A preliminary report on ethnomedicinal uses of selected plants by Sahara tribal groups of Kangaon village of Bargarh district in western Odisha

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Abstract
Ethnomedicinal plants are playing a significant role to cure various diseases. In this present manuscript the authors were documented the conventional practices of therapeutic medicinal plants by Sahara tribal groups of Kangaon village of Bargarh District, in western Odisha, India. As this village is the residence of both the authors ARS and MS, observation of plants and close interactions with the local practitioners of Sahara tribes to extract the data were done regularly. In this present manuscript authors had documented a total of 52 plant species belong to 45 genera and 32 families based on their ethno-botanical significance. Due to communication problems and systematic transmission among young generation the conventional knowledge may be decline. Hence it is urgent to document such knowledge of elderly peoples. Several species of the present study can be further studied for their pharmacological activity and active compounds.

Keywords: Bargarh district, ethnomedicine, Kangaon village, western Odisha

Introduction
In conventional medicine system, medicinal plants are the backbone; in less developed countries more than 3.3 billion depend on plants and plant parts as medicine source in their day today life. Medicinal plants consist of rich source of secondary metabolites that secondary metabolites used in drug developments in different pharmaceutical industries [17]. The early ethnic communities throughout the World had utilized their local flora to cure a number of diseases as well as immune booster. As per the World Health Organization, > 80% of the world depends on traditional medicines. In India about 65% of people in the rural area used Ayurveda and different plants for their primary healthcare purpose [14]. But the tribal people are not like to share their ethnomedicinal knowledge except some commonly useful medicinal plants [3]. In India, more than 43% of the angiosperms are reported for their medicinal importance [6]. Tribal people had knowledge on local utilization of plants or plant parts as foods and medicine purposes. Many tribal communities also worship plants as per their religious believes, hence they were associated towards conservation of plants. The collection and documentation of ethno-medicinal knowledge has great importance towards modern drug development [18]. Many of these plants are rare and endemic and found only in forest region medicinal plants are known to be in uses by mankind since the time of immemorial [1]. Odisha is one of the tribal dominated state of India where variable in climatic conditions, huge forest area and many number of tribal communities were staying and depends on forest for their primary healthcare purpose [6, 10]. The tribal district of Odisha is inhabited by large rural population. Many people in Bargarh district till yet depend on plants for their primary treatments.

Material and Methods
Study area
Bargarh district, one of the ten districts of Western Orissa lies between 20° 43’ to 21° 41’ North latitude and 82° 39’ to 83° 58’ East latitude and having 5837 Sq. Km of geographical area. The major rivers in the district are tributaries of Mahanadi River, Ong (Ang), Jira and Jhaun rivers.
Agriculture is the main source of income of tribal people, they also depend on forest and forest based product for their regular uses. Different tribes of peoples were living in the Bargarh district, among them the Sahara, Binjalal, Kondh and Gond are the major tribes of the district [8]. Kangoan (Latitude: 21.32 and longitude: 83.43) is a medium size village located in Sohela Block of Bargarh district, Odisha having 422 families residing. The total population of the village is 1533, out of them 798 are males and 735 are females as per the Census report 2011. Kangoan village has higher literacy rate i.e. 81.24% as compared to Odisha i.e. 72.87%. Although modern system of medicine has influenced the people, still the Sahara tribal people depend on plants for the treatment of different common diseases.

Data collection
Extensive field surveys were made and plant samples were collected and preserved as herbarium. With the help of Flora Books of Orissa the collected plant species were identified [13]. To collect the voucher specimen we had followed the protocol as described by Mohanty [3] and were stored in the Department of Botany, Vikash Degree College, Bargarh. Further the local names were cross checked by using available previous report of Bargarh district of western Odisha [5-7, 9-12, 15, 16]. As this village is the residence of both the authors ARS and MS, observation of plants and close interactions with the local practitioners of Sahara tribal groups to extract the data were done regularly. The plants are categories and compiled in tabular form, in the first column the botanical name were written alphabetically, next column contains the local name, third columns contains the family, then plant parts, and last column contains the conventional uses.

