Original Research Article
EXPLORATION OF SOME WILD FOOD PLANTS USED BY LOCAL PEOPLE OF KANGCHUP CHINGKHONG, SENAPATI DISTRICT OF MANIPUR, INDIA

ABSTRACT

The study on wild food plants was carried out to document the wild food plants used by the local people of KangchupChingkhong of Senapati District, Manipur. An extensive and intensive field survey was done in March,2022 to April, 2023.Information was obtained from 30 respondent age ranging from 45 to 85 years old individuals who have a good understanding of traditional knowledge of wild edible plants. A total of 30 wild plant species belonging to 23 genera and 17 families have been reported from the area. Zingiberaceae was the dominant family that represented 9 taxa followed by Fabaceae with 3 taxa while Rubiaceae, Verbenaceae and Asteraceae represent 2 taxa each and other 12 families represent 1 taxa each. Trees, Herbs, shrubs and climbers form the habit of these plants. The highest proportion of edible species were herbs, 12 numbers (41%) followed by trees, 10 numbers (31%), shrubs, 5 numbers (17 %), creepers, 2 numbers (7 %) and climber, 1 number (4 %).Among the parts, leaves were mostly used (27 %), followed by rhizome (22 %), fruits (13 %), shoots and flower (11 % each), bark and whole plants (5 % each) and tuber and stem (3 % each)

Keywords: KangchupChingkhong, Wild food plant, Traditional knowledge, Vegetables

1. INTRODUCTION

"The practice of consuming wild food plants is as old as human prehistory. Early humans obtained their food by hunting, fishing and gathering these plants or parts of plants (e.g., stems, roots, flowers, fruits, leaves, buds, and seeds), that are safe for human consumption. Wild foods are also integral to traditional food systems and have nutritional and cultural value for many indigenous peoples" [1]. "Wild plants play an important role in the livelihoods of local communities of hill areas and rural people to meet their nutritional and income sources. Wild plants are richer in minerals compared to cultivated ones, and these plants may satisfy the daily human need for elementary nutrition sources, particularly those of Vitamin C and A, and for some minerals according to WHO regulation" [2]. "Wild plants are also known to be used since time of immemorial for different purposes, such as food, medicines, production of goods and religious rituals. In particular, the use of wild edible plants mainly linked to primitive periods where there is no modern agriculture food is available in the region"[3]."The use of wild plant resources has been an integral part of cultural, religious and health aspect of numerous indigenous and rural communities across the globe" [4]. "Wild edible plants are a source of vegetables, fruits, staple food, and spices for indigenous people and are the main source of food. These plants play an important role in the development of new crops through domestication, giving rise to cultivated food plants and strengthening local food security" [5]. "The nutritional value of traditional leafy vegetables is higher than several conventional vegetables. They also contain antioxidants which offer protection against many chronic diseases like heart disease and the certain type of cancers. The potentialnutritional valueof traditional vegetables may help to meet the increasing demands of the growing population"[6]. "The popularity and use of wild foods have been declining continuously in the modern-day society due to globalization and modern lifestyle. Traditional knowledge and the culture of using wild plant as food and medicine has drastically reduced in current time due to the habit of choosing of easily available domesticated food over the wild food. Traditional knowledge of plants and their properties has always been transmitted from generation to generation through the natural course of everyday life. Transmission of traditional knowledge between the older and younger generation is no longer exists that's why the continuation of traditional knowledge is endangered"[5].

Modern scientific researchers are trying to value these traditional food items to fill the gaps between growing population and food production. The diversity of these plant resources needs to be documented and analysis should be done for their nutritional values[7].Therefore, the aim of this study was to explore and document of some wild food plants of Kangchup hill area of Senapati District of Manipur.

2. MATERIAL AND METHODS

Study area

KangchupChingkhong is a Village in SaituGamphazol Tehsil in Senapati District of Manipur State, India. It is located 40 Km towards South from District headquarters Senapati. 19 KM from State capital Imphal.It lies between 24.8366348^{o} N latitude to 93.8082835^{o} E longitude. KangchupChingkhong is surrounded by Kangpokpi Tehsil towards North, Imphal West II Tehsil towards South, Tamei Tehsil towards North, Saikul Tehsil towards East.

