



ISSN : 0973-7057

## Observation on potential ethnobotanical wild edible plants of Jharkhand

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Received , 20th December, 2014; Revised: 20th January, 2015

**Abstract :** In Jharkhand state due to tribal wisdom and their attachment to the ambient vegetation, the ethnobotanical study becomes an important aspect. The tribal communities mainly Santhal, Pahari, Oraon, Munda, Kol, Kharwar, Ho etc. have rich knowledge on plant and plants product because many wild plants as to supplement nutritional requirements as well as in the form of ethnomedicine for primary healthcare for treatment of many diseases. There are more than 400 plants having tribal or ethnobotanical names by the practical knowledge and experience of local tribal communities in their own ethnic culture. The ethnobotanical knowledge has been transmitted through oral tradition from one generation to next generation. In the present communication some wild edible plants are documented, which are widely utilized by the tribal and rural people of Jharkhand and fulfilling the requirement of nutritional components in day to day life. The plants viz. *Amaranthus spinosus* L. ('Kanta bhaji')- twigs, *Bauhinia purpurea* L. ('Koinar sag')- leaves, *Boerhaavia diffusa* L., *Trianthema monogyna* L. ('Khapra arak')- twigs, *Cassia tora* L. ('Chakundi arak')- leaves, *Centella asiatica* (L.) Urban ('Beng sag')/'Rote ara')- whole plant, *Hibiscus sabdariffa* L. ('Kudroom')- flowers and fruits, *Indigofera pulchella* ('Jirhul')- flowers, *Limnophila indica* (L.) Druce ('Nanha-hemcha')- twigs, *Marsilea minuta* L. ('Susni sag')- whole plant, *Portulaca* spp. ('Nuni sag')/'Jitia sag')- twigs, *Sesbania grandiflora* (L.) Poir ('Agust phool')- flowers etc. are most commonly used amongst all the tribal communities and rural people. Most of the plant species are collected by the people from wild and their cultivation practices are very rare. Various studies have been carried out in past and it has been enumerated that many wild edible plants are available in Jharkhand in indigenous conditions. However, the above ethnobotanical data described herewith based on wild edible plants have most significant due to the fact that these species are cooked as vegetable and are found effective for treating different ailments, diseases and disorders. Hence, there is a need to explore the biodynamic nutritive compounds and to promote the cultivation practices for benefits of societies in terms of healthcare. Besides, some wild edible mushrooms like 'Rugra' (*Gastrum* sp.) and 'Khukri' (*Termitomyces heimii*) are also widely utilized by the people of Jharkhand, which requires scientific evaluation.

**.Keywords:** Wild edible, ethnobotany, healthcare, vegetable, Jharkhand.

### INTRODUCTION

Around the world, researchers are very much interested and sincere to explore the medicinal components from edible plants. The most common aims and objectives of the scientists are to evaluate safe remedies from trial through indigenous nutritional sources of wild edibles. During the past decades a large number of herbal drugs have been evaluated. However, long term management of cure of ailments, diseases and disorders through the

chemical and isolated herbal components as active constituents have shown many side effects on long term uses. Hence, the therapeutic and curative edibles plant sources have many significant and safe in place of any kind of herbal, mineral or chemical components. Owing to the above purview the present study has been carried out towards documentation of some wild edibles ethnobotanical plant genetic resources cooked as vegetable in Jharkhand. The plants are used as vegetable to cure specific ailments. It is also due to the geographical locations of Jharkhand state (latitude 22°00' - 24° 37' N and longitude 83° 15'-87° 01'E) that it has richest ethnobotanical wisdom and considerable tribal populations i.e. the total population of the state is 26.91 million of which the rural

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population constituted 77.80% . There are about 28.72% forests cover of state's geographic area. The tribals, forest dwellers and rural people have a rich oral tradition and native and ethnic knowledge about ambient vegetation and forests. A large number of tribal communities like Santhal, Paharia (Sauria Paharia, Mal Paharia and Kumar Bhag), Oraon, Munda, Kol, Kharwar, Ho, Asur, Baiga etc. are residing in state and having great ethnobotanical –lore and constituting 22.50 % of populations.

