World Journal of Pharmaceutical Sciences
ISSN (Print): 2321-3310; ISSN (Online): 2321-3086
Available online at: http://www.wjpsonline.org/
Original Article

Ethnobotanicals of Senapati District of Manipur in North East India

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Received: 29-09-2020 / Revised Accepted: 31-10-2020 / Published: 30-11-2020

ABSTRACT

The present article deals with the documentation of tribal knowledge on ethnobotanicals in Senapati district of Manipur in North East India. An attempt has been made to document wild edibles enumerating botanical name, habit, part(s) use and method use for either as food or for emergency care in survival situations. A total of 63 species of plants recorded herein, of which, most of them are consumed as vegetables, either raw or cooked, few as thirst quencher, and medicine.

Keywords: Wild edibles; Vegetable; Fruit; Remedy

INTRODUCTION

Senapati district of Manipur in North East India (NEI), owing to its difficult terrain has limited accessibility to modern amenities, due to which the indigenous people depend on forest produce for food and medicines. Besides, plants are also used for clothing, shelter, religious ceremonies, ornamentation etc. [1]. However, in recent time, the local plant resources are dwindling rapidly due to athropogenetic activities.

Senapati, being part of Indo-Burma biodiversity hotspot, harbors varieties of flora and fauna (Fig. 1). Many wild edibles have been reported from the region from time to time. Local folks, mostly Naga tribes such as *Poumai*, *Mao*, *Maram*, *Zemei*, *Lengmei* etc., settled in this region, rely on indigenous plant resources to meet their daily needs. As many as 628 species of wild edibles are being consumed by Naga tribes [2].

Fig 1: Location of Senapati district: 93.29-94.15° East Longitude and 24.37-25.37 North Latitude.

Small groups of indigenous people, settled in pockets at different locations, have separate dialects and unique ethnobotanical knowledge, acquired through generations, which is unknown to

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How to Cite this Article: Nakhuru Khonamai Sewa, Ajitabh Bora, Jayshree Das and Sanjai Kumar Dwivedi. Ethnobotanicals of Senapati District of Manipur in North East India. World J Pharm Sci 2020; 8(12): 96-101.

outside world. This knowledge need to be documented before it is lost forever. This study aimed to document the ethnobotanical information of local plants of Senapati district, with special emphasis on use of potential plants by the Armed Forces, operating in difficult situations in particular and civil populace in general. Wild edible plants are enumerated herein with scientific name family, habit, parts (s), methods and uses.

METHODOLOGY

This study was conducted from October 2017 to June 2019. Information on wild edible plants was collected during market surveys and field visits. Local markets of Mao-gate, Purul, Senapati town were visited.

Respondents of the surveys were mainly female vendors, aged between 35-60 years. Wild edible plants are collected from the forest by nearby villagers, (both male and female of 35-60 years age and sometimes children), and supplied to the markets. Efforts were also made for interaction with locals who are knowledgeable about the local resources, who frequently visit the forests as well. On request, field visits were made with them to forests areas at Purul, where Poumai tribe resides. Samples were collected during the visits and identified with the help of knowledgeable locals, literature [3, 4, floraofindia.net] and taxonomists at DRL. Herbarium [5] and bottle specimens prepared were deposited at Specimen museum, DRL.

RESULTS AND DISCUSSION

Wild edible plants form an important part of food either in day to day life for nutritional supplement or in time of scarcity. Above 70% indigenous people depend on their environments or forests either for food or healthcare. Many of the ethnic people in this remote area, aged above 70, have never been to modern health care facilities. Leafy vegetables and indigenous fruits form part of their daily food to satisfy their hunger and for boosting their immunity as well. Seasonal minor fruits, which are lesser-known to urban dwellers, supplement their diet as these fruits are more nutritious, in many cases, than the commercial ones though the taste may vary from fruit to fruit. Since they consume these nutritious seasonal wild fruits and vegetables in meeting their daily dietary needs, by collecting from the forests, they could maintain healthy living. These wild edible plants are usually collected from forests both for household consumption and for income generation. These wild edible plants can also serve as a source of food when one cannot get any supply from anywhere due to natural calamity or other crisis situations. Therefore, there is an urgent need to validate ethnobotanical uses of these plants, which would enhance the chance of acceptability of these wild edible plants among the rural populations and urban dwellers alike. However, one must be very careful in identifying wild edible plants and consume in an appropriate manner and amount, so as to get maximum benefit out of it and to avoid health hazards or risks that may be associated with the wild edible plants.

