



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2021; SP-10(12): 728-732  
© 2021 TPI  
[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 25-10-2021  
Accepted: 28-11-2021

**Kuleswan Pame**  
Assistant Professor, Department of Livestock Products Technology, College of Veterinary Science, AAU, Joyhing, North Lakhimpur, Uttar Pradesh, India

**Sanjib Borah**  
Assistant Professor, Department of Veterinary Physiology, College of Veterinary Science, AAU, Joyhing, North Lakhimpur, Uttar Pradesh, India

**Bilifang Daimary**  
Ph. D. Scholar, Department of Livestock Products Technology, College of Veterinary Science, AAU, Khanapara, Guwahati, Assam India

**Ankita G**  
Assistant Professor, Department of Animal Genetics and Breeding, College of Veterinary Science, AAU, Joyhing, North Lakhimpur, Uttar Pradesh, India

**Jumi Dutta**  
Assistant Professor, Department of Veterinary Biochemistry, College of Veterinary Science, AAU, Khanapara, Guwahati, Assam India

**PR Boro**  
Ph. D. Scholar, Department of Livestock Products Technology, College of Veterinary Science, AAU, Khanapara, Guwahati, Assam India

**Corresponding Author**  
**Kuleswan Pame**  
Assistant Professor, Department of Livestock Products Technology, College of Veterinary Science, AAU, Joyhing, North Lakhimpur, Uttar Pradesh, India

## Purposive survey and documentation of wild plants and herbs used in traditional meat products by the Mising tribe of Assam (India)

**Kuleswan Pame, Sanjib Borah, Bilifang Daimary, Ankita G, Jumi Dutta and PR Boro**

### Abstract

The Mising people are the second largest ethnic plain tribes of Assam dwelling along the bank of river Brahmaputra. Their culture and tradition are integrated with nature, they consume various traditional meat preparations along with number of wild plants and herbs in their diet since time immemorial. This paper deals with the study and documentation of some of the important plant species mainly consumed along with meat in their diet. The present study revealed that plant species used by them are associated with the medicinal values of plants, their religious beliefs and festivals.

**Keywords:** mising, wild, plants, herbs, traditional, meat

### Introduction

Food acts like a lens and aids in better understanding of the society and the people. The culture and traditions of a community living in society are revealed by their eating habits (Boutaud *et al.* 2016) [2]. The Misings are an indigenous community of Assam, forms a major ethnic group of North-East India and constitutes the second largest tribe of Assam. As per 2011 census, the total population of Mising in Assam was 5,87,31. (Census of India, 2011) [3]. Majority of their traditional meat products are incorporated with locally available wild plants and herbs which is believed to have some medicinal value and also helps in imparting unique sensory attributes and enhancing the shelf-life of the products. Plants also play an important role in their rituals, religious beliefs, myths and mysticism. *Apong*, a traditional fermented alcoholic beverage is an integral part of Mising culture (Pegu *et al.* 2013) [17] and is considered as a valuable element for entertaining guests in the host's home. Although, consumption of processed foods is not common among the adults, gradually such items are gaining ground among the newer generations (Kumari P, 2012) [13]. The knowledge on preparation of traditional products has been gradually diminishing due to our changing life style. Moreover, the people of current generation are adopting cross-cultural food practices (Reddy *et al.* 2020) [18] which may further lead to loss of knowledge on traditional products. Also, the literature survey shows not much study has been undertaken with regards to the use of wild plants and herbs in meat items. Therefore, keeping in view of the practical importance, the present investigation has been undertaken to report the use of various wild plants and herbs used traditionally in preparation of various meat dishes among the Mising tribes.