Although, the ethnomedicinal plant resources of various tribal communities of Jharkhand has been well documented earlier by Bodding (1925, 1927)<sup>1,2</sup> and later Upadhyaya *et al* (1998)<sup>3</sup>, Kumar *et al* (1996, 1999)<sup>4,5</sup>, Kumar & Goel (1998)<sup>6</sup>, Kumar & Abbas (2012)<sup>7</sup> and other several workers, while the documentation of common wild edibles plants of the areas has been published by Sinha & Lakra (2007)<sup>8</sup> and Singh & Kumar (2014)<sup>9</sup> etc. The medicinal importance of ethnobotanical edibles cooked as vegetable as remedies of several diseases and disorders have been documented earlier by Kumar (1999, 2000)<sup>9,10</sup>. However, there is need for enumeration of more ethnic uses of wild edible for specific purpose hence the present study has been attempted for wider scientific applications.

#### **MATERIALS AND METHODS**

The information's provided in the communication have been documented based on in depth analysis of ethnobotanical studies prepared among several tribal and rural people of the state of Jharkhand. Since the establishment of Experiential Learning Unit on Medicinal Plants at Faculty of Forestry, Birsa Agricultural University there are tremendous opportunity to interact with many tribal vaidya and rural people and farmers who use to visit at above Unit and NTFPs Workshop and having interactions with authors. The information's been regularly gathered from the local *hats* /markets where some of the wild edibles are also sold during the season of plants. The ethnobotanical data provided in the present communication is although preliminarily and it is also regularly verified from knowledgeable informants who have already used such kind of recipes. The botanical names, family, local names, parts used, purpose of uses have been documented. As the single plant has a large number of diversity of phytochemicals, therefore the major chemical natures of group have been searched from published data and a comprehensive study has been carried out.

#### **RESULTS AND DISCUSSION**

The results of ethnobotanica data presented in Table-1 which are leafy parts, twigs and flowers of wild herbs, shrubs and small trees. It is in the culture of tribal and rural people of

Jharkhand to collect the leafy vegetables from wild and forest areas and too utilized in recipes. They have much knowledge based on the ambient vegetation as they collect many plants and plant products for day to day needs and primary healthcare. Most of the species are naturally occurring in field. There are less cultivation practices on the above plants. Although there are several species like *Centella asiatica*, *Cassia tora*, *Boerhaavia diffusa* are widely used in ayurveda, and known as 'Mandukparni', 'Chakramard' and 'Punaranava' respectively. There are several herbal products in ayurveda prepared based on classical text of '*Bhaisjya Ratnavali*'. However, some of species are underutilized like *Limnophila indica*, *Sesbania grandiflora* and *Indigofera pulchella* on their pharmacological aspects. The utilization pattern is not much popular among all tribal communities and rural population in comparisons to *Centella asiatica* and *Boerhaavia diffusa*, and *Moringa oleifera*. In some places where *Boerhaavia diffusa* does not occurs in wide and much quantity the substitute like *Trianthema monogyna* is used. The plant where *Portulaca oleracea* is not available the species *P. quadrifida* is utilized for the same purpose.

The alternative medicaments as cooked vegetable to treat illness are much interesting for the research workers particularly for the pharmacologist and dieticians. The source of carbohydrates, proteins, fats/fatty acids, vitamins, minerals etc. available in the plant materials need for proper evaluation to understand nutritional supplement of all the species. They must have potent action in perspectives of therapeutic and curative properties needs ethnopharmacological validation towards isolation of lead components. As it has been known that the isolated and synthetic constituents have potent action and great efficacious for the remedies of particular diseases and disorders. However, long term utilization as medicine and treatment have maximum chances for side effects. Hence, the emphasis should be given to control the diseases through habit of diet and way of cooking of vegetable. For the above purposes, the data presented herewith are quite significant as it based on the trial and error of people

