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A preliminary report on traditional use of selected plants of fabaceae family at Bargarh district, Western Odisha

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Abstract

The research work was initiated to get information and report the medicinal plants on the family Fabaceae of Bargarh district during January 2019 to April 2020. A total of 22 medicinal plants species belonging to 20 genera were used by the natives for the treatment of different diseases. Among the 22 plants; 12 species were tree, five herbs, four climbers and one shrub. The conventional medicinal plants were mostly used for different diseases like jaundice, malaria, tooth diseases, eye infection, headache, leprosy, diabetes, etc. The medicinal plants used by the natives of Bargarh district are arranged alphabetically followed by botanical name, local name, parts with medicinal and other traditional uses.

Keywords: Fabaceae, Medicinal plants, Traditional use, Tribals.

1. Introduction

Traditional knowledge of medicinal plants and their uses by indigenous healers and drug development in the present are not only useful for conservation of cultural tradition and biodiversity but also for community health care and drug development in the local people. The indigenous knowledge on medicinal plants appears when humans started to learn how to use the traditional knowledge on medicinal plants [1]. Bargarh district is one of the tribal dominant districts of western Odisha [3]. The rural people of Bargarh district rely on plant resources for their domestic and primary health care needs. They collect the useful plants and their parts from various habitats such as forests, grasslands, cultivated fields, wetlands, etc. and use in their traditional practices. Although there are a good number of scientific works on medicinal plants [3, 4, 5, 6, 7, 8, 9] have been reported from Bargarh district.

The Fabaceae commonly known as the legume or pea family is a large and economically essential family of flowering plants. It includes trees, shrubs and herbaceous plants perennials or annuals, which are easily recognized by their fruits and their compound, stipulated leaves, scattering habit of seeds. The group is broadly distributed and is the 3rd largest land plant family in terms of number of species, behind only the Orchidaceae and Asteraceae, with 730 genera and over 19,400 species [2]. Pea, chickpeas, mungbean, pigeonpea, soybean, etc. are important agricultural and food plants of the family Fabaceae. For the first time an attempt has been made in this paper to highlight the traditional use like medicine, food purpose and other uses of selected plants of Fabaceae family in the study region.

2. Materials and Methods

2.1 Study area

Bargarh district, one of the ten districts of Western Odisha lies between 20° 43' to 20° 41' North latitude and 82° 39' to 83° 58' East longitude. It is surrounded on the north by the state of Chhatisgarh and on the east by the district of Nawapara. The total geographical area of Bargarh district is 5837 Sq km., out of which 269.329 Sq km of the area is covered by forest. Although agriculture is main occupation of the tribal people, they are mostly dependent on forest and forest based resources for supplementing their livelihood and health care. The *Sahara*, *Binjhal*, *Kondh*, *Gond*, *Munda*, *Kuli*, *Oran*, *Kisan*, *Mirdha*, *Kharia* and *Parja* are major tribes of this district. Although modern system of medicine has influenced the people, still these people not only earn their livelihood from the forest but also go on forest for medicines for the treatment of different diseases.

2.2 Plant collection and identification

A survey of literature was carried out on the study area before start of the field work [3, 4, 5, 6, 7, 8, 9]. The study areas were visited frequently and close interaction was made with those senior

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tribal people practicing on herbal medicines. During field work, interviews were conducted with local knowledgeable villagers, the herbal healer called 'Vaidyas' (local physicians in Indian System of Medicine), old woman and medicinal plant vendors. Plant specimens were collected and identified with local flora [10]. Some of the elderly people practicing such medicines did not easily reveal the truth directly, so indirect methods were adopted to collect the information. Moreover common tribal people were also contacted to know about their common ailments and healing methods. All information thus collected were scrutinized and compiled in a tabular form (Table 1).

