

Research Article

LESS KNOWN USES OF NYMPHAEA SPP. (NYMPHAEACEAE) AS THE TRADITIONAL FOOD ITEM (VHET-LADDU) IN NORTHEAST INDIA

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ABSTRACT

Vhet-Laddu is a traditional food-item of the rural communities in the district of Bongaigaon, Assam, Northeast India. It is one of the delicious food items prepared during festivals. *Vhet-laddu* is prepared from the roasted endosperm of *Nymphaea nouchali* Burm.f. and *Nymphaea pubescens* Willd., two wild aquatic herbs of wetlands belong to the family Nymphaeaceae and locally called as *Vhet*. The present paper deals with hitherto known traditional methodology for preparation of *Vhet-laddu* along with the other uses of *Vhet* in the state of Assam.

Key Words: Traditional Food-Item, *Vhet-Laddu*, *Nymphaea nouchali*, *Nymphaea pubescens*, Rural Communities, Assam, Northeast India

INTRODUCTION

Vet-laddu is a traditional food-item prepared during festival seasons by the rural communities in the district of Bongaigaon, Assam, Northeast India. *Vhet-laddu* is prepared from the roasted endosperm of *Nymphaea nouchali* Burm. f. (NN) and *Nymphaea pubescens* Willd. (NP) and locally called as *Vhet* (Assamese and Bengali). Both the plant species belong to the family Nymphaeaceae, are the important wild aquatic herbs of wetlands in Assam. During the major festivals namely Durga Puja, Laxmi Puja and *Viswa Sankranti*, *Vet-laddu* is one of the traditional delicious food-items among the rural communities viz. Bengali, Koch-Rajbangshi, etc. in Bongaigaon district of Assam. Roy *et al.*, (2010) also reported less known traditional methodology for preparation of *laddu* from the nuts of *Schoenoplectus articulatus* (L.) Palla (Family- Cyperaceae) for the first time from Lower Assam, India.

Assam one of the northeastern states of India, lies between 20° 51' N- 27° 58' N latitude and 89°49' E- 97°26' E longitude. Being a state of the eastern Himalayan biodiversity hot spot, Assam is very rich in biodiversity as well as traditional knowledge. Economically weaker tribal sections and some rural people have to depend on the forest produce for their various daily necessities. Bongaigaon district situated in the west corner of Assam lies between 26°41'56'' & 26°10'27'' N latitude and 90°21'33'' & 90°54'32'' E longitudes covering an area of 1510 sq km. The district is bounded by Chirang district on the north, Kokrajhar and Dhubri district on the west, Barpeta district on the east and the river Brahmaputra and Goalpara district on the south (Figure 1). The district has been inhabited by different ethnic groups, viz. Koch-Rajbangshi, Boro, Garo, Rabha etc. The rural people of the district have a vast knowledge on the ethno- botany (Bora and Sarkar 2008, Roy *et al.*, 2010, Roy 2011).

The family Nymphaeaceae is classified under the order Nymphaeales in the groups of 'basal families', in the recent molecular based angiosperm phylogeny (Anonymous, 2003). Nymphaeaceae Salisb. is cosmopolitan with about 6 genera and 75 species (Mabberley, 1997). The genus *Nymphaea* includes approximately 40 species found in tropical and temperate climates on both hemispheres (Mohan Maruga Raja *et al.*, 2010). *Nymphaea* is divided into two main groups, which in turn is divided into five subgenera. Group Apocarpiae includes the subgenera *Anecphyta*, *Brachyceras* and group Syncarpiae includes *Hydrocallis*, *Lotos* and *Nymphaea* (Mohan Maruga Raja *et al.*, 2010). In India, 10 species of

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Nymphaea, both wild (*N. alba*, *N. candida*, *N. nouchali*, *N. pubescens*, *N. rubra* and *N. tetragona*) and cultivated (*N. caerulea*, *N. x marliacea*, *N. micrantha* and *N. alba* var. *rubra*) were reported (Mitra 1990, Kumar et al., 2012). Out of 10 species of *Nymphaea* reported from India, 7 species viz. *N. alba* var. *rubra*, *N. caerulea*, *N. x marliacea*, *N. nouchali*, *N. pubescens*, *N. rubra* and *N. tetragona* are recorded in North-East India (Assam and Meghalaya) (Dkhar et al., 2010).

