



## STUDIES ON INDIGENOUS TRADITIONAL KNOWLEDGE OF SOME AQUATIC AND MARSHY WILD EDIBLE PLANTS USED BY THE MUNDA TRIBE OF DISTRICT KHUNTI, JHARKHAND, INDIA

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Received for publication: October 21, 2013; Revised: November 12, 2013; Accepted: January 05, 2014

**Abstract:** Wild plants have provided an important source of food since time immemorial and even in present scenario. The Mundas are the dominant tribal community of Khunti district and are considered as the earliest aboriginals of the State Jharkhand. The Munda people are very close to nature and have hereditary traditional knowledge of consuming aquatic and marshy wild plants and plant parts viz. tuber, shoots, leaves, fruits etc. as a source of food. It is interesting to note that much of their folk knowledge is endemic. Although, these wild edible plants play an important role in rural food security, they are mostly ignored during land use planning and implementation, economic development and biodiversity conservation. Moreover, due to modernization of society and change in their lifestyle, indigenous traditional knowledge is rapidly eroding. The present paper compiles and evaluates the ethnobotanical data on about 17 wild edible aquatic and marshy plants traditionally used in various forms by the Munda tribe. The study is an effort to fulfil a part of the knowledge gap by providing data on the diversity and traditional knowledge as required for People's Biodiversity Register. The documentation of these uncultivated and underutilized wild edible plants will make them popular and can provide an alternative, inexpensive and healthier source of food for an ever increasing population.

**Keywords:** Aquatic and marshy plants, Food security, Indigenous, Munda tribe, Traditional knowledge, Wild edible.

### INTRODUCTION

The indigenous traditional knowledge is a part of the identity of most of the tribal communities. It arises from the long term immemorial association of indigenous people with the local flora and fauna. The knowledge of non-domesticated food resources is part of traditional and unstated ecological knowledge and is largely transmitted through socialization within cultural and household contexts [1]. The diversity in wild edible species offers variety in family diet and contributes to the household food security [2, 3]. The tribal community have always generated, refined and passed on verbally the knowledge from generation to generation. There is always a fear of loss of precious traditional knowledge, if somehow it fails to pass on from one generation to the other. Therefore, the documentation of traditional knowledge is necessary before it is being lost forever to posterity and also to preserve the knowledge for current and future generation as well as for protecting the Intellectual Property Rights and which are prerequisite for People's Biodiversity Register [4].

The execution of unplanned developmental activities and anthropogenic factors has caused degradation and destruction of water-bodies, marshes and wetlands, which has resulted in a serious ecological imbalance and degeneration of biodiversity in this region. Therefore, this ethnobotanical documentation can be beneficial to popularize and to conserve the

traditional knowledge and edible biodiversity in this region; in addition it would also be helpful for the Munda people to become inventor and claimant [5] in future.

### MATERIALS AND METHODS

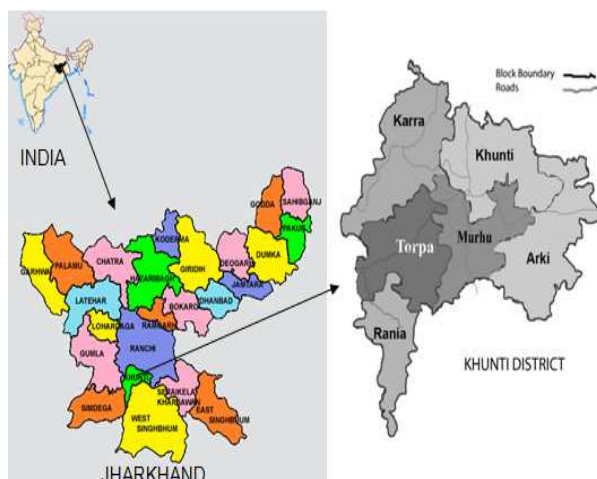
#### Survey Area

Khunti district is one of the twenty-four districts in South Chotanagpur division of the Indian State of Jharkhand (Figure 1). The district Khunti is located at 23.08° N and 85.28° E, at an average elevation of 611 m (2,005 ft.) above the sea level. It has almost southern location in the state of Jharkhand. The district is endowed with heterogeneous landscapes, huge natural resources, numerous small rivers, rivulets, streams and waterfalls, picturesque spots, cultural centers, historical sites, with dominance of aboriginal's habitats and their cultures. The region is covered with dense deciduous forest.