A total of 63 wild edible plants belonging to 33 families were recorded (Table 1) and their habit is represented in Figure 2. Rosaceae was found to be the predominant family, comprising of 9 species, followed by Polygonaceae and Moraceae with 5 and 4 species respectively. Fruits were most commonly consumed part. Other edible parts include embryo, inflorescence, leaf, tuber and whole plant (Table 2). Percent consumption of different parts is enumerated in Figure 3. A total of 23 species reported herein can be taken raw, whereas 27 species are to be cooked and 13 species can be relished either raw or cooked as per one's taste and liking (Table 3, Figure 4). Wild edibles plants against specific ailments are represented in Table 4. Few selected wild edible plants are shown in Figure 5.

Table 1. Habit and botanical name of wild edible plants of Senapati district.

No	Habit	Botanical name
1	Fungus	*Schizophyllum commune, Auricularia delicata*
2	Grass	*Dendrocalamus hamiltonii, Arundinaria callosa*
3	Herb	*Amaranthus dubius, Amaranthus viridis, Alocasia macrorrhizos, Amorphophallus paeonifolius, Centella asiatica, Hydrocotyle sibthopioides, Polygonum runcinatum Polygonum microcephalum, Polygonum molle, Colocasia esculenta, Oenanthe javanica, Elatostema lineolatum, Elatostema sessile, Fagopyrum esculentum, Begonia palmate, Impatiens parviflora, Diplazium esculentum, Ocimum basilicum, Curcuma angustifolia, Physalis angulata, Physalis peruviana, Utrica dioica, Spilanthes acemella, Musa sp., Oxalis corniculata*
4	Perennial vine	*Basella rubra, Paederia foetida, Passiflora edulis, Polygonum perfoliatum*
5	Shrub	*Calamus erectus, Rubus odoratus, Rubus apetalus, Rubus ellipticus, Rubus*

		rosifolius, Rubus volkensii, Rubus caesius, Clerodendrum colebrookianum, Solanum kurzii, Elaeagnus pyriformis., Elaeagnus spp.
6	Tree	*Baccaurea ramiflora, Prunus persica, Spondias axillaris, Spondias pinnata, Antidesma ghaesembilla, Rhus semialata, Myrica esculenta, Docynia indica, Pyrus pashia, Ficus benghalensis, Oroxylum indicum, Ficus auriculata, Ficus semicordata, Castanopsis indica, Castanopsis hystrix, Bauhinia purpurea Rhododendron arboretum, Murrya koenzii, Morus nigra.*