Results and Discussion
Present manuscript deals with a total of 52 species belonging to 45 genera that comprises from 32 families and enlisted in Table 1, photographs of 16 selected species were shown in Figure 1. Both the family Combretaceae and Fabaceae contribute four species each; both the family Asclepiadaceae and Moraceae contributes three species each; two species each from the ten family viz. Acanthaceae, Apocynaceae, Asteraceae, Convolvulaceae, Lythraceae, Malvaccea, Phyllanthaceae, Rutaceae, Simalaceae and Verbanaceae; one species each from 18 families i.e. Amaranthaceae, Amaryllidaceae, Anacardiaceae, Asparagaceae, Caesalpiniaceae, Capparidaceae, Dioscoreaceae, Euphorbiaceae, Liliaceae, Loganiaceae, Meliaceae, Menispermaceae, Myrtaceae, Nyctaginaceae, Oleaceae, Plumbaginaceae, Sapotaceae and Zingiberaceae (Figure 2). Out of 52 plants, 12 (23%), seven (14%), ten (19%) and 23 (44%) comes under herbs, shrubs, climbers and trees respectively (Figure 3). The Sahara tribal people of Kangoan village were used the whole plants, plant parts like roots, leaves, flower, fruits, seeds, seed oils, gums of different plant species to treat different diseases.

A total of 13 similar plants like Abrus precatorius L., Achyranthes aspera L., Aegle marmelos (L.) Corr., Boerhavia diffusa L., Calotropis gigantea R.Br., Curculigo orchioides Gaertn., Ficus benghalensis L., Ficus racemosa L., Hibiscus rosa-sinensis L., Lawsonia inermis L., Phyllanthus emblica L., Strychnos nux-vomica L., Terminalia arjuna (Roxb.) Wight. & Am. were reported for the used against skin diseases in Bargarh district in Orissa [13]. Used of 35 ethnomedicinal plants by the tribals for the treatment of diarrhoea and dysentery in Bargarh district was reported by Sen and Bahera [16]. In this present report plants like Achyranthes aspera L., Aegle marmelos (L.) Corr, Azadirachta indica L. Juss., Butea monosperma (Lam.) Taub., Madhuca indica Gmel., Terminalia arjuna (Roxb.) Wight & Am., and Vitex negundo L. were noticed to use as tooth brush and tongue cleaner in regular basis. Similar kinds of uses of same six plants were reported in Bargarh district [6, 9, 11, 12] and in Kalahandi district [8]. In this present manuscript we had reported about the ethnomedicinal uses of 23 similar plants that were reported by Sahu et al. 2013 [9], in that manuscript they had reported about the ethnomedicinal used of 117 plant species by the native people of Sohela Block of Bargarh district [6]. Latex of Calotropis gigantean R.Br. was used to cure gum pain by the native peoples of Kalahandi district [8]. Further, the tribal people of Kalahandi district used the small stem of Simala zeylanica L as tooth brush to cure toothache and pyorrhea [11, 12]. A total of 12 same medicinal plants species had been reported in relieving urogenital ailments by the tribal people of Bargarh district [10].

Table 1: List of medicinal plants used by Sahara tribal groups of Kangoan village of Bargarh district in western Odisha

| Local name         | Botanical names               | Family             | Voucher No.     | Plant parts | Conventional uses                          |
|--------------------|-------------------------------|--------------------|-----------------|-------------|-------------------------------------------|
| Bonbendi           | Abelmoschus crinitus Wall.    | Malvaceae          | ARS/BGH/001     | Leaf/Root   | Cramp, cuts, depression, joint pain/Sexual |
| Gunj               | Abrus precatorius L.          | Fabaceae           | ARS/BGH/003     | Seeds/root  | Constipation/boil                         |
| Apamarga           | Achyranthes aspera var. indica L. | Amaranthaceae     | ARS/BGH/009     | Leaf, roots, stem | Typhoid, tooth brush and tongue cleaner |
| Basang             | Adhatoda vasica Nees          | Acanthaceae        | ARS/BGH/011     | Root/Leaf   | Piles/Leprosy, Bronchitis, Cough, tuberculosis |
| Bel                | Aegle marmelos (L.) Corr.     | Rutaceae           | ARS/BGH/012     | Leaf, stem  | Acidity, gastric, toothbrush              |
| Poksunga           | Ageratum conyoides L.         | Asteraceae         | ARS/BGH/015     | Leaf        | Skin disease, cuts, itches                |
| Blueelim           | Andrographis paniculata (Burn. F.) Wall. Ex. Nees | Acanthaceae | ARS/BGH/025     | Leaf        | Headache, dysentery, diarrhea             |
| Iswarjata          | Aristolochia indica L.        | Asparagaceae       | ARS/BGH/215     | Root        | Snake and insects bites                   |
| Satabari           | Asparagus racemosus Wild.     | Liliaceae          | ARS/BGH/031     | Root.       | Dyssentery                               |
| Lim                | Azadirachta indica L. Juss.   | Meliaceae          | ARS/BGH/031     | Leaf/bark/twigs | Skin diseases/to cure white discharge/used as tooth brush and tongue cleaner |
| Gadhapurni         | Boerhavia diffusa L.          | Nyctaginaceae      | ARS/BGH/038     | Root        | Cough                                    |
| Palas              | Butea monosperma (Lam.) Taub. | Fabaceae           | ARS/BGH/045     | Gum, young twigs | Diarrhea, tooth brush and tongue cleaner |
| Arakh              | Calotropis gigantea R.Br.     | Asclepiadaceae     | ARS/BGH/049     | Flower, latex | Asthma, gum pain reliever                 |
| Sunari             | Cassia fistula L.             | Caesalpinaceae     | ARS/BGH/055     | Fruit, stem bark | Rheumatism, constipation, headache        |