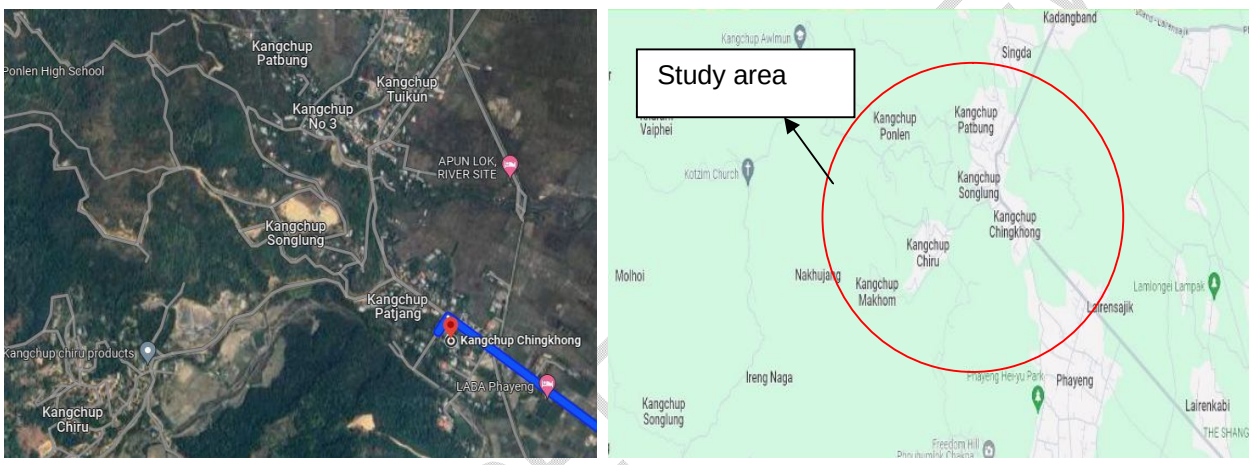

Fig 1. Map of study area

Field survey

An extensive and intensive field survey and collection programmed of indigenous wild food plants was conducted during March 2022 to April 2023 at KangchupChingkhong of Senapati district of Manipur. The data including scientific name, family, local names and parts used were collected through interviews using semi-structured questionnaires and discussions with elderly individuals who have a good understanding of traditional knowledge of wild edible plants. Information was obtained from 30 respondent age ranging from 45 to 85 years old. Among the informants, there were 18 men and 12 females (Table 1).

Table 1: Demographic data of the localparticipants

Age range	No. Of informants	No. Of male	No. Of female
45-55	2	0	2
56-65	14	8	6
66-75	10	7	3
76-85	4	3	1
Total	30	18	12

3. RESULTS AND DISCUSSION

During the present study a total of 30 plant species belonging to 23 genera and 17 families were reported (Table2). Zingiberaceae was the dominant family that represented 9 taxa (30%) followed by Fabaceae with 3 taxa (10%) while Rubiceae, Verbenaceae and Asteraceae represent 2 taxa each (7%) and other 12 families represent 1 taxa each (3%) (Figure 1). Most of the collected plant species was used as food by the localities of KangchupChingkhong, Senapati District of Manipur. Trees, Herbs, shrubs and woody climbers form the habit of these plants. Herb occupies highest habit (41%) followed by tree (31%), shrub (17%), creepers (7%) and climber (4%) (Figure 2). The highest proportion of edible species were herbs, 12 numbers (41%) followed by trees, 10 numbers (31%), shrubs, 5 numbers (17 %), creepers, 2 numbers (7 %) and climber, 1 number (4 %). Among the parts, leaves were mostly used (27 %), followed by rhizome (22 %), fruits (13 %), shoots and flower (11 % each), bark and whole plants (5 % each) and tuber and stem (3 % each) (Figure 3).