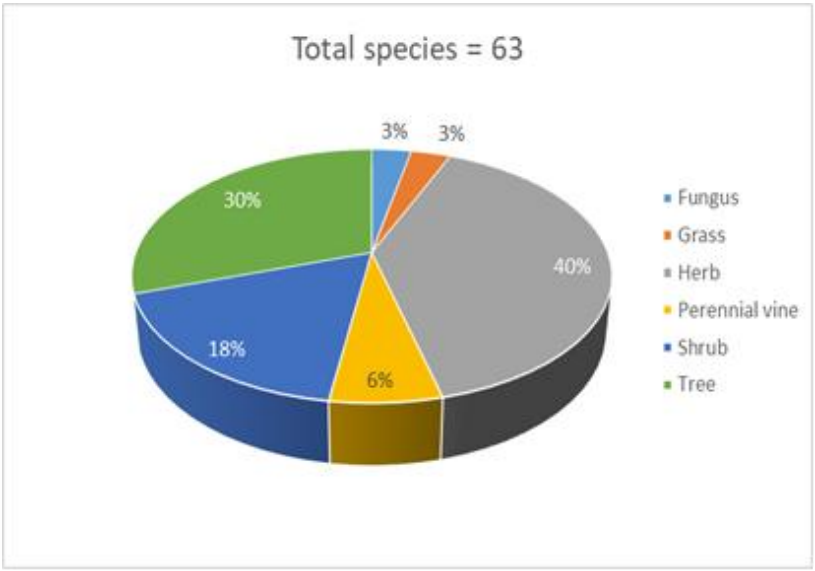


Figure 2: Habit of wild edible plants in percent

Table 2: Parts used along with botanical name of wild edibles

No	Parts	Botanical name
1	Fruit	*Calamus erectus, Rubus odoratus, Rubus ellipticus, Rubus rosifolius, Rubus apetalus, Rubus volkensii, Rubus caesius, Spondias axillaris, Antidesma ghaesembilla, Solanum kurzii, Auricularia delicata, Schizophyllum commune Morus nigra, Physalis angulata, Physalis peruviana, Myrica esculenta, Docynia indica, Pyrus pashia, Elaeagnus pyriformis, Elaeagnus spp.*
2	Leaf	*Paederia foetida, Polygonum microcephalum, Polygonum runcinatum, Oenanthe javanica, Clerodendrum colebrookianum, Fagopyrum esculentum, Diplazium esculentum, Basella rubra, Ficus benghalensis, Utrica dioica*
3	Fruit & Leaf	*Baccaurea ramiflora, Ficus auriculate, Bauhinia purpurea, Prunus persica, Spondias pinnata, Rhus semialata, Polygonum perfoliatum, Oroxylum indicum, Passiflora edulis*
4	Whole Plant	*Amorphophallus paeoniifolius, Centella asiatica, Hydrocotyle sibthopioides, Colocasia esculenta, Musa sp.*
5	Leaf, Stem	*Elatostema lineolatum, Elatostema sessile, Begonia palmate, Impatiens parviflora*
6	Leaf, Twig	*Amaranthus dubius, Amaranthus viridis, Murrya koenzii, Oxalis corniculata*
7	Shoot	*Dendrocalamus hamiltonii, Arundinaria callosa*
8	Embryo	*Castanopsis indica, Castanopsis hystrix*
9	Inflorescence	*Curcuma angustifolia, Rhododendron arboretum*
10	Leaf, Inflorescence	*Ocimum basilicum, Spilanthes acemella*
11	Fruit, Inflorescence	*Bauhinia purpurea*
12	Shoot, Leaf	*Polygonum molle*
13	Tuber	*Alocasia macrorrhizos*

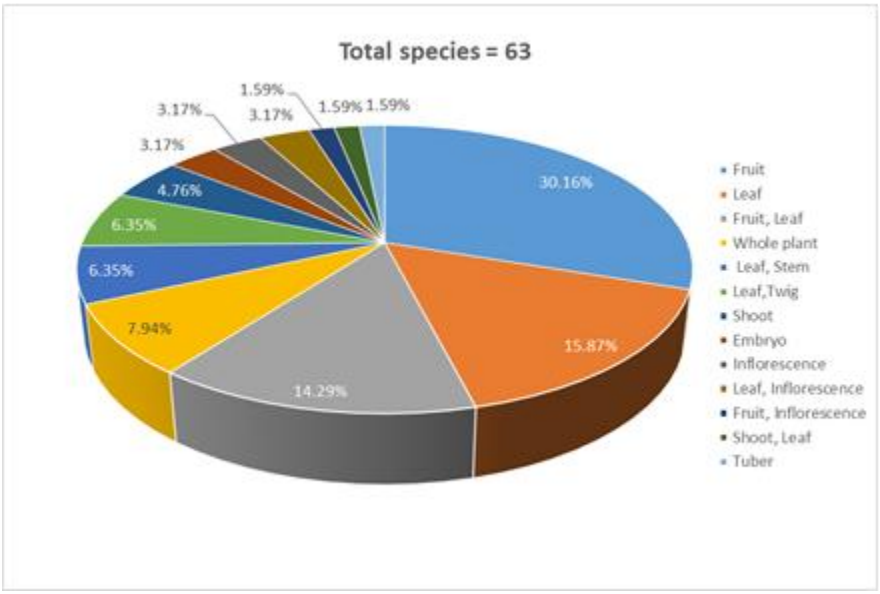


Figure 3: Parts used in percentage

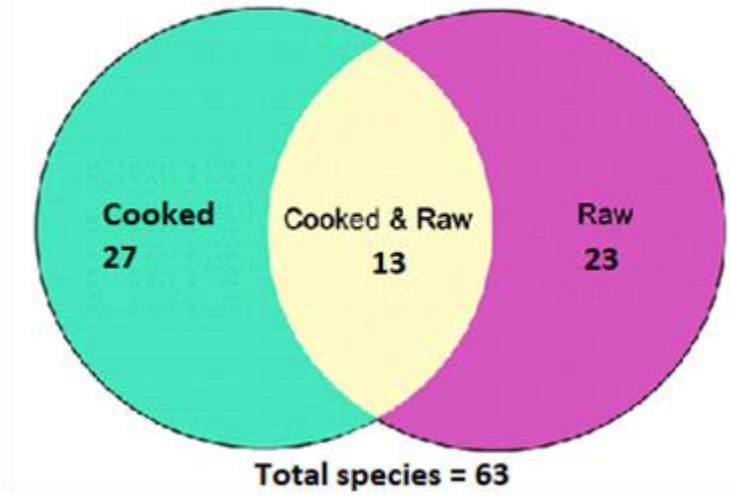


Figure 4: Methods of usage represented in pie chart.

