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Taxonomical study and documentation of some medicinal plants of Fabaceae in Sambalpur Sadar range of sambalpur south forest division (Odisha)

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Abstract
Taxonomical study and documentation of medicinal plants was carried out during 2011-2016 in Sambalpur Sadar range of Sambalpur South Forest Division, Sambalpur, Odisha. The study was undertaken in the locality due to diversified topography along with tropical moist deciduous type of forest in some places providing the most congenial condition for the luxuriant growth of plant species. The collected plant species were studied and recorded thoroughly with taxonomic characters including habit, habitat, stem, leaf, inflorescence and description of flower parts. Besides medicinal uses of the plants species were gathered from different sections of people. The study was confined to 22 medicinally important plant species of fabaceae family. The plants are arranged alphabetically according to their correct botanical names followed by brief description of the plant along with flowering and fruiting time, local name, locality and voucher number, plant parts used, dosages and mode of administration.

Keywords: Taxonomical study, medicinal plants, Fabaceae, sambalpur Sadar range

Introduction
Plant taxonomy involves the recognition, composition, classification and naming of the plants that have existed and exist at present on the earth. India is a mega-diversified country. India is rich in plant diversity and possesses 45,000 plant species which is about 7% of the world's flowering plants [1]. This particular area remains to be explored from the taxonomic point of view considering the changes that took place in the last few years owing to heavy agricultural, urbanization, industrialization and other such factors.

The state of Odisha is in eastern region of India. The flora and fauna in the state is extremely diverse and incurs a reputation for abundance of natural beauty and wide life. The state has tropical dry deciduous forests in the southwest region and tropical moist deciduous forests in the north-eastern region. However earlier study reveals that the state Odisha has six major types of forests [2]. Sambalpur district is in the western part of Odisha. Due to rapid urbanization and industrialization there is a severe threat to the forests. Besides unsustainable collection of plants for various purposes including medicinal use heavy destruction occurs in the forests.

The present study area is confined to the Sambalpur Sadar forest range under Sambalpur south forest division. It is located in between 20° 40' and 22° 11' N latitude and 82° 39' and 85° 15' E longitude. The total geographical area of the district is 6,702 sq km. whereas the total forest coverage is 3276 sq km. The total forest coverage of the present study area is107.66 sq km.

Plants have always played an important role in the treatment and curing diseases of human and animals. Plants are being used by the human civilization since time immemorial. India has ancient history of the use of plants in the indigenous system of medicine (Ayurveda, Unani nand Sidda) and still depends largely on the collection of wild growing population in the forests. The district has several undulating hills and dense forest areas. Although the forest of the study area basically belongs to dry deciduous type, it has floristically important moist deciduous area. Due to diversified topography and climate the hill range endowed with rich floristic diversity. Earlier a few numbers of floristic and medicinal research works were carried out by some researchers [3-6].

The Fabaceae or Leguminosae commonly known as the legume, pea, or bean family, are a large and economically important family of flowering plants. The group is widely distributed and is the third-largest land plant family in terms of number of species, behind only the

Orchidaceae and Asteraceae, with 730 genera and over 19,400 species [7, 8]. It includes trees, shrubs and herbaceous plants perennials or annuals, which are easily recognized by their fruits (legume) and their compound, stipulated leaves. The aim of this paper is to highlight on the systematic study as well as documentation of medicinal use of some plants of fabaceae family by the local inhabitant of Sambalpur Sadar forest range.

Materials and Methods

The present study was carried out during 2011 - 2016 in Sambalpur Sadar range of Sambalpur South Forest Division of Sambalpur District. The survey work was undertaken to study the vegetation, traditional knowledge of medicinal plants and their uses by local inhabitants.

Data on taxon distribution within the Sambalpur Sadar range were collected mainly from two sources: field observations and collection of specimens, and literature. For taxonomic study the specimens were collected in flowering and fruiting conditions during the field trips. Taxonomic characters including habit, habitat, stem, leaf, inflorescence and description of flower parts were studied and recorded. Besides, medicinal uses of the plant species were also collected from the local experienced men and women, traditional herbal medicine practitioners, *Kabirajs* and *Vaidyas*. The information on medicinal uses collected were cross-checked with some published scientific literatures [9-14] The identification of specimens was carried out by consulting relevant literature [3, 4, 5]. The specimens were identified and deposited in the Herbarium of Fasimal Anchalik College, Fasimal.

Enumeration

The plants are arranged alphabetically according to their correct botanical names followed by brief description of the plant along with their flowering and fruiting time, local name, locality and voucher number, plant parts used, dosages and mode of administration.