The ethnic practice and indigenous knowledge to consume wild plant as food as well as medicine has been rapidly decreased due to rapid urbanization and modern lifestyle in the developing countries like India. At the same time, the loss of indigenous knowledge has been discovered to be one of the major threats to the sustainability of biological diversity [5].Arjona-Garcia etal, 2021also reported that urbanization decreases people's involvement in activities in natural environments and can lead to devaluation of and discrimination against traditional knowledge. Therefore, the management and transmission of traditional knowledge to new generations is crucial not just for the preservation of cultural heritage, but also for the prevention of biodiversity loss[8].

More exploration and documentation work of such high value wild plant is required for future generations.Ethno-botanical studies indicated that hundreds of wild species are still unexplored in each country, representing an enormous wealth of agro-biodiversity with potential to contribute to improved income, food security and nutrition, combating hidden hunger [9].

Several workers have work on such survey and documentation of wild plant in Manipur. Laishramet. al, 2022 reported 108 plant species belonging to 86 genera and 56 families and Zingiberaceae was the most dominant family with seven species used as wild edible plants. Herbs were most dominant with 42 species. Sixty-six species (61%) of wild edible plants were marketed[10]. RajkumariSupriya Devi and Sanjeet Kumar, 2021 reported 40 wild food consumed by local community along with wild mushrooms. They also observed that most common wild foods are also commonly sold in local markets [11]. Gangte et.al, 2013 also reported 84 wild edible plants belonging to 36 families used by Zou tribes of Manipur. They also reported that the most common part of the plant consumed is leaves with 29 species (34.5%), tender shoots with 18 species (21.4%), fruits with 14 species (16.6%), rhizome, corm and tuber with 9 species (10.7%), inflorescence with 8 species (9.5%), pods with 7 species (8.3%), seeds with 6 species (7.14%), petioles with 3 species (3.5%) and fruit cover (rind), bark, frond and root with 1 species (1.19%)each[12].

The present studies are in line with earlier studies as stated above. Both the present and other previous study revealed that the local communities of the state used diverse wild plant as their food and medicine as well as their source of income. All of them reported that Wild plants are not only organic food that can aid in the fight against diseases and disorders, but also serve as a source of strength in their economic situation. The local communities of this area collected those wild plants in bulk and sell in the local market to fulfil day to day need.

Table 2. Wild plants used as foods by localities of KangchupChingkhong, Senapati District, Manipur.

Sl. No.	Botanical name	Family	Local name	Parts use	Ethnic uses	Habit/ Habitat
1	*Paedariafoeteda* L.	Rubiaceae	Uri-oinam	Leaves and Creeper	Leaves are used for the treatment of constipation	Creeper
2	*Clerodendrumcolebrookianum*Walp.	Verbenaceae	KuthapAngouba	Leaves and young shoot	Leaves and young shoot are cooked as vegetable curry items as well as used as best medicine to control blood pressure	Tree
3	*Hodgsoniaheteroclita* (Roxb.)	Cucurbitaceae	Kathai	Fruit	Roasted Fruits are eaten as vegetable as well as used in making chutney	Creeper
4	*Clerodentrumserratum* Linn.	Verbenaceae	Moirang khanambi	Whole plant	Leaves and young shoot are cooked as vegetable curry items. Decoction of roots are used as medicine as pain killer	Shrub
5	*Kaempferaparviflora*	Zingiberaceae	Sing amuba (black ginger)	Rhizome	Used in treatment of diabetes and lower cholesterol level	Herb
6	*Curcuma amada*Roxb.	Zingiberaceae	Yaiheinouman	Rhizome	Used in preparation of chutney	Herb
7	*Brachycorythisobcordata* (Lindl.ex Wall)	Orchidaceae	Kak-uba	Leaves and Shoots	Leaves and shoots are eaten as raw and cooked as vegetables curry items	Herb
8	*Dysoxylumexcelsum*	Mileaceae	Ujao (YongchakNambi)	Leaves, Stem and Flower	Used as vegetables curry items	Tree
9	*Alpinaofficinarum* (Gaerdn.) Burdd	Zingiberaceae	Pulleimanbi	Rhizome	Rhizome are used as spices	Herb
10	*Siphonochilusaethiopicus*	Zingiberaceae	Lam-sing	Rhizome	Rhizome are used as spices	Herb
11	*Parkiatimoriana*(DC.) Merr.	Fabaceae	Yongchak	Fruit	Used as vegetables curry	Tree
12	*Leucaenaleucocephala*	Mimosaceae	Chigonglei	Fruit	Used as vegetables curry	Tree