3. Results and Discussion

The present study revealed that most of the encountered plants were reported to have multiple local uses by the tribals of the locality. Besides medicinal importance *Dalbergia sissoo* and *Pterocarpus marsupium* have commercial value; whereas *Butea monosperma* and *Clitoria ternatea* are known

for their religious importance. Different plant parts such as root, stem, bark, flower, fruit, seed and gum are used as medicine by the local traditional healers. The plants are mostly used in the form of paste, decoction, plant parts extract and seed oil. There are 22 medicinal plant species from 20 genus have been reported in this paper (Table 1). A maximum of three species (*Acacia catechu* (L. f.) Willd, *A. leucophloea* (Roxb.) Willd. and *Acacia nilotica* L.) was contributed by the genus *Acacia*. Rest 19 genus contributes one species each (Fig 1). Twelve species (55%) are trees, five species (23%) are herbs, four species (18%) are climbers and one species (4%) is shrub (Fig 2). These plants are utilized to cure various diseases like leucorrhoea, diabetes, fever, headache, throat infection, piles, menorrhagia, skin diseases, leprosy, urine infection, jaundice, sores, gonorrhoea, toothache, pyorrhoea, etc. The young twigs of plants like *Acacia nilotica* L., *Cajanus cajan* (L.) Millsp., *Millettia pinnata* (L.) Panigrahi, and *Tamarindus indica* L. were used as tooth sticks and tongue cleaner by the native of Bargarh district.

Table 1: Traditional use of some medicinal plants of fabaceae family of Bargarh district, Western Odisha

Sl No.	Scientific Name	Local Name	Medicinal and other traditional uses
1	<i>Abrus precatorius</i> L.	Gunj	<ul style="list-style-type: none"> ➤ The roots are used to treat jaundice. ➤ Hot water extract of fresh root is administered orally as an anti-malarial ➤ Dry seeds are powdered and taken one teaspoonful once a day for two days to cure worm infection
2	<i>Acacia catechu</i> (L. f.) Willd	Khayar	<ul style="list-style-type: none"> ➤ Power of stem bark is used to cure bleeding gums and sores.
3	<i>Acacia leucophloea</i> (Roxb.) Willd.	Guhiria	<ul style="list-style-type: none"> ➤ The bark extract is taken two times daily to cure stomach-ache.
4	<i>Acacia nilotica</i> L.	Bamur	<ul style="list-style-type: none"> ➤ Young twigs are cut in to small pieces and used as tooth brush without any tooth paste. ➤ The bark powder is used as a tooth paste.
5	<i>Albizia lebbek</i> (L.) Benth.	Sesua	<ul style="list-style-type: none"> ➤ The leaves are used for the treatment of eye infection, whereas seeds are effective against boils or pimples.
6	<i>Butea monosperma</i> (L.) Taub.	Palasa	<ul style="list-style-type: none"> ➤ Shoot bark is burned to ash used as tooth powder for pyorrhoea and gum affection. ➤ The flowers are soaked overnight in a glass of water, crushed and filtered in the next morning. The filtrate (one cup) is taken once daily in empty stomach in the morning for one month to cure leucorrhoea. ➤ Mature roots were used as brush to paint the wall of buildings.
7	<i>Cajanus cajan</i> (L.) Millsp.	Kandul	<ul style="list-style-type: none"> ➤ Small stem are cut into small pieces and used as tooth brush to clean the teeth. ➤ Seeds are extensively eaten as a dal (rich source of protein).
8	<i>Cassia fistula</i> L.	Sunari	<ul style="list-style-type: none"> ➤ 10gm of unripe fruit pulp is crushed and cooked in 100 ml of mustard oil and filtered. 2-3 drops of the filtrated oil is poured into the ears to cure earache.
9	<i>Clitoria ternatea</i> Linn.	Aparajita	<ul style="list-style-type: none"> ➤ Root extract is diluted and the extract (2-3 drops) put into the nostrils to get relief from headache. ➤ The leaves paste (5 gm) with sugar candy is taken 1-2 times daily in empty stomach for 5-7 days to get relief from menorrhagia. ➤ Equal amount of root, stem, leaf, flower and fruits are crushed to paste (1-2 teaspoon) is taken 2 times daily to get relief from piles.
10	<i>Dalbergia sissoo</i> Roxb.	Sishu	<ul style="list-style-type: none"> ➤ Bark (10g) is boiled with water (500 ml) till it reduced to half. The decoction (one cup) is taken once daily in empty stomach in the morning to get relief from leprosy. ➤ Leaf extract (10-15 ml) is taken 3 times daily to cure eliminating pus in urine and jaundice
11	<i>Glycine max</i> (L.) Merr.	Soyabean	<ul style="list-style-type: none"> ➤ Seed has been used in case of poor nutrition, anaemia, diabetes, tuberculosis, hypercholesterolemia and liver disorders. ➤ Immature soybeans are boiled whole in their pods and eaten with salt. Soybean products are widely used for human consumption.
12	<i>Lablab purpureus</i> (L.) Sweet	Semi	<ul style="list-style-type: none"> ➤ Fresh leaves pounded and mixed with lime are rubbed over ringworms to cure. ➤ Tender pods, and seeds used as vegetable in curry making.
13	<i>Millettia pinnata</i> (L.) Panigrahi	Karanj	<ul style="list-style-type: none"> ➤ Young twigs are cut in to small pieces and used as tooth brush without any tooth paste. ➤ Tender leaf twigs are chewed and pressed between the teeth for about 15 minutes to cure toothache.
14	<i>Mimosa pudica</i> L.	Lajkuli	<ul style="list-style-type: none"> ➤ The leaves and flowers are traditionally recommended for the prevention of fever, ulcer and piles.
15	<i>Mucuna pruriens</i> (L.) DC	Baikhuje	<ul style="list-style-type: none"> ➤ Leaves are used in bone fractures, cough, dog-bite, ring worm, scorpion sting, and snake-bite. ➤ The roots are said to be useful to cure cholera, elephantiasis, diuretic. ➤ The seeds were used as antidiabetic, antifungal, abortion, immunomodulator, cough, debility, dysentery, irritant, night dreams, sterility, tuberculosis, uterine stimulant.
16	<i>Pisum sativum</i> L.	Chana	<ul style="list-style-type: none"> ➤ Traditionally seeds are used as nutrient, laxative, astringent and also used in treating wrinkled skin, diabetes, acne, heart diseases, blood purifier, and intestinal inflammation.
17	<i>Pterocarpus marsupium</i> Roxb.	Bija	<ul style="list-style-type: none"> ➤ A piece of wood is soaked overnight in a glass of water and filtered. The filtrate is taken once daily in empty stomach in the morning to get relief from diabetes.

