

## Ethnobotanical uses of wild fruits of Santal paraganas (Jharkhand)

Anuradha Das

Department. of Botany, Sindri College, Sindri, Dhanbad, Jharkhand, India.

Email: anuradha.das84@gmail.com

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### ABSTRACT

*Santal Paraganas of Jharkhand harbours a wide range of forest cover including several significant trees, shrubs and herbs species. The indigenous and tribal communities like Mahalis, Santals, Paharias, Koras, Karmalis, Bhumijis, Kols etc. living in and around these forest areas use their traditional wisdom to meet their requirements utilizing various forest products in a sustainable way. Present study aims to analyse and record ethnobotanical uses of different wild fruits being used by these communities. Data was collected using participant observations and in-depth interviews. Intensive survey conducted in the area revealed a total of 30 different wild fruits species belonging to 29 genera and 21 families serving both as nutritional supplement and ethno-medicines, treating different ailments. Most of the species among these have the potential to contribute to future food and nutrition security, dietary and culinary diversification. There is an immediate need for further critical phyto-chemical analysis of these plant species and exploring new valid drugs for common use, before the extinction of this precious traditional knowledge.*

**Keywords :** Wild Fruits; Ethnobotanical uses; Traditional; Nutrition etc.

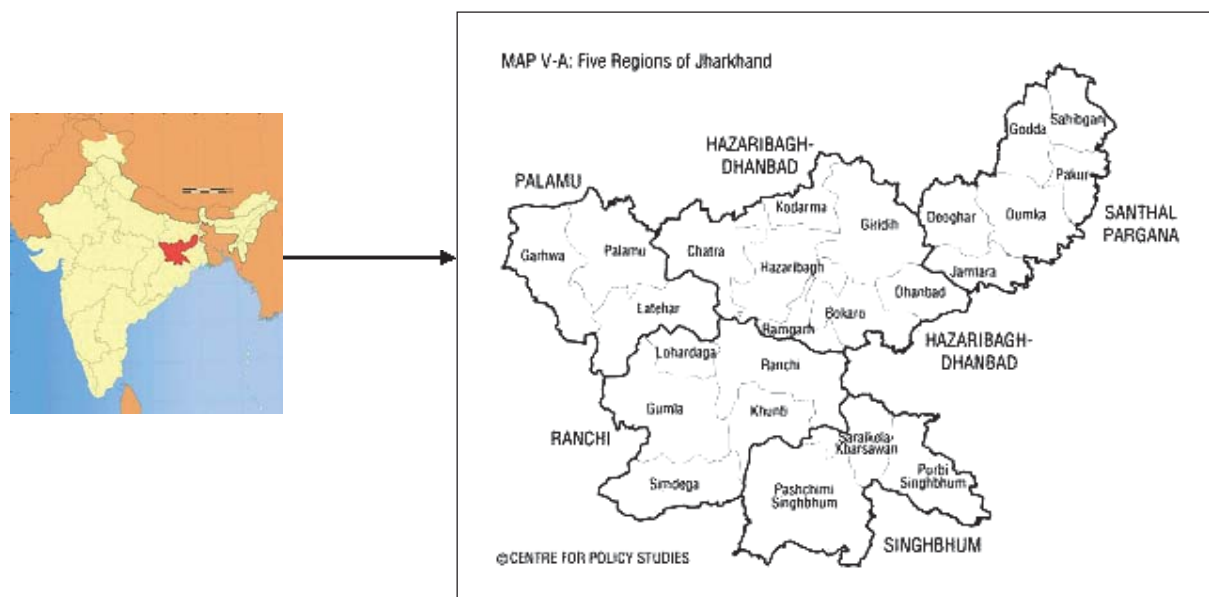
### INTRODUCTION

*Santal Paraganas*, derives its name from two words: “*Santals*”, a major tribe of India and “*Paraganas*” a Persian word meaning district. It is being provided to the *Santals* by the British government. Presently, this administrative division comprises six districts of Jharkhand: Godda, Deoghar, Dumka, Jamtara, Sahibganj and Pakur (Fig. 1). The division is gifted by rich phyto-diversity of dry deciduous tropical forests and a vast range of topographic conditions with significant potential for health security, in the form of abundant ethnomedicinal plants, for nutrition security as various wild-edibles and other Non-Timber Forest Products like fibres, gums, resins, latex etc. Apart from the rich phyto-diversity it also has a rich cultural diversity of different indigenous and tribal communities as *Mahalis, Santals, Paharias, Koras, Karmalis, Bhumijis, Kols* etc. living in and around the forest areas. The region is the abode of mainly two tribal communities *Santals* and *Paharias*, with a mixed Bengali culture, being close to West Bengal. Apart from their primary occupation of cultivation (either settled or Shifting locally called *Jhum* Cultivation), they use to collect diverse forest products.