Table 3. Wild edible plants against ailments

SN	Ailment	Plant species
1	Anemia	*Myrica esculenta, Pyrus pashia*
2	Bronchitis/cough	*Myrica esculenta, Solanum kurzii*
3	Diarrheal & dysentery	*Myrica esculenta, Rhus semialata, Spondias pinnata, Paederia foetida, Ficus semicordata, Ficus auriculata, Oenathe javanica, Oxalis corniculata*
4	Diabetes	*Ficus auriculata, Solanum kurzii*
5	Digestive aids	*Docynia indica*
6	Fever	*Solanum kurzii, Pyrus pashia,*
7	Hypertension	*Solanum kurzii, Clerodendrum colebrookianum, Musa sp.*
8	Stomach ulcer	*Myrica esculenta, Spondias pinnata, Pyrus pashia,*
9	Skin	*Ficus benghalensis, Ficus auriculata, Prunus persica, Bauhinia purpurea, Prus pashia , Baccaurea ramiflora,*
10	Gum & Tooth ache	*Prunus persica, Spilanthes acemella,*
11	Pile	*Oroxylum indicum*
12	Jaundice	*Oroxylum indicum*
13	Others	*Ficus auriculata, Musa spp. Rhus semialata, Prunus persica, Pyrus pashia, Castinopsis indica, Antidesma gaesembilla, Curcuma angustifolia, Ocimum basilicum*


i. Polygonum molle


ii. Auricularia delicata


iii. Polygonum runcinatum


iv. Dendrocalamus hamiltonii


v. Spilanthes acemella


vi. Arundinaria callosa


vii. Utrica dioica


viii Oenanthe javanica

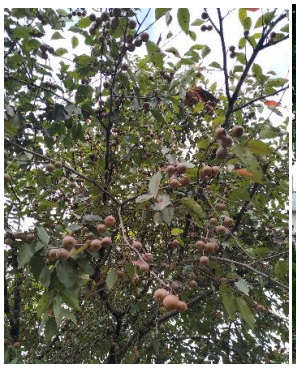

ix. Amaranthus viridis


x. Rubus ellipticus


xi. Curcuma agustifolia


xii. Baccaurea ramiflora


xiii. Schizophyllum commune


xiv. Pyrus pashia


xv. Alocasia macrorrhizos


xvi. Rhus semialata

Figure 5: Few wild edibles of Senapati.

Plants such *Musa* sp., *Arundinaria collasa* etc. can be used to quench thirst or hunger in survival situations. *Poumai* consumes stem and leaf of *Begonia palmate* and its tuber for removal of thorn that get stuck on feet while walking in the jungle. Among the plants recorded, 23 species are used as remedies against specific ailments and other uses, in addition to their use as food. In Manipur,

different varieties of *Musa* sp. are available. Each part of this plant is used as food, medicine, rituals, etc. and therefore it is considered one of the valuable plant resources. Ripe fruit of *Pyrus pashia* is consumed raw and is also used as remedy for constipation and anemia by *Poumai* tribe. Its leaves are used for enhancing the appearance and improving skin texture. Decoction of the bark is used for ulcer, fever etc. [6]. Fruit of *Solanum kurzii* is cooked and consumed as vegetable and also used as remedy for hypertension by various ethnic communities, like *Poumai, Mao, Kuki* and *Meitei* in Manipur. *Poumai* tribe uses this plant as an effective remedy for cold and cough, especially for aged people. Fruit of *Rhus semialata* is taken raw or as refreshing drink. Mature/ Ripe fruits are processed by drying or preparing juice and preserved for off-season use as remedy against ailments such as diarrhea and dysentery by *Poumai* and *Mao* and the claim was validated [7]. *Spondias pinnata* fruit is relished fresh when ripened. Fruits and leaf are used for seasoning ethnic cuisines. Fruits are taken as remedy for stomach ulcer, diarrhea by Zemei tribe. *P. foetida* leaf is taken as a vegetable and as remedy by the ethnic tribes in Senapati [8]. Ethnic communities of NEI use this plant for treatment of piles, gout, diarrhea, dysentery and bacterial /fungal infections and as stomachic. Its antidiarrheal activity has been validated scientifically [9]. *Clerodendrum colebrookianum* is cooked as vegetable by various communities like *Poumai, Mao, Meitei, Khasi* etc. It is also use for controlling high blood pressure by different ethnic groups North East India [10]. *Kuki* and *Mizo* communities use it to reduce the lactation by lactating mother, when new born does not survive. However, it is to be taken in limited amount and for short duration.

CONCLUSION

This study shows the richness of biodiversity and ethno-botanical knowledge of the indigenous people which call for proper documentation and conservation. Wild edible plants serve as food and supplement their daily nutrition, especially vitamins and minerals. Wild edible plants could play vital roles in survival or emergency situations. Potential minor fruits can be explored for developing as future fruits for food and health security. Validation of the claims of some of the ethno-botanicals recorded herein are underway.

CONFLICT OF INTEREST

The authors have declared no conflict of interest.

ACKNOWLEDGEMENT

Authors are grateful to DRDO, Headquarter, New Delhi for the fund. We are also thankful to local people for sharing their knowledge with us. Our thanks are due to Ranjan Pilankandi and Alok Somvanshi for their contributions in preparing the manuscript.

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