### Materials and Methods

The present study was commenced by conducting purposive field survey using questionnaires and direct observations in Lakhimpur and Dhemaji districts of Assam. The primary data has been obtained thorough oral interview by conducting extensive field visits. 80 numbers of women from the Mising community, who regularly prepares food in their household were interviewed regarding the use of plants and herbs in their daily food habits with reference to special occasions and festivals. Also, 50 numbers of *Mibu* (priest) were interviewed. Moreover, 30 numbers of aged people from the above mentioned two districts with sound knowledge on culture and food habits of Mising community were also interviewed and people from 10 nos. of local markets of both Lakhimpur and Dhemaji districts involved in selling various varieties of wild plants and herbs were interviewed with respect to their availability. The procedure of preparation and storage life at ambient temperature of some traditionally

prepared meat items were observed and documented. Ethnobotanical data were collected by using method suggested by (Jain and Goel, 1995) [9]. Identification and cross examination of the plant species were made with reference books (Kanjilal *et al.* 1992) [11] and also by discussion with local people of the Mising tribe and Professor from Department of Pharmacology and Toxicology, Lakhimpur College of Veterinary Science, AAU, Joyhing, North Lakhimpur, Assam. Finally, the collected plants and herbs and their use in various meat products were documented.

## Results and Discussion

The investigated species of wild plants and herbs used by Mising community are listed in table No. 1 as S1, S2,....S18. The present survey revealed that the plants S1, S2, S4, S5 and S15 were cooked mostly with pork in Dodgang, Dobur, Ali:aye Ligang and Po:rag singly or a combination of these plants are also used. Similarly, Gam NK and Gam J (2012) [7] reported that S1, S2, S4, and S15 were cooked with pork in the Dodgang, Gyatiuyu, Don'ng, Dobur and in Ali: aye Ligang. Investigation revealed that S1, S2 and S5 are found in most of the household, except S4 and S15 which are not commonly available. Edible parts of all the plant are available in their local markets around the year. The milky extract from the bark of S1 is used in the treatment of bone fracture, similarly Sonowal S and Sonowal R (2017) [19] also reported that the white latex obtained from *Ficus* spp., (Moraceae) tree is applied in a thick layer over the fractured area and

bandaged for 4 days with thin bamboo sticks to hold the fractured area intact. S3 is used to cure high blood pressure. Juice extract from young twigs of S5 is used for treatment of jaundice. S6 is reported as the medicine for diabetes (Borah *et al.* 2009) [1]. S8 is used as medicine to relieve body ache. S9 is consumed to enhance milk by new born baby's mother (Gam NK and Gam J, 2012) [7]. Leaf of S10 is used for wrapping meat during festival and traditional ritual. S1, S4 and S15 are also used to cure diarrhea, while Khuankaew *et al.* (2014) [12] reported that bark of S15 is used for fever and lumbago. Tender shoots of S14 are consumed along with fish, which is also used in Mizoram for the treatment of ulcer, stomach ache etc. (Lalawmpui *et al.* 2017) [14]. Paste prepared from root of S18 is given orally thrice a day for 5-6 days to cure menstrual disorder. Fruits of S16 are cooked along with fish or green vegetables, Islam *et al.* (2018) [8] also reported the use of various parts of the plants in traditional medicine for the treatment of various ailments in humans. Tender leaves of S17 are cooked along with meat or fish which is similar with the findings of Dutta and Borthakur (2016) [6]. They also reported that different parts of the plants are used for treatment of various diseases like cough, cold, sore throat etc. S11 is used against cough and bronchitis (Das and Rahman, 2011) [4]. Fruits of S18 are used for preparation of starter dish, similarly the leaves of these plants are also used in the preparation of traditional rice beer by the Deori tribe of Assam. (Deori C. *et al.* 2007) [5].

