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Ethnobotanical study of medicinal plants in the coastal districts of Odisha

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Abstract

Ethnobotanical study was carried out in the coastal districts of Odisha during 2010-2011 to document the medicinal utility of plants. The present paper deals with traditional uses of 46 plant species belonging to 44 genera and 32 families along with correct botanical identification, local names, parts used and mode of administration in respect to different diseases. The documented ethnomedicinal plants are mostly used to cure skin diseases, diarrhoea, jaundice, piles and urinary troubles.

Keywords: Ethnobotanical study; medicinal plants; coastal districts; Odisha

INTRODUCTION

Odisha is located in the eastern coast of India on 26^0. 00' N latitude and 94^0. 20' E longitude. It has an unindented coastline (about 480 km long) extending from the marshes of Ichhapuram in the south to the coast of Suvarnarekha in the north-east. The district of Kendrapara, Jagatsinghpur, Balasore, Bhadrak, Jajpur which is located in the coastal belt of Odisha are always in limelight due to frequent occurrence of cyclones. The most intense Tropical Cyclone 05Bone in October 1999 caused severe damage and 10,256 deaths. The coastal belt is the combination of several deltas of varied sizes and shapes formed by the major rivers of Odisha, such as the Suvarnarekha, the Budhabalanga, the Baitarani, the Brahmani, the Mahanadi, and the Rushikulya. Therefore, the coastal plain of Odisha is called the "Hexadeltaic region" or the "Gift of Six Rivers". It stretches along the coast of the Bay of Bengal having the maximum width in the Middle Coastal Plain (the Mahanadi Delta), narrow in the Northern Coastal Plain (Balasore Plain) and narrowest in the Southern Coastal Plain (Ganjam Plain). The North Coastal Plain comprises the deltas of the Suvarnarekha and the Budhabalanga rivers and bears evidences of marine transgressions. In the coastal districts, the climate is equable but highly humid and sticky. The summer maximum temperature ranges between 35-40° C and the low temperatures are usually between 12-14° C. The average rainfall is 150 cm, experienced as the result of south west monsoon during July-September. The month of July is the wettest and the major rivers may get flooded. The state also experiences small rainfall from the retreating monsoon in the months of October-November. January and February are dry season.

Traditional medicine is the sum total of all knowledge and practices whether explicable or not used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observation transferred by individuals from generation to generation [1]. India is one of the world's 12 mega diversity centres with 47000 plant species. About 600 to 700 species are in much use mostly by the tribal's and rural populations and nearly 200 species are used medicinally and commercially on fairly large scale. The plants have degraded rigorously due to changing life perception and socioeconomic transformation on a global scale. Plants are diminishing at an alarming rate [2] due to lack of organized and sustainable cultivation based on scientific data and lack of awareness of society influencing plant use.

About 60% of the population of world and 80% of population in developing countries rely on traditional medicine and mostly plant drugs for their need of primary health care. An account of 70% of the population of India is dependent traditional plants based medicines. Biodiversity is the basis of human survival and their economic well being and constitutes the resources upon which families, communities, nations and future generation depends [3]. The ethnic people of the districts are quite aware of the uses of the plant species having ethno-botanical values. Very few works have been reported on ethno-botanical uses of plant species found in coastal area [4,5,6,7]. The current deforestation scenario which threatens the existence of medicinal plants encourages for conservation of plants in coastal area. Therefore, an attempt has been taken to document the ethnomedicinal plants and their indigenous knowledge prior to its extinction.

METHODOLOGY

Medicinal plants were collected during 2010 to 2011 through field survey in different remote villages of coastal districts. During the period of study, door to door visits were made to identify local people with specialized knowledge on use of medicinal plants. Plants were collected with noting their local names, parts used and ethno medicinal uses. The samples of recorded herbs, shrubs, and trees were identified with the help of previous literature and regional floras [8,9,10]. The plants specimens were processed using the standard herbarium techniques and are preserved at IMMT, CSIR, Bhubaneswar herbarium (RRL-B).

RESULTS AND DISCUSSION

The results of the ethnobotanical study in the coastal districts of Odisha are presented below in Table-1.