In folk medicine, the *Nymphaea* is reported to be soothing and tranquilizing effects and is reputedly detoxicant and aphrodisiac along with astringent, diuretic properties (Kumar et al., 2012). In Ayurvedic medicine, it is used for dyspepsia, enteritis, diarrhoea, urinary problems, fever and heart palpitations (Encyclopedia of Herbs and their uses 1995). The leaves, rootstocks, peduncles, flowers, fruits and seeds have wide range of pharmacological activities and are used for diabetes, eruptive fever and liver disorders (Dhanabal et al., 2007, Mohan Maruga Raja et al., 2010) and in boils, postnatal and as an anti-fertility (Jain, 1991) and of economical activities and are used as vegetables and famine foods (Jain 1991, Mohan Maruga Raja et al., 2010).

Nymphaea nouchali Burm. f., Fl. Ind. 120. 1768; Deb, Fl. Tripura 2: 126. 1983; Mitra in Sharma et al., Fl. Ind. 1: 430. 1993; Chowdhery et al., in Hajra et al., Materials for the Fl. Arunachal Prad. 1: 115. 1996. *N. stellate* Willd., Sp. Pl. 2: 1153. 1799; Hook. f. & Thomson in Hook.f., Fl. Brit. Ind. 1: 114. 1872; Kanjilal et al., Fl. Assam 1: 64. 1934.

Stem rhizomatous. Leaves elliptic or orbicular, entire or irregularly sinuate toothed, glabrous; petiole 30-150cm long, fleshy. Flowers solitary on long peduncles, whitish purple, 8-10 cm across. Fruits spongy berries, globose. Seeds arillate with both endosperm and perisperm.

Flowering & Fruiting: July-November.

Nymphaea pubescens Willd., Sp. Pl. 2: 1154. 1798; Deb, Fl. Tripura 2: 127. 1983; Mitra in Sharma et al., Fl. Ind. 1: 431. 1993. *Nymphaea lotus* var. *pubescens* (Willd.) Hook. f. & Thomson in Hook. f., Fl. Brit. Ind. 1:114.1872; Kanjilal et al., Fl. Assam 1: 64. 1934.

Stem rhizomatous. Leaves ovate-elliptic, dentate, pubescent beneath; petiole 30-150cm long, fleshy. Flowers solitary on long peduncles, whitish, 10-13 cm across. Fruits spongy berries, globose. Seeds arillate with both endosperm and perisperm.

Flowering & Fruiting: July-November.

Both the plant species (NN and NP) are found growing in water bodies which may be village ponds, marshy lands, ditches. During the flood season the plant can be found profusely growing in the flooded regions as more land becomes submerged under water. The economically weaker rural people collected the plants from wetlands and sold in the markets to get for all. The present paper deals with hitherto known traditional methodology for preparation of *Vhet-laddu* from the roasted endosperms of *Vhet* (NN and NP) and also the traditional uses of each part viz. rhizomes, peduncles, flowers, fruits of the plants as food by the rural communities of Bongaigaon district in Assam.

MATERIALS AND METHODS

The information regarding the traditional uses of NN and NP were collected from four villages viz. Amguri and Basilarpar under Abhayapuri police station; Mahanpur under Jogighopa police station and Baripukhuri under North Salmara police station in Bongaigaon district of Assam (Figure 1). The surveys were conducted by the authors during July, 2011 – April, 2012. All the four villages are dominated by the Hindu Bengali and Koch-Rajbangshi communities of same culture and custom. Agriculture is the main economic activity in all these villages. The surveys were conducted with the help of semi-structured questionnaire and lengthy interviews. Interviews were conducted in Bengali language within the home of each informant basically the aged woman and/or rarely aged man. The knowledge holders were requested to provide the detail information on the *Vhet* plants (NN and NP) and procedure of *Vhet-laddu* preparation along with modes of consumption of different plant parts and the availability of the plants around the