**Table 1:** Wild plants and herbs used in various meat preparations by Mising tribe

Sample	Botanical Name	Family	Vernacular	Part(s)	Use
S1	<i>Ficus</i> spp.	Moraceae	Tajig/ Dimoru Paat	Tender leaves	Mostly with pork
S2	<i>Sarcoclamys pulcherrima</i> Gaud	Urticaceae	Ombe/ Mesaki Paat	Tender leaves	Mostly with pork
S3	<i>Clerodendrum colebrookianum</i> Walp.	Verbenaceae	Pakkom	Tender leaves	Roasted/steam cooked/fried with <i>namsing</i> and fried with pork intestine
S4	<i>Meliosma pinnata</i> Roxb.	Sabiaceae	Dermi	Tender leaves	With fish and pork
S5	<i>Dillenia indica</i> L.	Dilleniaceae	Sompa/ Owtenga	Fruit	Used mainly with pork and fresh fish
S6	<i>Musa sapientum</i> L.	Musaceae	Kopak/ bhim kol	Shoot and flower	Slices of shoot fried with chicken; flower is cooked with pork
S7	<i>Calamus tenuis/rotang/erectus</i>	Arecaceae	Jeying/Tayo	Tender shoot	Roasted and mixed with <i>namsing</i>
S8	<i>Spilanthes acmella</i> L.	Asteraceae	Marsang	Tender leaves	With meat in soup and with roasted <i>namsing</i>
S9	<i>Polypodium</i> spp. L.	Polypodiaceae	Bilongoni	Tender leaves	With chicken
S10	<i>Phrynium pubinerve</i> Bl.	Marantaceae	Kou-pat	Leaves	Used as wrapper for the religious and traditional food items.
S11	<i>Eryngium foetidum</i> L.	Umbeliferae	Yumrang- O:ri	Leaf and inflorescence	As spice in powder or paste form with chicken and pork.
S12	<i>Curcuma longa</i> L.	Zingiberaceae	Alodi	Rhizome, leaves	Rhizome powder used as spice. Leaves used as wrapper for roasted fish and meat.
S13	<i>Polygonum assamicum</i>	Polygonaceae	Pinker/Nekung	Leaves	Cooked with fish
S14	<i>Buettneria aspera</i> Colebr	Sterculiaceae	Risut-r'ob'ub'	Tender shoot	Cooked with fish
S15	<i>Meliosma simplicifolia</i> Roxb.	Sabiaceae	Gurban- 'using	Tender leaves	Cooked with fish and pork
S16	<i>Antidesma bunius</i>	Euphorbiaceae	Somkong-'using	Fruits	Cooked with fish and green vegetables
S17	<i>Phlogacanthus curviflorus</i> (Wall.) Nees	Acanthaceae	Kon'e-oying	Tender leaves	Cooked with meat or fish
S18	<i>Solanum torvum</i> Sw.	Solanaceae	Sita- bangko	Fruits	Roasted, steam cooked or fried with <i>namsing</i>

## Some traditional festivals of Mising tribe

**Ali:aye-Ligang and Po:rag:** These festivals are the main festivals of Mising community and are connected with agriculture. Ali:aye-Ligang marks the start of agrarian activities when they sow the seeds for a new season. This

festival is celebrated on the first Wednesday of Fagun month of Assamese calendar which falls mostly in the month of February, while Po:rag is the post-harvest festival of the Mising.

**Dodgang:** It is the final mortuary ritual of the Mising. It is a community feast in which the fellow villagers including the persons involved in funeral procession are invited where pigs and fowls are sacrificed and served to the invited guests. There is no fixed time for observing this ritual and it is arranged in a suitable time depending on facilities and economic conditions of the deceased's family (Zaman Arifur 2015) [20].

**Dobur:** An animistic rite performed occasionally by the villagers by sacrificing a sow and some hens for different purposes, such as to avert a likely crop failure and ensure general well-being of the community or to avert the evil effects of a wrong doing on the part of a member of the community.

**Mibu:** The Mibu is regarded to be a mediator between mankind and supernatural power and conducts all the works of propitiation and offering of sacrifices while officiating in community socio-religious functions, individual rites connected with life cycle and illness. So, Mising society has conferred him the highest authority of religious administration (Kaman R and Doley M, 2013) [10].