Abrus precatorius L.
Description: A twining shrub. Leaves paripinnate; leaflets 10-20 pairs, linear-oblong. Flower pink in axillary racemes. Seeds scarlet with a black spot.
Flowering & fruiting: September-December
Local name: Gunj
Locality and voucher number: Labdera-83
Medicinal use: Warm leaf paste is applied over the affected to get relieve from pain in swelling.

Acacia catechu (L.f.) Willd.
Description: A small, deciduous, thorny tree; bark black. Leaves paripinnate; leaflets 7-24 pairs. Flowers small, white or pale yellow, crowded in pubescent long spikes. Pod thin, brown, shining, dehiscent.
Flowering & fruiting: July-September
Local name: Khair
Locality and voucher number: Gunderpur-12
Medicinal use: Bark decoction (15-30 ml) is taken 2 times daily to cure fever.

Acacia leucophloea (Roxb.) Willd.
A small tree; bark yellowish. Leaves bipinnate pinnae sub-sessile; leaflets 11-20 pairs, linear-oblong, yellowish brown, tomentose. Pod linear, strap-shaped, densely velvety hairs; seeds 10-20.
Flowering & fruiting: August- December
Local name: Guhiria
Locality and voucher number: Kendumunda-74
Medicinal use: The bark extract is taken 2 times daily to cure stomach-ache.

Albizia lebbeck (L.) Benth.
Description: A large deciduous tree. Leaves bipinnate; leaflets elliptic-oblong. Flowers yellowish-white, in globose heads. Pods oblong, pale yellow when dry.
Flowering & Fruiting: April-October
Local name: Sesuan
Locality and voucher number: Bausenmura-86
Medicinal use: Migraine: Seed paste is applied on forehead to cure migraine.

Albizia procera (Roxb.) Benth.
Description: A large deciduous tree. Leaves bipinnate; leaflets elliptic-oblong. Flowers yellowish-white, in globose heads. Pods oblong, pale yellow when dry.
Flowering & Fruiting: April –October
Local name: Dhob Sesuan
Locality and voucher number: Jujumura-82
Medicinal use: Bark decoction (10-15 ml) is taken in empty stomach 2 times daily to cure stomach-ache.

Atylosia scarabaeoides **(L.)** Benth
Description: A twinning herb. Leaves subdigitately 3-foliate, leaflets, 3-3.7 cm long, elliptic, obtuse or subacute. Flower yellowish in axillary inflorescense, few flowered. Peduncles 1 to 4 mm long. Pods oblong, compressed, 1.5 to 2.5 cm long. Seeds 3 – 6, oblong, reddish to brown.
Flowering & Fruiting: April –October
Local name: Dhob Sesuan
Locality and voucher number: Jujumura-82
Medicinal use: Asthma: Bark decoction (15-20ml) is taken 2 times daily in empty stomach to get relief from asthma.

Bauhinia vahlii Wight & Arn.
Description: A large woody, climbing shrub, grow upto 10-30 m long; bark brown, smooth. Leaves 8-10 x 8-25 cm, simple, bilobed; lobes obtuse, cordate at base. Flowers white or creamy, large; the flowers terminal in panicled corymbs. Fruit is pod, woody, oblong, flat.
Flowering and Fruiting: April –June to November – February
Local name: Sial
Locality and voucher number: Kusamura-88
Medicinal Use: Seeds are dried and crushed to powder and boiled in water to obtain the decoction. The decoction (10 ml) is taken 2 times daily to enhance the body strength.

Bauhinia variegata **L.**
Description: A medium-sized tree. Leaves simple, alternate, with two obtuse lobes. Flowers white-purple, in axillary or terminal racemes. Fruit pod, glabrous; seeds flat.
Flowering & Fruiting: February-April
Local name: Kanchan
Locality and voucher number: Mahulpali-20
Medicinal Use: Anthelmintic: Bark extract (1/2 teaspoon) with honey is taken once daily to expel intestinal worm.

Butea monosperma **(Lamk.)** Taub.
Description: An erect tree. Leaves pinnately 3-foliate; leaflets broadly obovate, truncate-mucronate at apex. Flowers orange-scarlet, in panicles. Pods flat, pubescent.
Flowering & Fruiting: February-May

Local name: Phalsa
Locality and voucher number: Sahaspur-10
Medicinal Use: **Dysurea:** Root decoction (5-10ml) is taken 2 times daily to cure dysurea.