Of diverse forest produces, fruits are also one of the significant forest products growing wild in the

region. By definition, a fruit is the seed bearing structure in flowering plants formed from ovary after flowering. Fruits are generally rich in fibres, vitamins and of course water. Regular consumption of various seasonal, either wild or cultivated, fruits are associated with reduced risks of several diseases and age related various functional disorders. These wild fruits not only satisfy the nutritional supplements rather are also used by these communities to treat various ailments.

The herbal medicines are considered significant among different rural or indigenous communities in many developing countries like India (Ghosh, 2003). People all around the world prefer herbal medicines than other system of treatments. According to the World Health Organization as many as 80% of the World's population depends on traditional medicine and in India 60% of the people in rural areas use herbal medicines (WHO, 2002). Plant based traditional medicine in India is as old as human civilization and has been documented in ancient literatures (Charak, 1996). This age old ethnic knowledge or folklore of these communities has evolved out of extensive trial and error methods to meet their daily needs including health care, nutrition supplement, religious and cultural activities, etc. from different forests produces. But, unfortunately, it is handed over verbally from their ancestors to the successive



**Fig. 1.** Map representing the study area Santal Paraganas of Jharkhand.

generations, without any scientific documentations, compilations, standard pharmacopoeia preparations, etc. Moreover, rapid economic and cultural changes is increasingly threatening the traditional lifestyles of these peoples, gradually they are migrating to their neighbouring state to earn their livelihood and working there as labourers on daily wages. Hence we seek to conserve this knowledge along with these communities before their extinction.

Although several ethno-botanists like Bodding (1925); Roy Chaudhary (1957); Hembrom (1991); Jain (1998); Verma *et al.* (1999); Kumar (2014); etc. have worked in this field, still a major portion of the region is still unexplored. Many ethno-botanical studies (Borthakur and Gogoi (1994); Rao (1996); Jain (1998); Pei Shang-Ji (2001) have also showed that inventory preparations of indigenous knowledge through ethno-botanical studies are important for the conservation as well as sustainable utilization of the bio-resources. Present study is an endeavour in this direction.

## MATERIALS AND METHODS

For the purpose different tribal areas located in the different districts of Santal Paraganas were surveyed regularly since 2012-2017. The first hand data were collected through interviews and with the help of local guides, villagers, local herbal practitioners and tribal persons, women who had

the traditional knowledge of plants. They have quite deep knowledge about the herbal medicines. The tribal herbal practitioners locally called *Jangurus*, *Ojhas*, *Kavirajs*, *Vaidyas*, *Pahans*, *Manjhis*, *Horopaths*, etc. were interviewed to collect information about the description of the plants of different wild fruits and their medicinal uses. At the same time, field visit were also undertaken along with the villagers in the local markets called *Haats* or *Hatias*. Following the first hand data given by these people, a total of 30 wild fruits species were collected and properly tagged with their local names, from this region. Plants species were visited regularly in different seasons in order to observe the species in their natural flowering and fruiting condition. Collected plants were processed and herbarium specimens were prepared following standard herbarium techniques (Jain and Rao, 1977) and identified consulting available literatures (Haines, 1921-1925; Kirtikar & Basu, 1935; Anonymous, 1948-72; Chopra *et al.*, 1956; Nayar *et al.*, 1989 and Jain and Mudgal, 1999).

## RESULTS AND DISCUSSIONS

Ethnobotanical survey of the area revealed that this area has been gifted with rich phyto-diversity. A large number of plant species are growing in the wild enriching the floristic diversity of this region. Different plant species though uncommon contribute to the nutrition of these tribal and indigenous communities significantly.



