Research Journal of Agricultural Sciences
An International Journal

Res. Jr. of Agril. Sci. **12**(2): 693–696

P- ISSN: 0976-1675 | **E**- ISSN: 2249-4538

www.rjas.org

Research Paper

Study on Traditional Knowledge of Eryngo (*Eryngium foetidum* L.) in Bishnupur District of Manipur

P. Bijaya Devi*[1,3], Panna Deb[2,3] and H. Birkumar Singh[4]

Received: 26 Feb 2021 | Revised accepted: 22 Apr 2021 | Published online: 23 Apr 2021

A B S T R A C T

A study was conducted to assess the traditional knowledge on Eryngo (*Eryngium foetidum* L.) in the Bishnupur district of Manipur. To collect the information for the study, five villages were randomly selected by preparing questionnaire formats. Personal interviews were done on traditional knowledge, including indigenous spices found in the selected villages, source of Eryngo, its uses and its traditional package of practices. 18 species of spices were used by the different ethnic groups of the district. Most of the species were herbs. The Amaryllidaceae family found the highest number of species. In case of part used, a maximum number of (5) species were used for whole plant. Out of the 18 spices recorded, 11 species were cultivated while 2 species were collected from the wild habited. Seeds are the main propagation method for most of the species. The Allium species are most commonly used among all spices recorded. All the respondents were having the knowledge of eryngo as the plant grown in most of the kitchen garden of the selected five villages and some of the villagers were adopting traditional cultivation practices and earning limited income from eryngo. The whole plant of eryngo can be consumed except old inflorescence. There is similarity in preparation, application and parts used of eryngo plants among the ethnic community of Bishnupur district. The leaves were used as spices in curry preparation. The crushed leaves and liquid were used to control many human diseases and disorders. Thus, eryngo plants can be treated as high value spice as well as medicinal herb.

***Key words*:** Traditional knowledge, Eryngo, Spice, Medicine, Communities, Bishnupur

Traditional knowledge generally refers to knowledge systems related in the cultural traditions of regional, indigenous or local communities. Eryngo (*Eryngium foetidum* L.) under the family Apiaceae is considered as a culinary, leafy spice herb and has medicinal property. The eryngo was believed to be originated from the Caribbean region of the West Indies [1]. In India, it was cultivated and considered as a spice plant. It has different names such as Eryngo, Sea holly, Spirit weed, False coriander, Bilatidhonia etc. Eryngo was mostly grown in tropical Africa, South Asia, warmer Southern parts of Europe and Pacific islands [2] and widely cultivated in Costa Rica and Puerto Rico for local consumption and export to the USA. In the late 1800s and the beginning of 1900s, Eryngo was introduced by Chinese into South-East Asia (Malaysia, Indonesia, Thailand, Vietnam, Singapore, Myanmar, Sri Lanka, Bangladesh and India) as a substitute to coriander (*Coriandum sativum* L.) because of its similar pungent aroma [3-5]. North-eastern regions of India has considerable genetic variability of vegetables and spices. The adoption of the aromatic herb for sustenance has intrinsically linked to their cultural and traditional systems [6]. The aromatic flavour present in the spice is a good appetizer. Bishnupur district cover an area of 530 kms^2 with a total population of 240,363. The population of male and female were 120.178 and 120,185 respectively (Census 2011). Peculiar feature of the district is that nearly 50% of the area is covered by Loktak Lake, which provides means of livelihood to nearly about 10,000 people by producing food items. Topographically the district has three prominent units i.e., tiny plain topography, hilly area in the extreme north, central parts and marshy land in the southern parts of the district. The elevation of the district is about 790m above mean sea level. There are 56 villages in Bishnupur district (Census 2011). Five (5) villages were randomly selected namely Chiru which is mainly inhabited by tribal community, Kwakta mainly inhabited by Meitei Muslim, Keinou and Irengbam which is mainly inhabited by Meitei and Leimaram inhabited by Schedule caste of Bishnupur district.