***Butea superb* Roxb.**
Description: A large woody climber, trunk upto 60-90 cm in girth, smooth bark, deep brown. Leaves large, 3-foliate; leaflets 30-45 cm, obovate, rounded base, with stiff short hairy, petioles about 16-45 cm long. Flowers orange-scarlet in profuse racemes on leafless branches. Fruit is pod, stalked, 12-15cm long.
Flowering & Fruiting: March- June
Local name: Lata-Phalsa
Locality and voucher number: Hatibari-29
Medicinal Use: Bark decoction (10-15ml) is taken 2 times daily to cure fever.

***Cassia fistula* L.,**
Description: A small tree. Leaves pinnate, leaflets glabrous, ovate, acute. Flowers yellow, in axillary racemes. Pods long, cylindrical, terete.
Flowering & Fruiting: May-July
Local name: Sunari
Locality and voucher number: Panchphut-42
Medicinal Use: Earache: Unripe fruit pulp (10gm) is crushed and cooked in mustard oil (100ml) and filtered. The oil (2-3 drops) is poured into the ears to cure earache.

***Clitoria ternatea* L.,**
Description: Climber, perennial, pubescent. Leaves imparipinnate; leaflets 7, elliptic-oblong, obtuse, sparsely appressed hairy. Flowers blue of white, solitary, axillary. Pods linear-oblong. Seeds 6-10. Yellowish-brown, smooth.
Flowering and Fruiting: July-November
Local name: Aparajita
Locality and voucher number: Salesingh-160
Medicinal Use: Root decoction is taken 2 times daily in empty stomach to cure dysurea.

Dalbergia sissoo Roxb.
Description: A large deciduous tree. Leaf imparipinnate; leaflets 3-5, obliquely ovate or sub-orbicular, entire, cuneate base. Inflorescence of axillary panicles of short spikes. Pods strap-shaped, 2-4 seeded.
Flowering & Fruiting: February-December
Local Name: Shishu
Locality and voucher number: Tharli-142
Medicinal Use: Eczema: Seed oil is applied to cure eczema.

Desmodium oojeinense (Roxb.) H. Ohashi
Description: It is a tree usually grows 6-12 meters tall; bark cracked. Leaves large, trifoliate with rigid leathery leaflets. It has dark brown, deeply cracked bark with crooked trunk. Flowers are pink. The fruit is pod, linear with light brown colour.
Flowering & Fruiting: February to May
Local Name: Shalpheni
Locality and voucher number: Basiapada-241
Medicinal Use: Boil: Cow's ghee is applied over a leaf of the plant and warmed slightly. It is fomented over boils for hastening their bursting and healing.

Mimosa pudica L.
Description: A prostrate, prickly under shrub. Leaves alternate bipinnate, sensitive; pinnae 1-2 pairs; leaflets linear-oblong. Flowers pink, in globose heads. Pods flat, jointed; seeds flat.
Flowering & Fruiting: April-June
Local name: Lajkurilata
Locality and voucher number: Khunti-91
Medicinal use: Dysentery: Whole plant extract (2 teaspoon) is taken 2 times daily to cure dysentery.

***Mucuna pruriens* (L.)** DC.
Description: A shrubby twiners; young stem hairy. Leaves 3-foliate, leaflets rhomboid-ovate, lateral ones oblique, entire, acute, pubescent. Flowers in axillary, drooping, dense racemes. Pods 'S'-shaped, densely covered with irritant bristles, 4-6 seeded.
Flowering & Fruiting: September-January
Local name: Baikhujen
Locality and voucher number: Jujumura-41
Medicinal Use: Anthelmintic: Woolly hairs of the fruit is kept inside the jaggery and swallowed to expel out the Ascaris from the intestine of cattle.

***Pongamia pinnata* (L.)** Pierre
Description: A medium-sized tree. Leaves imparipinnate; leaflets ovate, entire, acuminate. Flowers pale pink, in axillary racemes. Pods obliquely oblong, 1-seeded.
Flowering & Fruiting: April –December
Local name: Karanj
Locality and voucher number: Lipinda-66
Medicinal Use: **Diarrhoea**: Fruit rind decoction (1/2 a cup) is taken daily to cure diarrhoea.

***Sesbania grandiflora* (L.)** Poiret
Flowering & Fruiting: May-August
Local name: Agasti
Locality and voucher number: Lipinda-35
Medicinal Use: Tender leaves are chewed to cure to cure mouth ulcer.