A. *Alangium salvifolium* (L.f.) Wang.



B. *Artocarpus lacucha* Buch.- Ham.



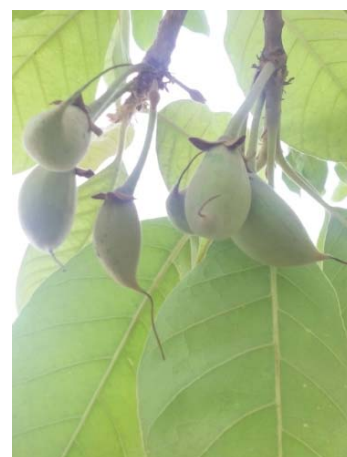
C. *Cordia dichotoma* G. Forst.



D. *Diospyros melanoxylon* Roxb.



E. *Glycosmis pentaphylla* (Retz.) DC.



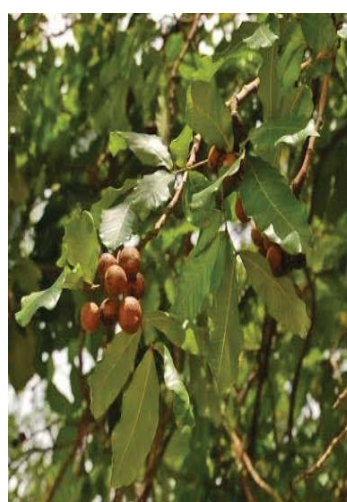
F. *Madhuca longifolia* (Koen) Mac Br.



G. *Neolamarckia cadamba* (Roxb.)



H. *Pithecellobium dulce* (Roxb.) Benth.



I. *Schleicheria oleosa* (Lour) Merr. Bosser

*Ethnobotanical uses of wild fruits of Santal paraganas (Jharkhand)*

All together, a total of thirty wild edible fruits belonging to 29 genera and 21 different families have been enumerated. These species have been enumerated depicting their scientific names arranged alphabetically along with their voucher specimen number in parentheses, followed by local names, families and their actual therapeutic uses (Table 1.).

Most of the species (25) are trees with two (2) shrubs species like *Carissa spinarum* L., *Glycosmis pentaphylla* (Retz.) DC, two (2) herbaceous species like *Physalis minima* L., *Solanum nigrum* L. and a single climber species *Cucumis melo ssp. agrestis var. Agrestis* Naud. Most frequent families are Sapotaceae and Anacardiaceae (3 species),

**Table 1.** List of ethnobotanical uses of wild edible fruits of Santal Paraganas of Jharkhand

Sl. No.	Scientific Name (Voucher Specimen number)	Local Name	Family	Therapeutic uses
1	<i>Alangium salvifolium</i> (L.f.) Wang. (AD- 239)	Dhela (S), Akola (IC)	Cornaceae	Fruit pulp is effective in controlling mucus and relieves constipation.
2	<i>Annona reticulata</i> L. (AD- 305)	Gom(S), Ramphal (IC)	Annonaceae	These are used to treat diarrhoea and dysentery.
3	<i>Artocarpus lacucha</i> Buch.- Ham.(AD- 692)	Barhal (S), Dahua(IC)	Moraceae	Jams and pickles are prepared out of these fruits. These are good for liver.
4	<i>Borassus flabellifer</i> L. (AD-699)	Tal (S), Tar (IC)	Arecaceae	Ripened fibrous outer layer of the fruits contain sweet juice which is either eaten raw, boiled, or deep fried to prepare sweet dishes.
5	<i>Buchanania lanzan</i> Spreng. (AD-569)	Piyar, Chironji (IC)	Anacardiaceae	The kernels as a whole are eaten as a substitute for almond kernels. Seeds treating skin infections. A face pack made with the seeds and milk brings extra glow to the face.
6	<i>Carissa spinarum</i> L. (AD- 612)	Jangli Karaunda(IC)	Apocynaceae	Useful in headache and vomiting. It is also eaten raw or as pickles.
7	<i>Cordia dichotoma</i> G. Forst. (AD- 701)	Lasora (IC)	Boraginaceae	Immature fruits are pickled. Seeds of the fruits are used to expel intestinal worms.
8	<i>Cucumis melo ssp. agrestis var. Agrestis</i> Naud. (AD- 606)	Kachri (IC)	Cucurbitaceae	Fruits are edible and are also called wild melon due to similar appearance. The fine powder of the fruits is the best natural meat tenderizer. Chutney of the fruits has a tangy taste.