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**Fig.1:** Map of study area district Khunti in the State Jharkhand, India.

### People

Munda tribe is the major tribal community of Khunti district and is the third leading tribal community out of 30 tribal communities of the State Jharkhand [6]. Ethnically they are proto- Austroloids and speak Mundari language. The Mundas are dark brown, almost black in colour, short stature, sturdy in his limbs, with irregular features, scanty beards, thick lips, broad nose, low facial angles, with a long head [7]. They are basically agriculturists. Apart from being dependent upon rainfed agriculture as the primary means of livelihood, the Munda community has much to do with their natural resources especially forests. The Munda people are traditionally bound with the natural resources for multifaceted uses such as food, fodder, dyes, ornamentals, medicines etc. They use local wild plants and plant products as fruits and vegetables. Locally, they are of great relevance for nutrition and food security. Wild plant species provide minerals, fibers, vitamins and essential fatty acids and enhance taste and colour in diets. The food habit of Munda people developed on the basis of experiences and survival through generations. They consume wild edible plants products both raw and cooked.

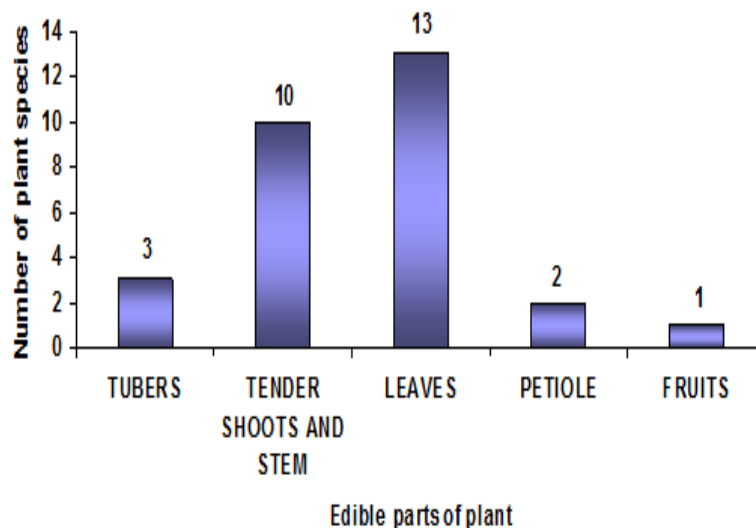
### Data collection

The ethnobotanical study was carried out in different seasons during the year 2010-2013. The study was conducted among the Munda people of Khunti district through survey, interview and field work along with the knowledgeable individuals as done by previous workers [8, 9, 10, 11, 12, 13, 14]. Information on aquatic and marshy wild plant species was collected by interviewing and observing the local people, especially the women and the elderly people of the villages, more or less following the standard methodology used for ethnobotanical studies [15, 16]. Moreover, informal

discussions and field walks along with key informants, both adults and children, was carried out to enhance understanding about traditional knowledge and about different species of aquatic and marshy wild edible plants available around the village. The collected specimens were further identified with the help of floras and other documents [17, 18, 19, 20].

## RESULTS

The result shows that, the study area is floristically rich and the Munda tribe inhabiting in this region possess a very good knowledge on aquatic and marshy plant species. The aquatic and marshy plant species were collected from rice-fields, ponds, marshes, wetlands, riverbanks etc. The marshes of the study area are generally dominated by grasses, rushes or reeds. The aquatic plants have aerenchyma in their tissues. The marsh plant also tends to have rhizome for underground storage and reproduction. The marshes in this region usually become dry during summer. A total of 17 plant species belonging to 12 families have been recorded as wild edible plant growing in aquatic and marshy habitat in the study area (Table 1) (Fig. 3). Of which 3 have edible tubers, 10 have edible tender shoots and stems, 13 have edible leaves, 2 have edible petiole and 1 have edible fruit (Fig. 2). The edible parts like tubers, cooked or raw form. Traditionally, the leafy vegetables are cooked by wrapping them in several layers of fresh leaves of *Shorea robusta* (Sal, Sakhua), before putting them on low heat. The edible leaves are sun-dried, powdered and stored for off seasons.