13	*Wendlandiagrandis* Cowan	Rubiaceae	Pheija	Flower	Used as vegetables curry	Tree
14	*Accacia pennata* (L) Willd.	Fabaceae	Khang	Leaves and young shoot	Used as vegetables curry	Woody climber
15	*Aalpiniagalanga* (L) Willd.	Zingiberaceae	Kanghu	Rhizome	Used as spices	Herb
16	*Canna indica* L.	Cannaceae	Alalu	Rhizome	Used as food in cooking vegetables curry items	Herb
17	*Smallanthussonchifolius*	Asteraceae	Ground apple	Tuber	Eaten as raw as well as cooked as vegetables	Shrub
18	*Zinziberstriolatum* Ludwig Diels	Zingiberaceae	Sarei	Flower	Used as food in cooking vegetables curry items	Herb
19	*Zanthoxylumoxyphyllum*Edgew.	Rutaceae	Singjol	Leaves	Used as food in cooking vegetables curry items	Shrub
20	*Carcumaanguistifolia*Roxb.	Zingiberaceae	Yaipan	Flower	Flower are used as vegetable curry	Herb
21	*Zingibercassumunar*Roxb.	Zingiberaceae	Tekhaoyaikhu	Rhizome	Use as medicine in treatment of Asthma, constipation and stomach bloating	Herb
22	*Viola serpens* Wall.	Violaceae	Huikhong	Whole plant	Use as vegetables	Herb
23	*Rhynchotechumellipticum* A. DC.	Gesneraceae	Yembum	Leaves	Leaves are eaten as either raw or cooked as vegetables items as well as use as medicine for the treatment of peptic ulcer and constipation	Shrub
24	*Oroxylumindicum* (L) Vent.	Bignoniaceae	Shamba	Fruit, bark and leaves	Flower and fruits are eaten as raw and cooked as vegetables and also use in treatment of cancer	Tree
25	*Eurya japonica* Thunb.	Ternstromiaceae	uyangan	Leaves	Leaves are use as vegetable curry	Tree
26	*Cinnamomumzeylanicum* Bryn.	Laoraceae	Ushingsa	Bark	Bark powder use as spices. Use as digestive medicine	Tree

27	*Artemisia vulgaris* L.	Asteraceae	Laibakngou	Tender shoot	Tender shoot is cooked as vegetables. Use as medicine as diabetic treatment as well as insect repellent.	Shrub
28	*Rhussemialata* Murray.	Anarcadiaceae	Heimang	Young leaves, flower and fruits	Flower and fruits are eaten as raw, water soaked of dry seeds are used in dyspepsia, peptic ulcer and unhealthy uterus.	Tree
29	*Curcuma caesia*Roxb.	Zingiberaceae	Yaimu	Rhizome	Use in treatment of cough and decoction of *C. caesia* and *O. indicum* use as intestinal cancer treatment	Herb
30	*Albiziamyriophylla*Benth.	Fabaceae	Yangli	Bark	Use in the preparation of local wine	Tree