## Kumar *et. al* :Observation on potential ethnobotanical wild edible plants of Jharkhand

of Jharkhand since many successive generations. Literary review also revealed that there are some plants which are also utilized in several parts of country which shows the potentiality of species for consisting certainly curing ailments. The plants have specific components as food supplements as well as medicaments. Hence, there are need to collect more information related to above plants for generating the enrichment of ethnobotanical data. Thus, it is necessary to mention that although as the edible amount as cooked as vegetable is much large. In Jharkhand, as it has been noted during the course of study that some mushrooms like 'Rugra' (*Geastrum* sp.) and Khukri (*Termitomyces heimii*) are used. Although the source of carbohydrates and proteins are reported from the above species. Sometimes the persons suffering from diseases are also taking in diet in remote areas and the above species are also being sold in the market. Therefore, the particular species must be evaluated.

Kambley & Jadhav (2013)<sup>11</sup> has stated that that knowledge of wild leafy vegetables may be lost in the near future, unless efforts are made to educate younger generations about their importance. They could be used as an important source of nutrients during the pre-cropping season, before traditional crops are available for human consumption. It is recommended that agronomic

investigations into cultivation of wild leafy vegetables that are adapted to rural areas where exotic leafy vegetables are not widely available to be undertaken. Those studies could contribute significantly in government policies to improve food security in rural areas, and in the improvement of wild vegetable status, whose potential as sources of nutrition is currently undervalued. The wisdom about treatment of illness through folk remedies is also a part of ethnoherbology which should be preserved (Kumar & Singh, 2001)<sup>12</sup>.

It is fact that there are some underutilized edible and nutritious ethnobotanical plants widely used by the tribal and rural people. Scientific evaluation of their nutritive compounds of dietary diversification may provide new sources of nutraceuticals. The traditional knowledge of indigenous people about the food plants must be combined with scientific data. The wisdom about treatment of illness through folk remedies is also a part of ethnoherbology which should be preserved (Kumar & Singh, 2001)<sup>12</sup>. As most of the plants are being collect from wild and there is less cultivation practices. Hence, to sustainable utilization there are need to develop suitable agro technology as well as harvest technology. Studies are also required for the toxicity of long term uses, if any for the welfare of mankind.

**Table- 1.: Some potential wild edible ethnobotanical plants used to treat the ailments.**

Ethnobotanical plants	Local names	Life form	Uses	Major chemical components
<i>Amaranthus spinosus</i> L. (Amaranthaceae) SPINY PIGWEED	'Kanta -bhaji' 'Janum -arak'	Herb with sharp axillary spines with panicles spike. Commonly found as weed in open ground.	Twigs- Intestinal disorder, Stomach trouble	Spinasterol saponin
<i>Bauhinia purpurea</i> L. (Caesalpiniaceae) BUTTERFLY TREE	'Koinar -sag'	Small to medium sized tree with very deeply lobed leaves. Mostly occurs in rural areas and roadsides.	Leaves- Remove toxicity, blood purifier	Polyphenolic compounds Triterpene Flavonoids
<i>Boerhaavia diffusa</i> L. (Nyctaginaceae) SPREADING HOGWEED	'Khapra- arak'	Herb with minute pink flowers. Mostly occurs in grass land, open ground, waste places and sometimes frequently occurs as weed.	Twigs- Urinary trouble, liver disorders	Flavonoids Steroids Alkaloids Triterpenoids
<i>Cassia tora</i> L. (Caesalpiniaceae) SICKLE SENNA	'Chakundi- arak' 'Chakora'	Herb with obovate leaflets increasing in size from the base. Very common and mostly seen during rainy season.	Leaves- Treat skin diseases	$\beta$ -Sitosterol d-Mannitol Anthraquinone derivatives