*P. Bijaya Devi
singhsenjam@gmail.com

[1]Krishi Vigyan Kendra, Utlou - 795 134, Manipur, India

[2]Centre for Biodiversity and Natural Resource Conservation, Assam University, Silchar - 788 011, Assam

[3]Department of Ecology and Environmental Science, Assam University, Silchar - 788 011, Assam, India

[4]CSIR-North East Institute of Science and Technology, Branch Lab, Lamphelpat, Manipur, India

MATERIALS AND METHODS

Five (5) villages were randomly selected namely Chiru which is mainly inhabited by tribal community, Kwakta

mainly inhabited by Meitei muslim, Keinou and Irengbam which were mainly inhabited by Meitei and Leimaram inhabited by schedule caste for data collection to cover the informations of all the ethnic community of Bishnupur district. A survey was conducted during October 2015 to September 2016.The information was based on traditional knowledge on Eryngo including indigenous spices found in the selected villages, source of Eryngo, its traditional package of practices, and its uses. During the survey programme, the necessary data from five villages were collected through the use of questionnaires and personal interviews. The profile of the respondents in the study include: gender, age of respondents, occupational status and sources of income. Formal and informal interviews were conducted from 100 households following the method [7].

The result of the survey conducted on the traditional knowledge associated with Eryngo (*Eryngium foetidum* L.) is given in the (Table 1-3).

Table 1 Details of various spices used by different ethnic communities of Bishnupur district, Manipur

S. No.	Species	Family	Habit	Source	Parts used	Method of propagation
1.	*Allium cepa* Linn.	Amaryllidaceae	Herb	Cultivated	Whole plant	Seed and bulb
2.	*Allium hookeri* Thw.	Amaryllidaceae	Herb	Cultivated	Whole plant	Rhizome
3.	*Allium tuberosum* Rotler ex-sprengel	Amaryllidaceae	Herb	Cultivated	Whole plant	Rhizome
4.	*Allium sativum* Linn	Amaryllidaceae	Herb	Cultivated	Whole plant	Cloves
5.	*Cucurma longa* Linn	Zingiberaceae	Herb	Cultivated	Whole plant	Rhizome
6.	*Capsicum annum* Linn	Solanaceae	Herb	Cultivated	Fruit	Seed
7.	*Capsicum sinensis* Linn	Solanaceae	Herb	Cultivated	Fruit	Seed
8.	*Anisoclulus carnosus* Wall	Lamiaceae	Herb	Cultivated	Leaves and inflorescence	Seed
9.	*Elsholtzia blanda* Benth	Lamiaceae	Herb	Cultivated	Leaves and inflorescence	Seed
10.	*Coriandrum sativum* Linn	Apiaceae	Herb	Cultivated	Leaves and seeds	Seeds
11	*Houttuynia cordata* Thunb	Saururaceae	Herb	Cultivated and wild	Runners and leaves	Seeds and stolon
12.	*Eryngium foetidum* L	Apiaceae	Herb	Cultivated and wild	Leaves and roots	Seeds
13.	*Alpiniaallughas* Rose	Zingiberaceae	Herb	Wild	Rhizome	Rhizome
14.	*Cucurma zedoaria* Rose	Zingiberaceae	Herb	Wild	Inflorescence	Seed
15.	*Citrus macroptera* Montrouz	Rutaceae	Tree	Cultivated	Fruit	Seed and vegetative
16.	*Cinnamomum tamala* Nees	Lauraceae	Tree	Cultivated and wild	Leaves	Seed
17.	*Cinnamomum zeylanicum* Breyn	Lauraceae	Tree	Cultivated and wild	Bark and seed	Seed
18.	*Zanthoxylum alatum* Roxb	Rutaceae	Tree	Cultivated and wild	Leaves and fruit	Seed

The study revealed that a total of 18 species were used by the different ethnic groups of Bishnupur district (Table 1). These plants belong to 12 genera and 9 families of which 77.77% were herbs, 22.22% were trees. The family - Amaryllidaceae have the highest number of species (4) followed by, Zingiberaceae (3) and Apiaceae (2), Lauraceae (2) Rutaceae (2) Solanaceae (2), Lamiaceae (2) and Saururaceae (1). In case of part used, a maximum number of (5) species are used for whole plant followed by leaves and inflorescence (2) fruit (2), leaves (1) rhizome (1) bark and seed (1) inflorescence (1), stolon and leaves (1) leaves and seeds (1) leaves and fruit (1) and leaves and roots (1). Out of the 18 spices recorded 11 species were cultivated while 2 species were collected from wild habitat and the remaining 5 species were found to be either cultivated or collected from the wild habited. Among 18 spices, 10 species were propagated by seeds, followed by rhizome (4), seed and stolon (1), seed and bulb (1), clove (1), seed and vegetative parts (1). Some spices were used daily along with vegetables in one way while few were used occasionally. The species Allium are most commonly used among all spices recorded.