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year. Market surveys were also conducted in three town- markets namely Abhayapuri, Jogighopa and Tulungia Bazar (North Salmara) by the authors

RESULTS AND DISCUSSION

Traditional Methodology for Preparation of Vhet-Laddu

Details of the methods for processing of seeds of NN and NP and *Vhet-laddu* preparation are discussed below-

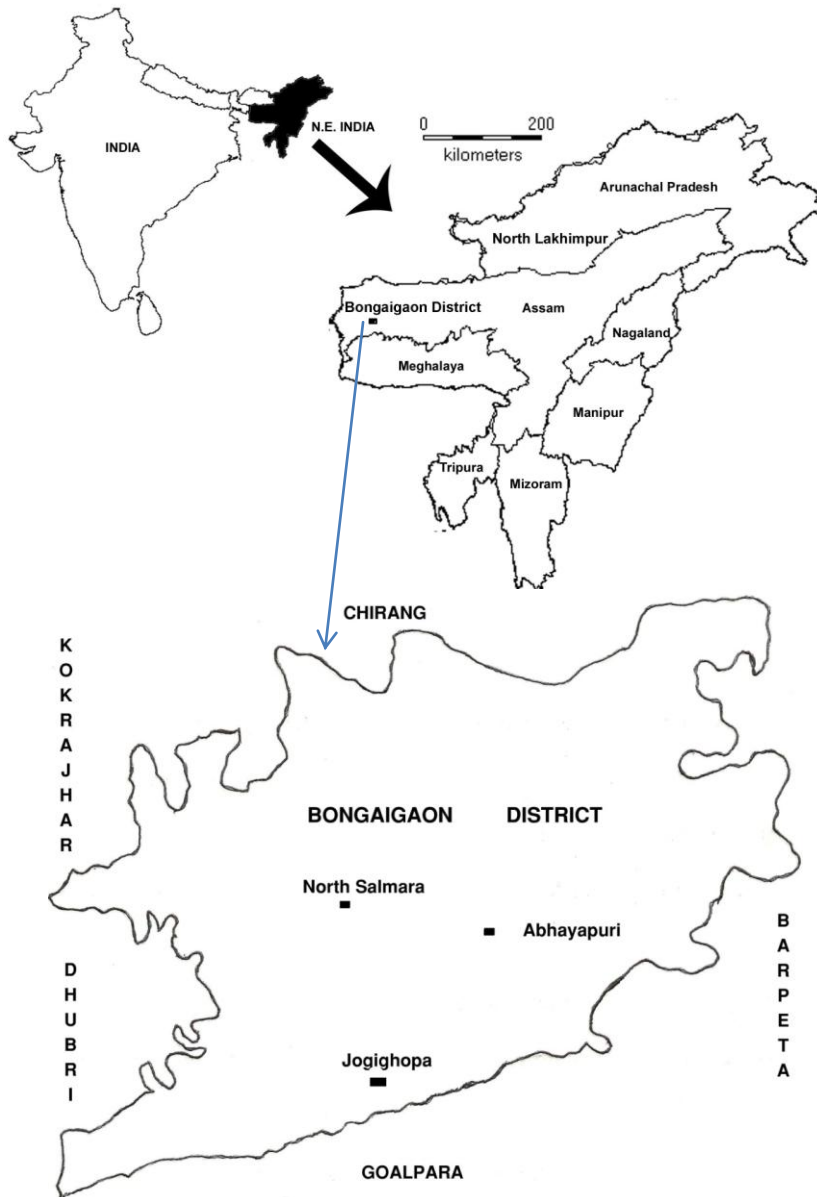


Figure 1: Location of Bongaigaon District of Assam, India

Collection of Fruits of Vhet

The *Vhet* plants use to flower in the month of July-August. Generally during the month of September-October, i.e. at the time of maturity, the matured fruits are collected. After collection, the fruits of NN and



Figure 2: Extraction and roasting of seeds of Vhet.



Figure 3: Preparation of delicious Vhet-laddu with melting gur (molasses).

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NP are separated for further process. But sometimes the fruits of both NN and NP are kept together. NN is preferable than NP because of taste.