Sl. No.	Scientific Name (Voucher Specimen number)	Local Name	Family	Therapeutic uses
9	<i>Diospyros melanoxylon</i> Roxb. (AD- 394)	Kend (IC), Terel (S)	Ebenaceae	Cures dysentery, Paste of unripe fruits is applied as poultice over the fractured bones. Enhances healing process.
10	<i>Ficus racemosa</i> L. (AD- 388)	Dumbari (IC), Loa (S), Gular	Moraceae	The fruits are given in menorrhagia, bronchitis, dry cough and diseases of kidney. Urinary troubles & Diabetes are also treated.
11	<i>Flacourtia indica</i> (Burm. f.) Merr. (AD- 298)	Boichi (IC), Serali (S, P)	Salicaceae	Cures liver disorders
12	<i>Glycosmis pentaphylla</i> (Retz.) DC. (AD- 307)	Ansh sheora (S)	Rutaceae	Edible translucent pink sweet and fleshy fruits are eaten raw.
13	<i>Holoptelea integrifolia</i> (Roxb.) Planch. (AD- 702)	Chilbil, Papri (IC)	Ulmaceae	Fruits edible. Paste of the seeds is useful in treating ringworm.
14	<i>Limonia acidissima</i> L. (AD- 314)	Kath bel (IC), Kainta	Rutaceae	Pulp of the fruits with honey and 'Pipli' ( <i>Piper longum</i> ) is given to cure hiccup and difficulties in breathing. Pulp is also used for curing infections of gums and to tone the breast. It also cures diarrhoea & dysentery.
15	<i>Madhuca longifolia</i> (Koen) Mac Br. (AD- 626)	Mahua	Sapotaceae	Fruits are eaten either raw or after cooking.
16	<i>Manilkara zapota</i> (L.) P. Royen (AD- 291)	Sapatu (IC), Chikoo	Sapotaceae	Eaten both raw and after ripening. These taste delicious.
17	<i>Mimusops elengi</i> L. (AD- 646)	Bakul (IC)	Sapotaceae	Helpful for dental ailments such as bleeding gums & dental carries.
18	<i>Neolamarckia cadamba</i> (Roxb.) Bosser (AD-270)	Kadam (IC)	Rubiaceae	Fruits are edible and are eaten either after cooking or even raw. These fruits quench excessive thirst in fevers. These also reduce excessive burning sensation and increase lactation in nursing women.
19	<i>Phyllanthus emblica</i> L. (AD- 343)	Amla (IC), Meral (S)	Phyllanthaceae	Ripened fruits are eaten to stimulate appetite. Of great medicinal potential. It conditions stomach, one of the ingredients of "Triphala", in Ayurveda.