From the above (Table 2), it was found that all the respondents were having the knowledge of Eryngo as the plant grown in most of the kitchen garden of the selected five villages. The villagers are adopting the traditional method of cultivation. The people of the village Chiru and Kwakta are maintaining the sowing time i.e., April-May whereas the other three villages do not have any specific sowing time as the eryngo grown in their kitchen garden are all self-emergence after completing each life cycle. The villagers of the Chiru are adopting broad cast method of seed sowing, Kwakta villagers were found to sow mature inflorescence, but the villagers of Keinou, Irengbam and Leimaram are not practicing any method of seed sowing. The adopted method of land preparation was hand digging in Chiru and Kwakta village whereas the three villages Keinou, Irengbam and Leimaram have no specific method of land preparation. The type of land where eryngo is growing is generally at foot hills of Chiru village and for the villages Kwakta, Keinou, Irengbam and Leimaram, they are found at flat land areas. In Chiru and Kwakta villages, days to first germination of seed was noticed at 20 – 30 days after sowing but the other villagers of the three villages had no idea about the germination of seeds as they do not practice seed sowing. The villagers of Chiru and Kwakta applied organic manures in the selected fields before sowing of seeds but the other three villages do not use any manure. All the eryngo growing areas of Chiru. Keinou, Irengbam and Leimaram are rainfed but the villagers of Kwakta village were

also found to irrigate the eryngo growing areas. The Eryngo grown in Chiru and Kwakta village started harvesting from 25 – 30 days after sowing. while communities in Keinou, Irengbam and Leimaram started harvesting after 45 – 50 days after emergence of seedlings. All the villages are practicing same method of harvesting i.e., cutting of matured leaves and uprooting of whole plants. All the villages have similar frequency of harvesting i.e., 25 – 30 days. The villagers of Chiru and Kwakta are harvesting the eryngo for 7-8 times and the three villages Keinou, Irengbam and Leimaram are harvesting for 5 – 6 times. The villagers of Chiru and Kwakta are practicing collection of dry inflorescences for seed whereas the villagers of Keinou, Irengbam and Leimaram are not practicing any seed production method.

Table 2 Details of traditional practices of Eryngo (*Eryngium foetidum* L.) by different communities of Bishnupur district

S. No.	Package	Chiru	Kwakta	Keinou	Irengbam	Leimaram
1.	Source of Eryngo	Wild Kitchen garden	Kitchen Garden	Wild Kitchen garden and Market	Wild Kitchen garden and Market	Wild and Kitchen garden
2.	Mode of cultivation	Traditional	Traditional	Traditional	Traditional	Traditional
3.	Sowing time	April to May	April to May	Self-emergence after each life cycle	Self-emergence after each life cycle	Self-emergence after each life cycle
4.	Seed rate	Not specific	Not specific	Not practiced	Not practiced	Not practiced
5.	Method of sowing	Broad cast	Sowing of matured inflorescence	Not adopted	Not adopted	Not adopted
6.	Land preparation	Hand digging	Hand digging	Not practiced	Not practiced	Not practiced
7.	Location of land	Foot hills	Flat	Flat	Flat	Flat
8.	Days to 1st germination of seeds	20 – 30 days after sowing	20-30 days after sowing	No idea	No idea	No idea
9.	Application of manure and fertilizer	Application of organic manure before sowing	Application of organic manure before sowing	Not practiced	Not practiced	Not practiced
10.	Irrigation	Rainfed	Rainfed and life-saving irrigation	Rainfed	Rainfed	Rainfed
11.	Harvesting of Eryngo	From 60-75 days after sowing	From 60-75 days after sowing	From 45-50 days after seedling emergence	From 45-50 days after seedling emergence	From 45-50 days after seedling emergence
12.	Method of harvesting	Cutting of mature leaves and Uprooting whole plants	Cutting of mature leaves and Uprooting whole plants	Cutting of mature leaves and Uprooting whole plants	Cutting of mature leaves and Uprooting whole plants	Cutting of mature leaves and Uprooting whole plants
13.	Frequency of harvesting	25 – 30 days interval	25 – 30 days interval	25 – 30 days interval	25 – 30 days interval	25 – 30 days interval
14.	Total number of harvesting per year	7 - 8 times	7-8 times	5-6 times	5-6 times	5-6 times
15.	Method of seed production	Collection of dry inflorescences	Collection of dry inflorescences	Not yet practice	Not yet practiced	Not yet practiced