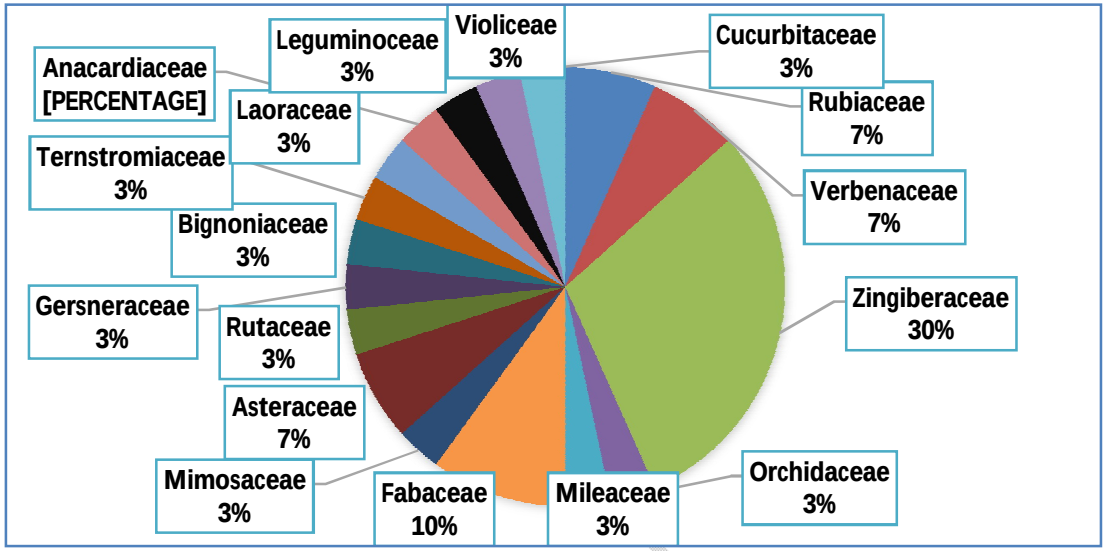

Fig.2 Distribution of medicinal plant species according to their family in the study area