			<ul style="list-style-type: none"> ➤ Gum of the plant is applied locally to cure toothache and pyorrhoea.
18	<i>Saraca asoka</i> (Roxb.) de Wilde	Ashok	<ul style="list-style-type: none"> ➤ Bark is used to cure biliousness, dyspepsia, dysentery, colic, piles, ulcers and pimples. ➤ Leaves possess blood purifying properties and their juice mixed with cumin seeds is used for stomach-ache. ➤ Flowers, pounded in water are used in haemorrhagic dysentery and the dried flowers in diabetes.
19	<i>Sesbania grandiflora</i> (L.) Pers.	Agasti	<ul style="list-style-type: none"> ➤ Agasti leaves useful in skin disorders, night blindness, nasal catarrh and headache. ➤ The juice of flower is used to cure the migraine problem. ➤ Root bark is helpful in gaining relief in the pain for rheumatic joint.
20	<i>Senna tora</i> (L.) Roxb.	Chakunda	<ul style="list-style-type: none"> ➤ Leaves and seeds are used in the treatment of skin disorders (Ringworm and itch) ➤ Leaves are used as antirheumatic ➤ The seeds have been used as aperients, diuretic agent, improve visual activity and to treat liver disorders
21	<i>Tamarindus indica</i> L.	Tentul	<ul style="list-style-type: none"> ➤ Tamarind can be eaten fresh (ripe or unripe) and it can be consumed processed into different products. ➤ Leaves are used as decoction variegated with potash for the treatment of stomach disorder, general body pain, jaundice, yellow fever. ➤ Leaves and pulp crushed and applied on swollen joints provides great relief and reduces inflammation. ➤ Young twigs are cut in to small pieces and used as tooth brush without any tooth paste.
22	<i>Vigna mungo</i> (L.) Hepper	Sanobiri	<ul style="list-style-type: none"> ➤ Young Fruit is antihelmintic, piles, dysentery, cough and good for eyes. ➤ Cooked seeds used as delicious food.