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Table 1- Ethnomedicinal plants in the coastal districts of Odisha

Sl. No.	Plant name/Family	Local name	Ethnobotanical claims
1	*Acacia nilotica* (L.) Delile subsp. *indica* (Benth) Brenan. (Mimosaceae)	Babool	5g powder of flower well mixed with 10g sugar candy is administered for curing jaundice.
2	*Adhatoda vasica* Nees (Acanthaceae)	Basanga	Leaf juice 10ml with 10ml honey is orally taken 3 times per a day to cure chronic cough.
3	*Aegle marmelos* (L.) Corr. (Rutaceae)	Bel	5-7 leaf taken with water in the morning once a day to relax from acidity and gastric.
4	*Aloe vera* (L.) Burm.f. (Liliaceae)	Ghikuanri	Massage the fresh leaf 2-3 times per a day to control high B.P.
5	*Andrographis paniculata* (Burm.f.) Wall.ex Nees. (Acanthaceae)	Chireita	Juice of leaves used for curing diabetes and worm in stool.
6	*Azadirachta indica* A.Juss (Meliaceae)	Limba	Paste of 20-25 fresh leaves mixed with 50gm turmeric powder is applied externally against skin diseases.
7	*Boerhavia diffusa* L. (Nyctaginaceae)	Puruni	Whole plant except root taken as vegetables.
8	*Bombax ceiba* L. (Bombaceae)	Simili	Root juice is administered in empty stomach to break the sterility of female.
9	*Calotropis gigantea* R.Br. (Asclepiadaceae)	Arakha	Fresh leaf fried with castrol oil is applied against knee joint pain.
10	*Centella asiatica* (L.) Urban (Apiaceae)	Thalkuri	7-8 leaf with one piece of sugar candy is taken in empty stomach twice a day to relief from gastric.
11	*Clitoria ternatea* L. (Fabaceae)	Aparajita	1-2g root powder mixed with warm water/milk is administered against nephritis.
12	*Curcuma longa* L. (Zingiberaceae)	Haldi	6g rhizome powder is taken orally twice a day for 4-5 days to cure from jaundice.
13	*Cuscuta reflexa* Roxb. (Cuscutaceae)	Nirmuli	Whole plant paste is used against piles.
14	*Cynodon dactylon* (L.) Pers. (Poaceae)	Duba	Leaf paste is used for curing epistaxis.
15	*Cyperus rotundus* L (Cyperaceae)	Mutha	Whole plant decoction is administered against dysentery.
16	*Emblica officinalis* Gaertn. (Euphorbiaceae)	Amla	Dried fruit and jaggery is boiled in water and filtered, which is taken twice a day for joint pain.
17	*Erythrina variegata* L. (Fabaceae)	Paldhua	Fresh leaves juice used for curing worm in stool.
18	*Euphorbia tirucalli* L. (Euphorbiaceae)	Kantasiju	Milky stem juice is applied to relief from ear pain.
19	*Ficus benghalensis* L. (Moraceae)	Bara	20g bark decoction taken twice a day for treating diabetes. 25g fresh leaf grinded with 200ml water and is taken twice a day against piles.
20	*Jatropha gossypifolia* L. (Euphorbiaceae)	Nakajada	Stem is used to cure from teeth pain.
21	*Kalanchoe pinnata* (Lam.) Pers. (Crassulaceae)	Amarpoi	40-50ml decoction of leaves is given 2-3 times a day to treat stone and urinary bladder problems.
22	*Lawsonia inermis* L. (Lythraceae)	Manjuati	Stem is boiled in water and kept overnight in a clay pot, in the morning it is filtered and taken as drink for curing stone and jaundice.
23	*Leucas aspera* (Willd.) Link (Lamiaceae)	Gainchha	Fresh leaves used as vegetable for curing worm in stool.
24	*Mimosa pudica* L. (Mimosaceae)	Lajakuli	Leaf is used for curing piles.
25	*Mimusops elengi* L. (Sapotaceae)	Baula	Seed and bark decoction is taken twice a day after food against mouth disease.
26	*Momordica charantia* L. (Cucurbitaceae)	Kalara	7-8 fresh leaf juice mixed with 1 spoon honey is applied against diabetes and blood pressure.
27	*Moringa oleifera* Lam. (Moringaceae)	Sajana	Juice of fresh leaves (2 spoons) is directly taken to treat high blood pressure. Paste of newly arising leaves with black pepper powder is very effective to treat dysentery.
28	*Nyctanthes arbortristis* L. (Oleaceae)	Gangasiuli	Juice of 7-8 leaves mixed with 5 drops of honey taken before food twice daily for curing malaria.
29	*Ocimum sanctum* L. (Lamiaceae)	Tulasi	Juice of 8-10 leaves mixed with 5 drops of honey taken twice on a day before food for curing from cough.
30	*Paederia foetida* L. (Rubiaceae)	Pasaruni	Leaf paste 10g is taken with warm water twice a day to cure from mucostool.
31	*Phoenix sylvestris* (L.) Roxb. (Arecaceae)	Khajuri	Milk of stem is administered to cure from gastric.
32	*Piper longum* L. (Piperaceae)	Pippali	A glass of water taken twice a day after food against abdomen pain.
33	*Pongamia pinnata* (L.) Pierre. (Fabaceae)`	Karanja	Stem is used as toothbrush for pain and bleeding of teeth.
34	*Punica granatum* L. (Punicaceae)	Dalimba	15-16 fresh leaf juice (1spoon) is taken twice a day for curing diarrhoea.
35	*Ricinus communis* L. (Euphorbiaceae)	Gaba	6g juice of roots is mixed with 25g milk is administered against jaundice.
36	*Saraca asoka* (Roxb.) de wilde (Caesalpiniaceae)	Asoka	40-50ml decoction of its bark is useful for piles. Paste of 1-2g of