Among the total spices, herbs are recorded highest in number and in case of part used, the species were used as whole plants, fruits and leaves, inflorescence, runners and leaves, rhizome, bark, seed, stolon etc. This result supported the finding of [8] that during a survey on traditional knowledge on wild food plants, it was observed that among the total plant species, herbs are found highest in number and most of the edible parts are fruits, leaves, tubers and flowers.

From the result, it was found that all the respondents were practicing traditional package of practices and this information would be supported with the report given by [9] that there were few reports on cultivation and fertilizer requirements for culantro. The tender shoot and leaves were extensively used as a spice in preparation of curry especially in fish and meat cooking. Chopped shoot or leaf was semi-fried in edible oil or can garnish meat cuisines. Slice of leaf was put in preparation of omelette. The whole plant and leaf were macerated with gram flour and fried in edible oil and taken as snacks as well as along with major meals. This result could be supported with the report given by [10-12] that the aerial parts of spiny coriander were good sources of several nutrients including minerals, vitamins, carotenoids, anti-oxidants and phytosterols. The fresh whole plant or leaf was crushed into paste and taken as chutney. It could be smashed with chilli and fermented fish and taken along with major meals. The plant shoot or leaf was used as an important ingredient in preparation of Pakoura or Bora Paknam. This food could be taken as snacks or along with major meals. This result was also conformity with the report given by [13] that the Chothe tribe of Manipur often served the leaves especially in beef curry, or adds the raw leaf in dry meat chutney to enhance its taste and aroma. From the report, it was found that eryngo plants were used in the treatment of many diseases like arthritis, asthma, constipation, convulsion of children, cough, diabetes, diarrhea, epilepsy, fever, hepatic and liver problems, gastro intestinal problems, hypertension, malaria, vomiting etc. These findings were also supported with the report given by [14] that the plant was used to treat burns, ear ache, fevers, hypertension, constipation, seizures, asthma, stomach ache, worms, infertility complications, snake bites, arthritis, diarrhea and malaria.

Table 3 Local uses of Eryngo plant by different communities inhabited in Bishnupur district

Parts used	Uses and mode of preparation/application
Food/Cuisine	▪ The tender shoot and leaf is extensively used as a spice in preparation of curry especially in fish and meat cooking. Chopped shoot or leaf is semi-fried in edible oil or can garnish meat cuisines. Slice of leaf is put in preparation of omelette. The whole plant and leaf is macerated with gram flour and fried in edible oil and taken as snacks as well as along with major meals. The fresh whole plant or leaf is crushed into paste and taken as chutney. It can be smashed with chilli and fermented fish and taken along with major meals. ▪ The plant shoot or leaf is used as an important ingredient in preparation of Pakoura or Bora. A Manipuri traditional cuisine called 'Paknam' the chopped plant is added as an important ingredient. Chopped plant is mixed with gram flour, preferably green chilli, leaf of onion, common salt, sometimes added with fresh prawn and wrapped with the leaf of turmeric 92-3 layers) and baked. This food can be taken as snacks or along with major meals.
Medicine	▪ *Epilepsy*: The fresh plant shoot or leaf is washed thoroughly with water and slightly crushed and the mass is applied to mouth while a patient is suffering from epileptic attack. Also put a lump just on the nose to inhale it. Regular consumption of it along with vegetables is generally practiced to control epilepsy. ▪ *Hypertension*: Local villagers consume the plant regularly as a vegetable to control hypertension. The fresh plant paste is also taken along with little honey. ▪ *Vomiting and Diarrhea*: The plant is used use to treat vomiting and diarrhea. Fresh plant paste is given to patient along with little common salt. This preparation is also effective against dyspepsia. ▪ *Bodyache*: The fresh plant paste is applied against body ache. The paste is also applied against mumps. ▪ *Cough and Fever*: The plant is boiled in water and the soup after adding with little common salt is given a glass daily for a week period to treat prolong cough and fever. In fever the plant paste is applied on forehead. Children should apply very less dose. ▪ *Cut and Wounds*: In fresh cut and wounds, fresh plant paste is applied as a bandage which immediately stops bleeding and heals quickly. It also enhances for early suppuration and helps to remove foreign bodies like spine or pins, etc. ▪ *Ulcer*: The fresh root paste along with little honey is applied against sore throat. The tincture made from fresh shoot or leaf is gurgling twice a day to treat throat ulcer.