**Fig.2:** Use of frequency of wild edible plant parts obtained from aquatic and marshy plant species



**Figure 3 : Photographs of edible wild aquatic & marshy plants of Khunti district, Jharkhand**  
 A - *Alternanthera philoxeroides*, (Mart.) Griseb., B - *Butomopsis latifolia*, (D. Don) Kunth., C - *Linnophila repens*, (Benth.) Benth., D - *Linnophila aromatica*, (Lam.) Merr., E - *Actinoscirpus grossus*, (L.f.) Goetgh. & D.A.Simpson, F - *Hygrophila auriculata*, (Schumach.) Heine, G - *Ipomoea aquatica*, Forssk., H - *Linnophila rugosa*, (Roth.) Merr., I - *Enhydra fluctuans*, Lour., J - *Rungia quinqueangularis*, Koen., K - *Lobelia alsinoides*, Lam., L - *Monochoria vaginalis*, (Burm.f.) C. Persl., M - *Marsilea minuta*, L., M - *Nelumbium speciosum*, Willd., O - *Nymphaea lotus*, L., P - *Sagittaria sagittifolia*, L., Q - *Trapa natans* var. *bispinosa*, (Roxb.) Makino.

**Table 1:** List of edible wild aquatic and marshy plants of Khunti district

S.N.	Botanical Name	Family	Mundari Name	Hindi Name	Edible Parts	Methods to consume plant parts
1.	<i>Hygrophila auriculata</i> , (Schumach.) Heine	Acanthaceae	Koila Khari, Koila Ara	Kanta Kalia	Leaves	Steamed or cooked.
2.	<i>Rungia quinqueangularis</i> , Koen.	Acanthaceae	Kauwa Ara	Kauwa Saag	Leaves, young shoots	Steamed or cooked.
3.	<i>Butomopsis latifolia</i> , (D. Don) Kunth.	Alismataceae	Lundi Ara	Karchhul Saag	Leaves	Boiled, then water is squeezed out and then cooked as pot-herb.
4.	<i>Sagittaria sagittifolia</i> , L.	Alismataceae	Lochkor	ChotoKut	Leaves	Boiled, then water is squeezed out and then cooked as pot-herb.
5.	<i>Alternanthera philoxeroides</i> , (Mart.) Griseb.	Amaranthaceae	Gara Ara	Nadi Saag	Leaves, young shoots	Steamed or cooked.
6.	<i>Enhydra fluctuans</i> , Lour.	Asteraceae	Muchri Ara	Hirmicha Saag	Leaves, young shoot	Steamed or cooked.
7.	<i>Lobelia alsinoides</i> , Lam.	Campanulaceae	Bari Ara	Painmali (in Oriya)	Tender leaves and shoots.	Steamed or cooked.
8.	<i>Ipomoea aquatica</i> , Forssk.	Convolvulaceae	Kalmi Ara	Kalmi Saag	Leaves, young shoot	Steamed or cooked.
9.	<i>Actinoscirpus grossus</i> , (L.f.) Goetgh. & D.A.Simpson	Cyperaceae	Kesari	Kesar	Underground tubers	Tubers sweet in taste, eaten raw.
10.	<i>Marsilea minuta</i> , L.	Marsileaceae	Chatom Ara	Sunsunia Saag	Leaves	Steamed or cooked.
11.	<i>Nelumbium speciosum</i> , Willd.	Nymphaeaceae	Salkub Sanga	Kamal	Petiole, stem, tubers	Boiled and cooked with tamarind pulp.
12.	<i>Nymphaea lotus</i> , L.	Nymphaeaceae	Salkub Sanga	Kumudini	Petiole, stem, tubers	Boiled and cooked with tamarind pulp.
13.	<i>Trapa natans var. bispinosa</i> , (Roxb.) Makino	Trapaceae	Daa Jo	Pani-phal	Fruits	Fruit sweet in taste, eaten raw.
14.	<i>Monochoria vaginalis</i> , (Burm. f.) C. Persl.	Pontederiaceae	Sadom Lochkor Ara	Nanka, Indivar	Leaves	Steamed or cooked.
15.	<i>Limnophila aromatica</i> , (Lam.) Merr.	Scrophulariaceae	Loson Ara, Losodh Ara	Kuttra, Kapur	Tender leaves and shoots	Steamed or cooked. Chutney (green sauce) is also prepared.
16.	<i>Limnophila repens</i> , (Benth.) Benth.	Scrophulariaceae	Uli ara	Kapur	Tender leaves and shoots.	Added to chutney (green sauce) for essence of unripe mango.
17.	<i>Limnophila rugosa</i> , (Roth.) Merr.	Scrophulariaceae	Loson Ara, Losodh Ara	Kala Kapur	Tender leaves and shoots.	Steamed or cooked. Chutney is also prepared.