			seeds mixed with water (2 spoons) is regularly taken for stone disease.
37	*Streblus asper* Lour. (Moraceae)	Sahada	Stem used as toothbrush for pain and bleeding of teeth.
38	*Syzygium cumini* (L.) skeels (Myrtacae)	Jamukoli	Seeds powder 1 spoon mixed with water is taken twice a day in empty stomach to cure from diabeties.
39	*Tarenna asiatica* (L.) Kuntze ex Schum. (Rubiaceae)	Jajhanga	32-40g leaves pest mixed with 25gm turmeric powder is applied externally on the head of the children for curing wounds.
40	*Terminalia arjuna* (Roxb.ex DC.) Wight & Arn. (Combretaceae)	Arjuna	1 spoon bark powder mixed with 1 glass of tomato juice is used for treating tracycardia.
41	*Terminalia bellirica* (Gaertn.) Roxb. (Combretaceae)	Bahada	Thin bark decoction is used for cough. 2-5g bark powder is mixed with 2-3 cloves and taken with honey for dysentery.
42	*Terminalia chebula* Retz.. (Combretaceae)	Harida	1g powder mixed with jaggery and honey is administered against jaundice.
43	*Trewia nudiflora* L. (Euphorbiaceae)	Garuda gobinda	8-10 leaf juice mixed with 25g molasses is used against dysentery.
44	*Tribulus terrestris* L. (Zygophyllaceae)	Gokhura	Whole plant decoction is taken twice a day for urine burning.
45	*Vitex negundo* L. (Verbenaceae)	Begunia	Fried leaf wraped with thin cloth to relief from ear pain.
46	*Zingiber officinale* Rosc. (Zingiberaceae)	Sunthi	2-3g stem powder mixed with warm water is taken thrice a day for abdomen pain.

The data is presented in the form of botanical name of plants, family, local name, parts used for medicine, mode of preparation and administration by the people. Plants of medicinal value are threatened because of their rapid exploitation in the preparation of different medicine. A total of 46 medicinal plant species belonging to 32 families and 44 genera were documented. Euphorbiaceae was the most dominant family (5 species) followed by Combretaceae (3 species), Fabaceae, Acanthaceae, Rubiaceae (2 species each) (Fig. 1). The uses of aerial plant parts were higher than underground parts. Among the above ground aerial parts, the leaves were used in most of the cases (21 species) than other parts. Most of the species were collected from wild habitats and road side shrubs. Out of 46 plant species, 5 species are used for jaundice, 5 species for dysentery, 3 species for piles, 3 species for diabetes and 1 species each for other diseases (Table-2). Some of the medicinal plants are employed for external uses like bone fracture (leaves of *Calotropis gigantea*), skin diseases (leaves of *Azadirachta indica*) and skin burnings (leaves of *Aloe vera)*. Most of the collected medicinal plants have efficiency to fight against more than one disease. Out of three diseases (dental, dysentery and worm), dysentery is the frequently occurring disease in the study area. Jaundice is treated by maximum number of plants i.e. 11.0 % followed by diabetes 7 % (Table 2).

Table 2: Medicinal plants used for different diseases

Diseases	No of plant species	% of plant species
Jaundice	5	11
Dysentry	5	11
Piles	3	7
Diabetes	3	7

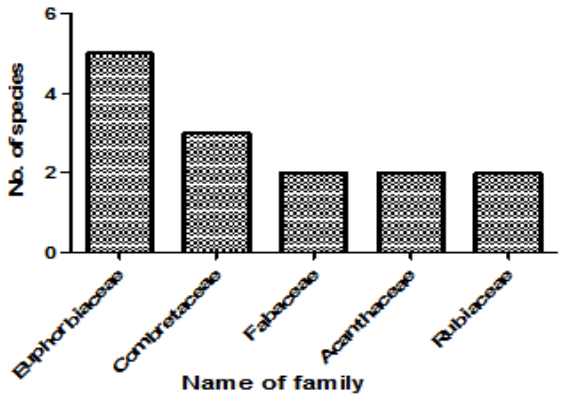

Fig 1: Dominant families with number of species

This information was checked with available literatures [11,12,13,14,15,16]. Some of the ethno-medicinal information provided in this study is new, as they have not been reported earlier. As these medicinal plants and their efficacy is claimed to be high; detail pharmacological study is needed for better utilization of medicinal plant resources.

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