Fig 1: Photographs of *Abrus precatorius* L. (a), *Acacia leucophloea* (Roxb.) Willd. (b), *Albizia lebbek* (L.) Benth. (c), *Butea monosperma* (L.) Taub. (d), *Cajanus cajan* (L.) Millsp. (e), *Cassia fistula* L. (f), *Clitoria ternatea* Linn. (g), *Dalbergia sissoo* Roxb. (h), *Lablab purpureus* (L.) Sweet (i), *Mimosa pudica* L. (j), *Mucuna pruriens* (L) DC (k), *Pterocarpus marsupium* Roxb. (l), *Saraca asoka* (Roxb.) de Wilde (m), *Senna tora* (L.) Roxb. (n), *Tamarindus indica* L. (o) and *Vigna mungo* (L.) Hepper (p).

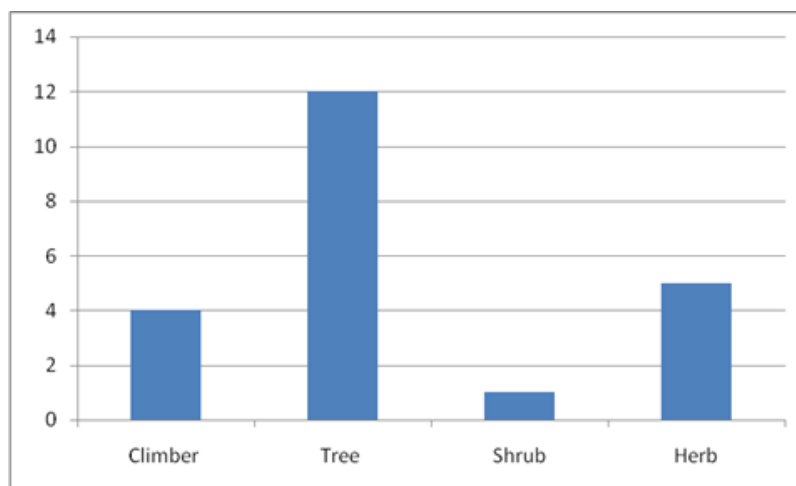


Fig 2: Natural habit wise distribution of medicinal plants of fabaceae family in the study area

A total of 209 ethnobotanical species including 19 species from Fabaceae family used in curing different types of diseases and many of them were used as edible food plants by the native of Bargarh district [3]. Sahu et al [4] reported a total 117 number of medicinal plants belonging to 52 families (including ten from fabaceae family) are found which are used successfully by the traditional healers to treat various disease and disorders of common people of Sohela Block, Western Odisha. The traditional use of 57 plant species (including five species from family Fabaceae) for dental and oral health care in Bargarh district of western Odisha, India was reported by Sahu and Sahu [9]. A total of 55 plant species belonging to 47 genera and 28 families (including five species from Fabaceae) have been recorded from the kitchen garden of Bargarh district [6]. Sahu and Sahu [7] reported 42 different plant species distributed in 39 genera belonging to 28 families (including three species from the family Fabaceae) used by the tribal people of Bargarh district to treat various diseases and disorders of oral cavity, particularly in tooth decay.

In this circumstance, phytotherapy resources for health care appear relevant as it requires no special resources, sophistication or expertise in production, preparation and usage. So it has become a necessity to collect record and pharmacologically evaluate the useful alkaloids, tannins, resins or any other beneficial plant product available from the local vegetation for better health care in Odisha. Medicinal plants, which form the backbone of traditional medicine, have in the last few decades been the subject for very strong pharmacological studies; this has been brought about by the acknowledgement of the value of medicinal plants as probable sources of new compounds of therapeutic value. Traditional medicine is a talent practiced by few elderly people whose experimental knowledge is appreciated by everyone in the rural community. Plant-based traditional knowledge has become a standard tool in search for new sources of drugs, it is clear that these herbal medicines can present a platform for further research. During the study, it was also observed that elderly people have more knowledge about these traditional herbal medicines. Hence there is an urgent need to protect the biodiversity as well as the traditional knowledge by correct documentation and for further research.

4. Conclusion

Although Western System of medicine has several options for the treatment of simple as well as serious diseases, still the people of study area have strong belief in efficacy on the

success of herbal medicines. But due to lack of interest among the present young generation this traditional wealth is going to be lost in the near future. That is why it is now necessary to acquire and preserve this traditional knowledge on medicinal plants through documentation and identification of plant species. The present study concludes that the plant species reported here are with multifarious uses for the community. Therefore it is necessary to ensure the survival of plant species by providing protection, conservation and multiplication of such medicinal and economically important plants. 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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