*Ethnobotanical uses of wild fruits of Santal paraganas (Jharkhand)*

Sl. No.	Scientific Name (Voucher Specimen number)	Local Name	Family	Therapeutic uses
20	<i>Phoenix sylvestris</i> (L.) Roxb. (AD- 399)	Khajuri, Pin- khajur(IC)	Arecaceae	The fruits are good in heart complaints, vomiting and constipation.
21	<i>Physalis minima</i> L. (AD- 661)	Bantapari (IC)	Solanaceae	Fruits are roasted in coconut oil and given to treat spleen disorders. Also improves appetite.
22	<i>Pithecellobium dulce</i> (Roxb.) Benth. (AD- 582)	Jangli jalebi (IC)	Fabaceae	The pulpy ripened fruits are sweet in taste. These also cure ulcers.
23	<i>Schleichera oleosa</i> (Lour) Merr. (AD- 709)	Kusum (IC)	Sapindaceae	Unripe fruits are pickled. These also improves appetite
24	<i>Semecarpus anacardium</i> L. f., (AD- 570)	Bhelwa (IC), Soso(S), Bale(P)	Anacardiaceae	Red-Orange part of the fruits are eaten and is considered good for female reproductive system
25	<i>Spondias pinnata</i> (L.f.) Kurz. (AD- 371)	Amra (IC)	Anacardiaceae	The fruits are fabulous in taste. These are eaten both as vegetable and as fruits after ripening. These are used in treating indigestion and nausea.
26	<i>Solanum nigrum</i> L. (AD- 231)	Makoi	Solanaceae	Fruits edible and fruit juice is used in gastritis and acidity.
27	<i>Syzygium cumini</i> (L.) Skeels (AD- 114)	Sokod (S), Jam (IC), Jamun, Nudgey(P)	Myrtaceae	Decoction of the fruits and seeds is given to control diabetes and urinary troubles.
28	<i>Terminalia catappa</i> L. (AD- 695)	Badam (S) (IC)	Combretaceae	The kernel of the fruits eaten fresh and also relieves constipation but high doses can cause diarrhoea.
29	<i>Ziziphus mauritiana</i> Lam. (AD- 397)	Kul, Ber (IC)	Rhamnaceae	Used as a cooling agent. Fruits are eaten fresh, dried, candied or stewed. Kernels are used in the treatment of nausea, vomiting and for abdominal pain in pregnancy.
30	<i>Ziziphus oenoplia</i> (L.) Mill. (AD- 592)	Makora, Mahkoa, Jangli Ber, Siakul (IC)	Rhamnaceae	Used as a cooling agent. Fruits are used in the treatment of dysentery.

\*(S)- Santal Community, \*\*(P)- Paharia Community, \*\*\*(IC)- Indigenous Communities like Mahalis, Bhumijis etc.

followed by Moraceae, Arecaceae, Rutaceae, Solanaceae (2 species each) followed by single species of each of the rest families.

These wild edibles including various fruits are the natural, low calorie content, vitamins, minerals and fibres rich diet. These are easily available to them in natural and fresh condition without any chemicals and preservatives, enriching their nutrition more than that are found in urban areas (Das and Bondya, 2016). Some of these are quite tasty and fabulous in appearance too. These wild fruits can withstand harsh climatic condition and also these do not need much care to grow. After collecting, these fruits are also sold in the local markets called “*Hatias* or *Hats*” for earning their livelihood.

The plant species like the *Borassus flabellifer* L., *Phoenix sylvestris* (L.) Roxb. etc. are also used in the preparation of typical cultural alcoholic beverages known as *Tadi*. The latter is often taken by them for celebrating different festivals. *Cordia dichotoma* G. Forst. yields a natural gum used in different purposes as adhesives. So, these in turn add values to the under-utilized wild edible species. Plants like *Madhuca longifolia* (Koen) Mac Br. yield different useful products from its flowers, fruits and seeds. *Mahua* (*Madhuca longifolia* (Koen) Mac Br.) oil and *Kusum* (*Schleichera oleosa* (Lour) Merr.) oil are also edible and can be used variously. These people have esteemed their surrounding phyto-diversity in their culture and tradition. It is a matter of fact that the ritualistic, symbolic & religious associations with bio-resources are deeper rooted than the material uses of bio-resources (Ford, 1994). This healthy blending of the bio-resources and their cultural attachment is also a crucial approach of sustainable utilization and conservation of these bio-resources in this region.

Although these plant species do have significant medicinal potential in addition to their edible and other miscellaneous values yet these are neglected in terms of their utility. Ethno-medicines utilized by these indigenous and tribal communities including the herbal healers can no doubt prove the best medicines to discover new drugs or escort active bio-molecules for the development of new drugs, provided the formulations and data should

have integrated scientific approaches. Intensive pharmacological, phytochemical, nutritional analysis of different plants species utilized by these tribal communities is the need of the hour. Also, approaches towards the large scale cultivation, sustainable utilization and conservation of the important plant species are equally needed. This will in turn lead to future food and nutrition security, dietary and culinary diversification and ultimately resulting in better health and income generation of the society.

In addition, efforts should be made to recognize IPR (Intellectual Property Rights) of these ethnic communities to sustainably utilize their precious knowledge and conserve this for our future generation (Borathakur & Gogoi, 1994).

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*Ethnobotanical uses of wild fruits of Santal paraganas (Jharkhand)*

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