CONCLUSION

Traditional knowledge is gaining importance in view of the realization that such knowledge can be the basis for commercial profit and utility. *E. foetidum* is being considered as spice and medicinal herb by different communities of Bishnupur district. The details of various spices found in the district, its traditional practices and its method of uses were almost practicing in similar system by the different communities of Bishnupur. There was lack of scientific knowledge for some of the indigenous spices. So, efforts must be taken to conserve indigenous spices and will help in upliftment of rural economy by further adoption of its scientific cultivation practices.

LITERATURE CITED

1. Singh HB, Devi LP. 2014. *Hidak Kanaraba Pambishing*: *A treatise of medicinal and aromatic plants* (Manipuri medium), Padma Printers, Imphal.
2. Wong KC, Feng MC, Sam TW, Tan GL. 1994. Composition of the leaf and root oil of *Eryngium foetidum* L. *Journal of Essential Oil Research* 6: 369-374.
3. Ramcharan C. 1999. Culantro: A much utilized, little-understood herb. (Eds). Janick J., in *Perspectives on new crops and new uses*. ASHS Press. pp 506-509.
4. Seaforth C, Tikasingh T. 2005. A study for the development of a Handbook of selected Caribbean Herbs for industry. *In*: Proceedings of the Seventh International workshop on Herbal Medicine in the Caribbean. CARAPA and Display of the CHBA, June 23-26th, 2005, St. Lucia, West Indies. MPC Printers, UWI, St. Augustine, Trinidad and Tobago. pp 1-10.
5. Chowdhury JU, Nandi NC, Yusuf M. 2007. Chemical constituents of essential oil of the leaves of *Eryngium foetidum* L. from Bangladesh. *Bangladesh Journal of Scientific Industrial Research* 42: 347-352.
6. Singh BK, Pathak KA, Ramakrishna Y. 2013. Underutilized vegetable crops and spices of Mizoram: needs exploration and utilization. *In*: Developing the potential of underutilized horticultural crops of hill regions (Eds) Prakash et al. Today & Tomorrow's Printers and Publishers, New Delhi. pp 217-232.
7. Yumnam JY, Tripathi. 2012. Traditional knowledge of eating raw plants by the Meitei of Manipur as medicinal/ nutrient supplement in their diet. *Indian Journal of Traditional Knowledge* 11(1): 45-50.
8. Reddy KN, Chiranjibi C, Reddy CS, Raju VS. 2007. Traditional knowledge in wild food plants in Andhra Pradesh. *Indian Journal of Traditional Knowledge* 6(1): 223-229.
9. Alexandria VA, Seaforth C, Tikasing T. 2005. Report-Study for the development of a handbook of selected Caribbean herbs for industry, CHBA/IICA, Trinidad. pp 44-47.
10. Bautista OK, Kosiyachinda S, Rahman ASA, Soenoeadji. 1988. Traditional vegetables of Asia. *Asian Food Journal* 4: 47-58.
11. Chanwitheesuk A, Teerawutgulrag A, Rakariyatham N. 2005. Screening of antioxidant activity and antioxidant compounds of some edible plants of Thailand. *Food Chemistry* 92: 491-497.
12. Paul JH, Seaforth CE, Tikasingh T. 2011. *Eryngium foetidum* L.: a review. *Fitoterapia* 82(3): 302-308.
13. Yuhlung CC, Bhattacharyya M. 2014. Practice of ethno-medicine among the Chothetribe of Manipur, North-East India. *Int. Jr. Pharmac. Biol. Arch.* 5(3): 138-149.
14. Shavandi MA, Haddadian Z, Ismail HMH. 2012. *Eryngium foetidum* L., *Coriandrum sativum* and *Persicaria odorata* L.: A review. *Journal of Asian Scientific Research* 2(8): 410-426.