrestris</i> L.	72	Zygophyllaceae	Gukgra	Herb	Throughout year	Herb
133	<i>Urena lobata</i> Linn.	43	Malvaceae	Rakta pheni, Bilokapasira	Roots	Aug-Dec	Undershrub
134	<i>Urginea indica</i> Kunth. Enum.	86	Liliaceae	Ban piyaz	Bulb	Mar-July	Herb
135	<i>Vanda tessellate</i> Hook.	64	Orchidaceae	Malang	Root	March-Nov	Shrub
136	<i>Vernonia roxburghii</i> Less.	76	Compositae	Sahadevi	Roots	Nov-Feb	Herb
137	<i>Vertiveria zizanioides</i> (L.) Nash	84	Graminae	Bena	Root	Aug-Jan	herb
138	<i>Vitex negunda</i> Linn.	32	Verbenaceae	Begunia	Leaf	Most part of the year	Shrub or tree
139	<i>Vitex trifolia</i> L.	44	Verbanaceae	Bana-Begunia	Leaf	July	Shrub
140	<i>Vitis quadraangularis</i> L.	52	Vitaceae	Hadabhanga	Stem	May-Dec	Shrub
141	<i>Withania somnifera</i> Dunal.	47	Solanaceae	Asgandh, Ashwagandha	Roots	Oct-May	Shrubs or Under shrub
142	<i>Woodfordia fruticosa</i>	37	Lythraceae	Dahi, Dhatak	Roots (crushed	Nov-May	Shrub

143	Kurz. Argyreia speciosa (Linn. f.) Sweet	22	Convolvulaceae	Mundanoi	form) Root	July-April	Climber
144	Zingiber montanum (J. König) Link ex A. Dietr.	74	Zingiberaceae	Bhutanasan, Banoada	Rhizome	Aug-Nov	Herb

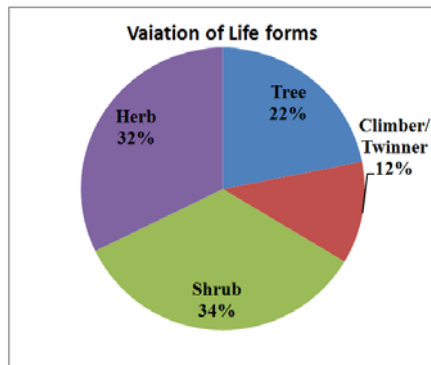


Fig. 1: Life forms of plant used for the treatment of rheumatism in the study area

The need for a specific definition of traditional knowledge is impelled by the push from the formal sector to control, manage and market the knowledge and to bring it under a regulatory framework [10]. Unfortunately, neither local inhabitants nor the government is making serious efforts for conservation of medicinal plants in the study area. An unsustainable collection of generative and vegetative parts of medicinal plants from the natural resources reduces their population as well as decrease multiplication and regenerative power. There is an urgent need to create awareness among the inhabitants of the study area about sustainable collection, conservation, domestication, small scale as well as large scale cultivation of medicinal plants. This will improve the socio economic condition of the inhabitants as well as reduce pressure on natural resources. Due to the lack of modern communications, as well as poverty, ignorance and unavailability of modern health facilities, most people, especially rural people are still forced to practice traditional medicines for their common day ailments [11]. However, the data collected during the present investigation provides sufficient clue for further scientific evaluation (phytochemical, pharmacological, and clinical) to verify and confirm the active principle (Secondary metabolites like alkaloids, steroids, phenol compound etc) responsible for curative property of these wild plant species.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

REFERENCES

1. Azaizeh H, Fulder S, Khalil K, Said O. Ethno medicinal knowledge of local Arab practitioners in the middle east region. *Fitoterapia* 2003;74:98-108.
2. Behera SK, Mishra MK. Indigenous phytotherapy for genitor-urinary diseases used by the Kandha tribe of Orissa, India. *J Ethnopharmacol* 2005;102:319-25.
3. Kumar A, Tewari DD, Pande YN. Ethnophytotherapeutics among tharus of beerpur semera forest range of balrampur. *J Econ Taxon Bot* 2003;27:839-44.
4. Longuefosse JL, Nossin E. Medical ethno botany survey in Martinique. *J Ethnopharmacol* 1996;53:117-42.
5. Martin GJ. *Ethno botany: A Methods Manual*. Chapman and Hall, London; 1995. p. 268.
6. Rajkumar N, Shivanna MB. Traditional herbal medicinal knowledge in Sagar taluk of Shimoga district, Karnataka, India. *Indian J Nat Prod Res* 2010;1:102-8.
7. Rao RR, Sharma BD. *A manual for Herbarium Collections*. India: Botanical Survey of India; 1990.
8. Saikia AP, Ryakala VK, Sharma P, Goswami P, Bora U. Ethno botany of medicinal plants used by Assamese people for various skin ailments and cosmetics. *J Ethnopharmacol* 2006;106:149-57.
9. Saxena HO, Brahmam M. *The Flora of Orissa*, Orissa Forest Development Corporation Ltd, Bhubaneswar, India; 1994-1996. p. 1-4.
10. Shinwari MI, Khan MK. Folk use of medicinal herbs of margalla hills national park, islamabad. *J Ethnopharmacol* 1999;69:45-56.
11. Woodland DW. *Contemporary Plant Systematics*. USA: Andrews University Press; 1997.