**Table- 1: continued.....**

<i>Centella asiatica</i> (L.) Urban (Apiaceae) INDIAN PENNYWORT	'Beng -sag'	Creeping herb with kidney shaped to circular leaves, rooting at the nodes. Very common in grassland, nearby river bank and ponds.	Whole plant- Brain tonic, body pain	Asiaticosides Triterpene Flavonoids
<i>Crotolaria juncea</i> L. (Fabaceae) SUNN HEMP	'Sanai- phool'	Shrub with bright green trifoliate leaves with yellow flowers. Cultivated for fiber.	Flowers- Blood purifier	Phenolics Flavonoids Glycosides
<i>Hibiscus sabdariffa</i> L. (Malvaceae) ROSELLE	'Kudroom'	Shrub with typically dark green to red stems, fruits velvety capsules. It is cultivated in the along with other crops in field.	Flowers and fruits- Useful for liver function	Hibiscic acid Flavonoids Hibicitrine
<i>Indigofera pulchella</i> Roxb. (Fabaceae)	'Dare-huter' / 'Jirhul'	Much branched shrub with impari-pinnate leaves, raceme of bright pink flowers. Mostly occurs in remote forest areas.	Flowers- Used in atrophy	Flavonoids
<i>Limnophila indica</i> (L.) Druce (Scrophulariaceae) INDIAN MARSHWEED	'Nanha- hemcha'	Herb with usually whorled leaves. Mostly grow in marshy places, aquatic areas sometimes stems merged in water.	Twigs- As tonic after fever, appetizer	Flavonoids $\beta$ -Sitosterol
<i>Marsilea minuta</i> L. (Marsileaceae) AIR PEPPERWORT	'Susni -sag'	Fern with slender, rooted, creeping sterile frond consist four clovers like leaflets. Now become rare due to loss of habitat as it occurs in marshy and dump places	Whole plant- Bodyache during fever	Phenolic compounds Flavonoids
<i>Moringa olerifera</i> Lam. (Moringaceae) DRUM STICK TREE	'Sojna' 'Sahijan' Munge -ara'	Small tree with tripinnate compound leaves. Mostly cultivated in rural areas.	Flowers- To protect from pox. Leaves- cough and cold	Ascorbic acid Carotene Phenolic
<i>Portulaca oleracea</i> L. (Portulacaceae) PURSLANE	'Nuni-sag' / 'Jitia -sag'	Diffuse succulent herbs with whorled leaves. Often occurs in grassland and nearby semi aquatic places.	Twigs- Before fast and atrophy	Glutamic acid Aspartic acid Glucoside
<i>Sesbania grandiflora</i> (L.) Poir (Fabaceae) VEGETABLE HUMING BIRD	'Agust phool'	A small tree with 12-20 pairs of oblong leaves mostly pink, red or white giant flowers. Usually grown or cultivated. Flowers sold in market.	Flowers- Digestive purposer	Sterol Saponin Tannin



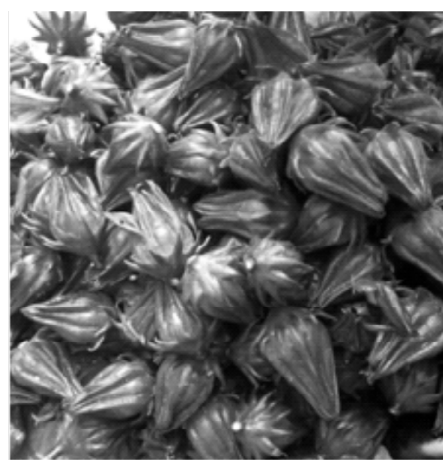
Sunn Hemp ('Sanai -phool')



Indain Marsh weed ('Hemcha-sag')



Purslane ('Nuni- sag'/ 'Jitia- sag')



Roselle ('Kudroom')

Photo: Photographs of some botanicals used as vegetable and ethnomedicine in Jharkhand

#### ACKNOWLEDGEMENTS

The authors are thankful to the tribal and rural people and farmers who have provided information's related to potential ethnobotanical wild plants and shared the experiences based on the recipes cooked as vegetable for the treatment for specific illness.

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**Biospectra : Vol. 10(1), March, 2015, Spl. issue.**  
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