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| Species                          | Family          | Part Used                  | Effect                                      |
|---------------------------------|-----------------|----------------------------|---------------------------------------------|
| Akanbindhi                      | Cissampelos pareram L. | Menispermacae | ARS/BGH/-064 | Leaf | Prevent miscarriage and bleeding after childbirth. |
| Lembu                           | Citrus limon (L.) Burm. f. | Rutaceae    | ARS/BGH/-067 | Fruit Juice | Acidity, Cold, Cough, Headache, Rheumatism, Abdominal pain, Anti-vomiting |
| Karada                          | Cleistanthus collinus (Roche.) Benth. Ex. Planch | Verbenaceae | ARS/BGH/-216 | Leaf | Insecticides |
| Barun                           | Crateva magna (Lour.) DC | Capparidaceae | ARS/BGH/-078 | Leaf | To cure fissure. |
| Talnume                         | Curcudicto orchoides Gaertn. Amaryliadiaceae | ARS/BGH/-217 | Rhizome | Piles |
| Nirmuli                         | Curcudicto refixa Roxb. | Convolvulaceae | ARS/BGH/-082 | Stem | To cure epilepsy |
| Sidhpoo                         | Dalbergia siso Roxb. | Fabaceae | ARS/BGH/-086 | Seed oil | applied on burning skin to cure itching problem |
| Masiakanda                      | Dioscorea pentaphylia L. | Dioscoreaceae | ARS/BGH/-218 | Tubers | To increase sex power |
| Chitakuti                       | Euphorbia hirta L. | Euphorbiaceae | ARS/BGH/-104 | Root | Common cold and fever |
| Vichamalia                      | Evolvalus nummulars L. | Convolvulacea | ARS/BGH/-105 | whole plant | increasing memory power and to decrease hysteria |
| Bar                             | Ficus bengalensis L. | Moraceae | ARS/BGH/-106 | Tender prop root, Bark | Piles, Diabetes |
| Dumer                           | Ficus gloromata Roxb. | Moraceae | ARS/BGH/-107 | Fruit, Bark | Diabetes, Dyspepsia, Asthma, Increase in Milk Secretation |
| Pipal                           | Ficus religiosa L. | Moraceae | ARS/BGH/-108 | Bark | Skin Diseases, Boils, Blisters, Carbuncles |
| Gudamari                        | Gymnema sylvestre (Retz.) Schult. | Asclepiadaceae | ARS/BGH/-114 | Leaf | Diabetes |
| Annanta mula                    | Hemidesmus indicus L. | Asclepiadaceae | ARS/BGH/-117 | Root | Diarrhea |
| Mandar                          | Hibiscus rosa-sinensis L. | Malvaceae | ARS/BGH/-118 | Stem bark, Flower buds, stem | Abortion, Contraceptive/young stem also used as tooth brush and tongue cleaner |
| Kure                            | Holarrhena pubescens (Buch.-Ham.) Wall. Ex. G. Don. | Apocynaceae | ARS/BGH/-120 | Seed | Stomach-ache, diarhea. |
| Syamolota                       | Ichnocarpus frutescens (L.) R.Br. | Apocynaceae | ARS/BGH/-219 | Root | To clear stone in the bladder |
| Benjati                         | Lawsonia innermis L. | Lythraceae | ARS/BGH/-126 | Root | Anemia, Jaundice |
| Mahul                           | Madhuca indica Gmel. | Sapotaceae | ARS/BGH/-129 | Bark, young twigs | Dysentery, tooth brush and tongue cleaner. |
| Ganga Siualis                   | Nyctanthes arbortristis L. | Oleaceae | ARS/BGH/-147 | Leaf | Malaria |
| Anla                            | Phyllanthus emblica L. | Phyllanthaceae | ARS/BGH/-098 | Fruit, Seed oil | Digestion, mature fruit is edible; hair oil |
| Bhuein anla                     | Phyllanthus fraternus Webster | Phyllanthaceae | ARS/BGH/-159 | Root | Dysentery and diabetes. |