**Table 2:** Ethnomedicinal uses of some edible aquatic and marshy plants of Khunti district

S.N.	Botanical Name	Family	Ethnomedicinal Uses
1.	<i>Hygrophila auriculata</i> , Heine	Acanthaceae	A teaspoon of juice of leaves of fresh leaves is given in anaemia and untimely greying of hairs.
2.	<i>Rungia quinqueangularis</i> , Koen.	Acanthaceae	Cooked pot-herb is good for stomach and relieves from constipation.
3.	<i>Butomopsis lanceolata</i> , Kunth.	Alismataceae	Cooked pot-herb is good for stomach and relieves from constipation.
4.	<i>Sagittaria sagittifolia</i> , L.	Alismataceae	Cooked pot-herb is good for stomach and relieves from constipation.
5.	<i>Alternanthera philoxeroides</i> , (Mart.) Griseb.	Amaranthaceae	Cooked pot-herb is good for stomach and relieves from constipation.
6.	<i>Enhydra fluctuans</i> , Lour.	Asteraceae	Leaves of <i>Enhydra fluctuans</i> , leaves of <i>Andrographis paniculata</i> and leaves of <i>Azadirachta indica</i> are cooked together and given to improve appetite and digestion.
7.	<i>Lobelia alsinoides</i> , Lam.	Campanulaceae	Cooked pot-herb is good for stomach and relieves from constipation.
8.	<i>Ipomoea reptans</i> , Poir.	Convolvulaceae	Cooked pot-herb is good for stomach and relieves from constipation
9.	<i>Marsilea minuta</i> , L.	Marsileaceae	Cooked pot-herb is also given to person suffering from sleeplessness.
10.	<i>Nelumbium speciosum</i> , Willd.	Nymphaeaceae	Tuber mixed with other plants given to cure jaundice.

The edible wild plants not only provide food to us but they are also an important source of ethnomedicines used locally by the tribal people (Table 2). Out of 17 plants species reported as edible from aquatic and marshy habitat; 10 of them were used in their traditional medicine to cure hepatic disorders and other diseases. The maintenance of good health by the tribal community seems to be due to consumption of such wild edibles.

### DISCUSSION

Documentation of wild edible aquatic and marshy plant species from ethnobotanical approach is important for enhancing the understanding of indigenous knowledge systems. But due to modernization of tribal societies, the old tradition in many tribal communities are at risk and gradually declining; hence there is urgent need to study and document such knowledge system and find innovative ways of tapping their potential for the welfare of mankind [21]. It is recommended that a harmonious blend of indigenous knowledge with modern science is essential to promote sustainable and sustained utilization of these uncultivated sources of nutritious food [22, 23]. Efforts should also be taken to protect and conserve the water bodies and marshes, as they are now considered as waste-lands and are converted to agricultural fields.

### CONCLUSION

During survey and investigation it was observed that due to modernization, urbanization and change in the lifestyle of the societies, the younger generation in rural population are not very keen to collect these wild edible plants and consider them as inferior food. But due to their relishing taste, they are still eager to eat those wild edibles collected by the older people of the villages. Much of these wild edibles are not even sold in rural and urban markets. Thus, most of the people are not familiar with these wild growing plants and consider them as weeds. So, to make these precious reserves of wild edible diversity popular and for their conservation it is important to include them in cultivation. Some of these wild edible plants, if cultivated may have the potential to be a valuable food source and could be part of a strategy in tackling food insecurity.

### ACKNOWLEDGEMENT

We would like to thank the people of Munda tribe of different villages of district Khunti for their active support in providing valuable information about wild edible plants. We are grateful to Shri Lago Munda of village Ghagra; Shri Buran Singh Munda of village Sosokuti; Shri Sugna Munda and Shri Panda Munda of village Piska-toli; Shri Lodro Munda and Shri Jetha

Munda of village Saparum; Shri Bandhna Pahan of village Silda; Shri Arjun Munda of village Jiki; Shri Sukhram Munda, Shri Tulsi Munda, Shri Laka Munda, Shri Gonda Munda, Pelong Devi, Babi Munda and Mungli Munda of village Mahil as key informants who contributed to this study by revealing their valuable traditional knowledge; without their support this work would not have been possible.

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**Source of support:** Nil

**Conflict of interest:** None Declared