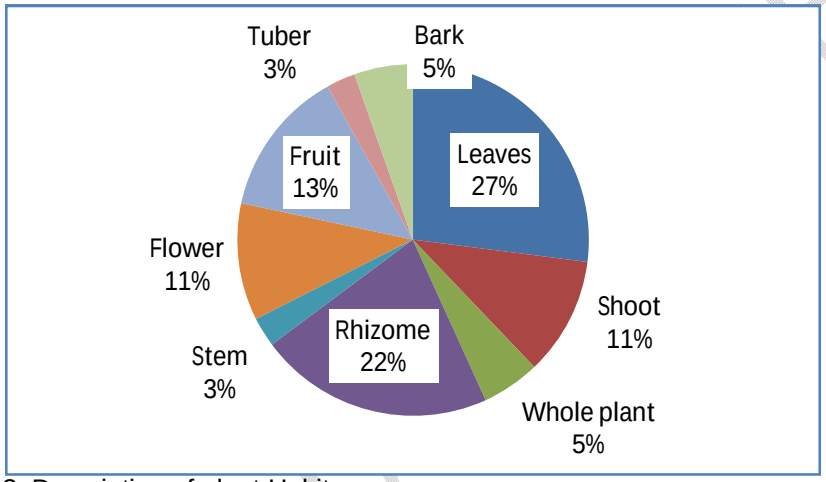

Fig. 3. Description of plant Habit

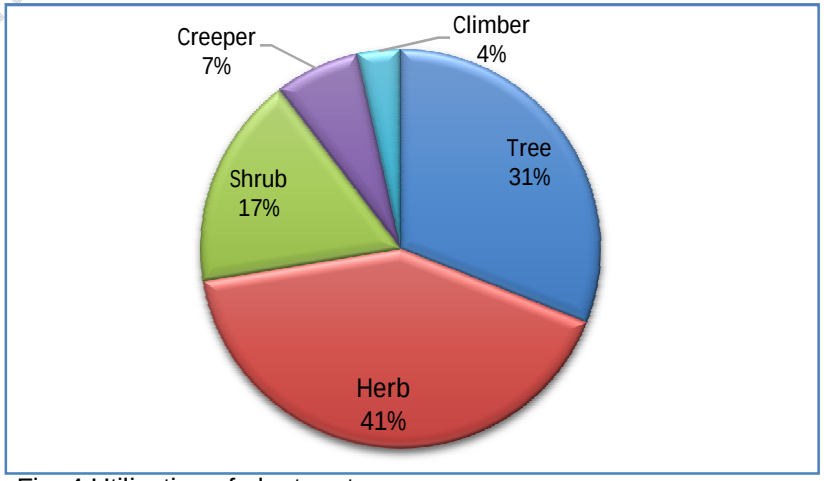

Fig. 4.Utilization of plant parts

4. CONCLUSION

From the above investigation, it was found that KangchupChingkhong has a variety of wild edible, medicinal plants. The local people collected wild food plants for their livelihood purposes. The use of wild plant as food and medicine needs to be properly document for future generations. The present study emphasizes the importance of appropriate awareness among society regarding the socio-economic implications for conservation and sustainable development. Since the plant species may present different valuable pharma constituents, a thorough investigation about the phyto-constituents present of these plant species is much needed.

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REFERENCES

1. Borelli T, Hunter D, Powell B, Ulian T, Mattana E, Termote C, Pawera L, Beltrame D, Penafiel D, Tan A, et al. Born to Eat Wild: An Integrated Conservation Approach to Secure Wild Food Plants for Food Security and Nutrition. Plants. 2020;9, 1299. https://doi.org/10.3390/plants9101299
2. Kaval I,Behcet L and Cakilcioglu U. Survey of wild food plants for human consumption in Gecitli (Hakkari/Turkey). Indian Journal of Traditional Knowledge. 2014; 14(2):183–190.
3. Ceccanti C,Landi M, Benvenuti S, Pardossi A and Guidi L. Mediterranean Wild Edible Plants: Weeds or “New Functional Crops”? Molecules. 2018; 23(9), 2299. doi: 10.3390/molecules23092299. PMID: 30205584; PMCID: PMC6225202.
4. Doni T and Gajurel P R. Diversity of wild edible plants traditionally used by the Galo tribe of Indian Eastern Himalayan state of Arunachal Pradesh. PLANT SCIENCE TODAY (2020); 7(4), 523-533
5. Arti Thakur, Somvir Singh, Sunil Puri, "Exploration of Wild Edible Plants Used as Food by Gaddis-A Tribal Community of the Western Himalaya. The Scientific World Journal, vol. 2020, Article ID 6280153, 6 pages, 2020. https://doi.org/10.1155/2020/6280153

6. Setiya A.V, NarkhedeS.D and Dongarwar N.M.Exploration and documentation of some wild edible plants used by the aboriginals from Gadchiroli District (M.S.) India.IARJSET. 2016; 3 (7): 24-34.
7. Kailash S. Lokhande. Ethnobotanical Survey on Wild Edible Plants Used by Tribals Rural People of Arjuni/Mor Taluka, Gondia District, Maharashtra State, India. Advances in Zoology and Botany. 2020; 8(3): 209-217.
8. Arjona-García, C., Blancas, J., Beltrán-Rodríguez, L. *et al.* How does urbanization affect perceptions and traditional knowledge of medicinal plants? J Ethnobiology Ethnomedicine. 2021; 17(1): 48. https://doi.org/10.1186/s13002-021-00473-w
9. Konsam S and BisehoriT. Exploring indigenous flora of Manipur (North East India) as potential source of nutrients and dietary antioxidants. In: ThangjamAnand Singh, Prakash K. Sarangi, Neeta Sarangthem, editors .Food bio resources and ethnic foods of Manipur, northeast India. 1st ed Empyreal Publishing House; 2019.
10. Laishram Ricky Meitei,A De, AshihoAsoshii Mao. An ethnobotanical study on the wild edible plants used by forest dwellers in YangoupokpiLokchao Wildlife Sanctuary, Manipur, India. Ethnobotany Research and Applications. 2022; 23(15): 1-22
11. RajkumariSupriya Devi and Sanjeet Kumar.Wild Foods Consumed by Ethnic and Local Communities of Imphal, Manipur State of India. In: Thatoi HN, PriyaRajanDebata, editors.Biodiversity Conservation and Livelihood Management.Daya Publishing House; 2021
12. GangteH.E ,Thoudam N.S and Zomi G.T. Wild Edible Plants used by the Zou Tribe in Manipur, India. International Journal of Scientific and Research Publications. 2013; 3 (5): 1-8.