| Dhob Chitapar                   | Plumbago zeylanica L. | Plumbaginaceae | ARS/BGH/-163 | Root | Abortification |
| Bija                            | Pterocarpus marsapum Roxb. | Fabaceae | ARS/BGH/-167 | Bark, gum | Stomach-ache, cracks cream. |
| Bhuji                           | Semecarpus anacardium L.| Anacardiaceae | ARS/BGH/-024 | Seed oil | Cuts, wounds healing |
| Chopachini                      | Smilax aspera L. | Smilaceae | ARS/BGH/-220 | Root extract | Scabies and blood purifier. |
| Muturi                          | Smilax zeylanica L. | Smilaceae | ARS/BGH/-221 | Root | Joint pain, spermatorrhoea, |
| Kochila                         | Strychnos nux-vomica L. | Loganiaceae | ARS/BGH/-189 | Stem | Leucoderma |
| Jam                             | Syzygium camini (L) Skeels | Myrtaceae | ARS/BGH/-191 | Seed | Diabetics |
| Sahaj                           | Terminalia alata Heyne ex. Roth. | Combretaceae | ARS/BGH/-222 | Leaf, bark | Loose motion, itching |
| Kahu                            | Terminalia arjuna (Roxb.) Wight & Am. | Combretaceae | ARS/BGH/-197 | Bark, young twigs | Internal injuries, tooth brush and tongue cleaner |
| Behera                          | Terminalia bellirica (Gaertn.) Roxb. | Combretaceae | ARS/BGH/-198 | Fruit | Diarrhea, stomachache |
| Harda                           | Terminalia chebula Retz. | Combretaceae | ARS/BGH/-200 | Fruit | To remove cough, stomach problems, skin diseases. |
| Buisalakarani                   | Tritis procumbens L. | Asteraceae | ARS/BGH/-203 | Leaf | Ringworm, to stop bleeding |
| Nirgundi                        | Vitex negundo L. | Verbanaceae | ARS/BGH/-207 | Leaf, young twigs | To get relief pain from tooth, also used as tooth brush and tongue cleaner. |
| Dhataki                         | Woodfordia fruticosa (L.) Kurz | Lythraceae | ARS/BGH/-209 | Dry Flower /Leaf | Leucorrhoea/Dysentery |
| Ada                             | Zingiber officinale Rosc. | Zingiberaceae | ARS/BGH/-211 | Rhizome | Cold, Cough, Tooth ache, Asthma, Rheumatism, Stomach ache |
Fig 1: Photographs of Adhatoda vasica Nees (a), Andrographis paniculata (Burm. F.) Wall. Ex. Nees (b), Fruits of Cassia fistula L. (c), Cissampelos pareiram L. (d), Fruits of Citrus limon (L.) Burm. f. (e), Leaves of Crateva magna (Lour.) DC. (f), Rhizome of Curculigo orchioides Gaertn. (g), Cuscuta reflexa Roxb. (h), Tubers of Dioscorea pentaphylla L. (i), Gymnema sylvestre (Retz.) Schult. (j), Madhuca indica Gmel. (k), Leaves of Nyctanthes arbor-tristis L. (l), Fruits of Phyllanthus emblica L. (m), Bark of Pterocarpus marsupium Roxb. (n), Strychnos nux-vomica L. (o), and Seeds of Syzygium cumini (L.) Skeels (p).

Fig 2: Family-wise distribution of medicinal plant species.

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Fig 3: Diversity of plant species by habit

Conclusion
Traditional medicinal plants play a vital role in therapies uses to cure various diseases by Sahara tribal groups of Kangaon village of Barghar District. Many of them till yet using young stem of different plants as tooth brush and tongue cleaner in their daily life. These plants can be further studied for their pharmacological activity and active compound. Awareness regarding scientific and systematic collections of medicinal plants may be done by responsible authority for commercial purposes, which can be beneficial for the local inhabitants.

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