Seed Extraction

The matured fruits are then stored in damp-moist places and covered with straw for 15-20 days, to complete decomposition of the mesocarps. The decomposed fruits are then spread under sunlight for drying and crushed to get detach the seeds from debris. The seeds are separated from the debris by sieving. The extracted seeds are dried in Sunlight and stored (Figure 2: A & B).

Roasting of Seeds

Well dried seeds are fried in hot sand oven to split open the seed coat giving out the endosperm in large soft puffy form. The seed coat and the sands are removed from the soft puffy endosperms by sieving (Figure 2: C & D).

Making of Laddu

The soft puffy endosperms are mixed with melting sugar or molasses (*gur*) (Figure 3: A). The mixture puffs become very sticky with each other (Figure 3: B). Then the traditional *laddu* of suitable size are prepared from these sticky puffs (Figure 3: C&D). The soft puffy endosperm may be also eaten with warm milk with sweet as a delicious traditional food.

Other Uses of NP and NN

Each part of the plant has the traditional uses as food and are enumerated as follows-

1. Rhizomes

Locally called *Sheluk* (Assamese, Bengali). The rhizomes of the young plants are collected from the wetlands, cleaned removing the mud, roots and finally the barks and taken as row. The rhizomes are also taken as boiled. Before removing the barks the rhizomes are boiled in water adding little salts. Then the barks are removed and the rhizomes are taken as traditional starchy foods. The rhizomes of NN are sweeter than the rhizomes of NP.

2. Peduncles

The soft herbaceous peduncles are cooked and eaten as vegetable. After removing the skins, the long peduncles are cut into small pieces of about 2-3 cm. Then these are cooked with salt, oil, spices, as a tasty curry. Paste of muster-grains is also added. Peduncles of NP are tastier than the peduncles of NN; hence generally the peduncles of NP are taken.

3. Fruits

The matured fruits may be taken as row with sugar after removing the barks. The Young fruits also may be taken row. But the semi-matured fruits are generally not taken because of its bitter taste.

Magico-Religious Beliefs on NN and NP

Generally the flowers, fruits and peduncles of NN and NP are eaten only when the Manasha Puja (Goddess of Snake) is passed and/or from the next day of the said puja during the time of availability in wild. There is a magical belief that snakes shelter on *Vhet*-plants just before the days of Manasha Puja. So, the consumption of *vhet* plants before the Manasha Puja may not be healthy. Besides, the domestic animals viz. cows, goats, etc. are kept away from the flowers of NN and NP. They believe that the consumption of row flowers cause infertility in the animals.

Potentiality of vhet

The *vhet* plants have immense potential in multipurpose uses viz. ornamental, medicinal and economic. The plants also play a vital rule in the economy of some rural landless people basically during flood. During the flood season the plants can be found profusely growing in the flooded regions. The plants are also found in the permanent wetlands (ponds, ditches etc). They collect the plants (Rhizomes, flower stalks, and fruits) in wild and also sale in markets to get for all. During market survey it is found that a bundle of flower-stalks (approximately 500gm) cost of Rs. 5-10/- and the cost of Seeds is Rs. 25-45/- per kg. Villagers collect the rhizomes for their own utilization only, not for sale. Selling of rhizomes is not

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seen in any markets whereas flower-stalks are common in all the markets under survey (Abhayapuri, Jogighopa and North Salmara).

Each part of the *Vhet* plants has the economic as well as medicinal values. As the plant is also associated with the traditional knowledge in its various processes of utilizations viz. food and medicine. The rural landless people also depend on the plants for their livelihood during flood season. But due to shortage of habitats, use of herbicides and over exploitations, the plant is becoming rare in the natural habitats like Wetlands and low lying water logging areas in Assam. No effort is taken to stop their disappearance from the natural habitats due to the tremendous anthropogenic pressures and or to analysis the contents of its seeds in terms of protein, carbohydrate, fats, etc. for use during the famine and drought. The scientific evidence of the nutritional value of the plants will encourage their cultivation and conservation as the wild habitats of the plants are shrinking day by day due to growth of human activities.

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