***Tamarindus indica* L.,**
Description: A large tree leaves paripinnate; leaflets narrowly oblong, obtuse. Flowers pale yellow, in lax racemes. Pods turgid, falcate.
Flowering & Fruiting: April –December
Local name: Tentel
Locality and voucher number: Ichhapali-98
Medicinal Use: Root bark paste (5-10 gm) is taken 2-3 times daily to cure diarrhoea.

Results and Discussions
The detailed floristic survey reveals that, a total of 19 plant species belonging to 15 genera were recorded from Sambalpur Sadar forest range. Most of the plant species of fabaceae family are known for their medicinal value and some are known for their religious purposes. The detail study reveals that mostly trees species are prevailing in the study area than that of other category of species. Figure 1 shows the habit of the plants included in the present paper with maximum number (12) of trees species (67%) followed by 5 numbers plant species with climbing habit (22%) and 2 herbs plant (11%).

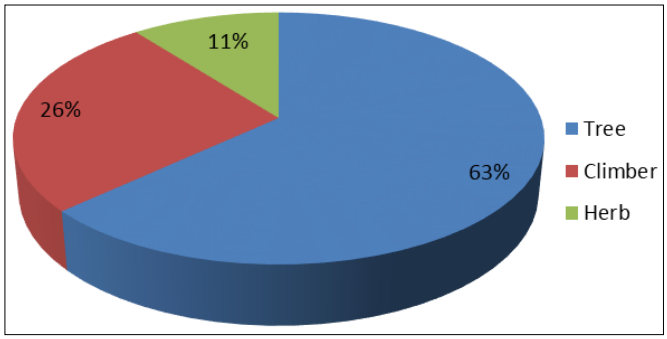

Fig 1: Percentage of habit of medicinal plants

Different plant parts such as root, root bark, stem bark, fruit, seed and whole plant are utilized as medicine by the local traditional healers. Bark (6 numbers) is used in maximum number followed by leaf, fruit and seed (3 numbers each), root (2 numbers), root bark and whole plant (1 each) (Fig 2). The plants are mostly used in the form of paste, decoction, plant parts extract and seed oil.

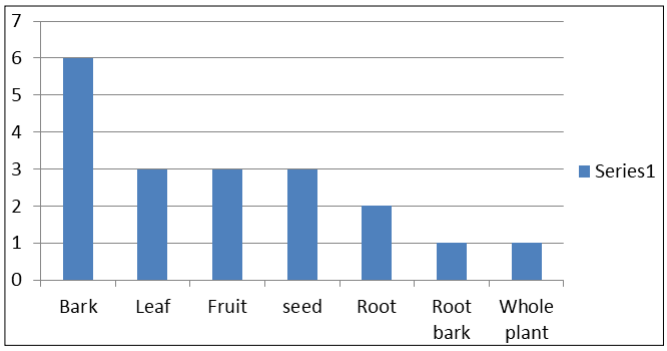

Fig 2: List of plant parts used as medicines

There are 19 medicinal plant species have been reported in this paper with 18 ethnomedicinal prescription. Out of which 13 numbers are used orally, 5 numbers used externally and 1 number used internally (Fig 3). These plants are utilised to cure several diseases and ailments like diarrhoea, dysentery, stomach-ache, ear-ache, fever, asthma, migraine, Boil, eczema, mouth ulcer, dysurea, helmintic, swelling pain, enhancing body strength and in one case ti is used to cure animal ailment.

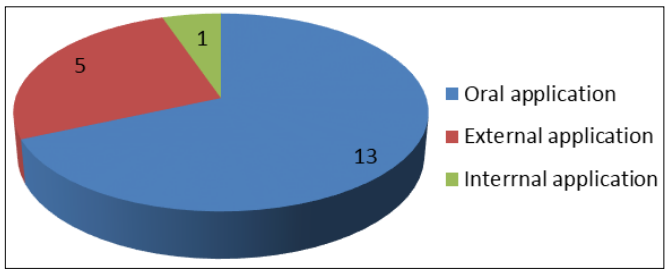

Fig 3: Mode of use of herbal medicines

Conclusion

Since time immemorial herbal medicines have played an important role in life of human race and animals. Although modern system of medicine has several options for the treatment of simple as well as serious diseases, still the people have strong belief in efficacy on the success of herbal medicines. But due to rapid modernisation, the life styles of the people have been changing day by day which cater no interest among the present young generation as a result of which 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 single use for the treatment diseases and ailments. The plant species are not only important for medicinal point of view but also they have certain religious importance. Besides deforestation, soil erosion, overgrazing and drought are the major factors that affect different medicinal plants in the study area. 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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