**Urom-apin:** Urom-apin is a religious belief of worshipping ancestral spirits by sacrificing local poultry breed and black coloured pig. The Mising people believes that the human soul is immortal. The Urom (departed soul) is believed to remain in this world unless and until the Urom-apin or the Dodgang is performed. After performing Dodgang, it is believed that the soul goes to the other world called Uie-among. They believe that the souls of departed forefather (Urom) are benevolent to the family members and held the responsibility of health and happiness of the family. The Mising pays homage to their ancestral spirits on all occasions by uttering their names in prayer.

#### Some traditional meat/fish preparation of Mising tribe

**Aasan-adin:** Pork is cut into uniform pieces, mildly boiled and dried under mild smoke using wooden fire for two to three days. It can be stored for 7 to 10 days at ambient temperature. Similar traditional product 'Vawksarep' is also prepared in Mizoram, where fresh pork is cut into chunks of uniform size and is placed in a wooden stick and then light smoking is done by placing in fire for about 45 min. Lalchamliani *et al.* (2015) [15] reported that vawksarep contained 64.38% moisture, 15.05% fat and 18.23% protein where ham portion was smoked and stored for 15 days at refrigeration temperature.

**Banam eag-adin:** Mildly boiled or even fresh pork pieces marinated with local spices and condiments woven in bamboo sticks- roasted over wooden fire until it turns into golden brown colour. Then the meat is mixed with sliced onion and green chilli and served with rice beer as a starter dish before meal.

**Ekung adin:** Almost all the Mising people prepare this item. Ekung adin is prepared in two forms either by ekung (fermented bamboo shoot) or euig (dried bamboo shoot). Ekung and euig both can be prepared with fresh and smoked pork. Fresh pork it is allowed to cook in its own moisture by covering the cooking vessel at low flame and stirred intermittently to avoid sticking and charring. Once the pork is

well done, the fermented streaks of bamboo shoot (ekung) is added with lots of chopped garlic, ginger and green chilli and sometimes dried red chilli is used to impart red colour to the preparation. The same method of preparation is followed for smoked pork also.

**Eea-atung adin /Baa-sungar mangsho:** Finely chopped meat pieces mixed with offal and blood are properly mixed with rice powder along with chilli, spices and condiments. The emulsion type mix is put in to bamboo sieves and the open end of the bamboo is closed tightly by stuffing banana leaves. Then the bamboo is burned in wooden fire till the outside surface of the bamboo turns in to ash. The cooked meat is then served with rice beer. The particular item is prepared mainly during special occasion like Dobur, Urom-apin and other rituals.

**Eag-adin Luktir:** Asan-adin is further minced into smaller pieces and fried slightly to reduce the moisture, then euig (dried bamboo shoot) and dried chilli (slightly fried) is mixed along with local herbs and spices. The preparation can be stored up to 8 to 12 months.

**Eg-adin acchar/Gahori aachar (Pork pickle):** Prepared both from smoked or fresh pork. Fresh pork is boiled and deep fried to reduce the moisture. Then the spices and condiments are fried separately and mixed with the fried pork pieces. Bamboo shoot (Fermented and dried), lemon juice or sometimes vinegar, curry leaves and locally available spices are added to increase the shelf life and flavour.

**Ngotir:** It is a traditional dish of Adi and Galho tribe of Arunachal Pradesh, now adapted by many of the Mising tribe residing in border areas of Arunachal Pradesh. Smoked meat and dry fish are cut into small pieces and is mixed with finely ground dried red chilli, bamboo shoot and other locally available dried herbs. The mixture is filled in a bamboo container or in a specially made container known lao-sunga which is prepared from dried fruit of the bottle gourd plant (*Lagenaria siceraria*). Similar product 'Sa-um' is available in Mizoram, where cooked pig fat from abdominal area is cut into smaller pieces and then placed in a specially made container known as sa-um bur, prepared from dried fruit of *Lagenaria siceraria* (Lalthanpuii *et al.* 2015) [16]. Then it is kept near a fireplace for ripening for about a week or longer, after ripening it becomes a pasty consistency where it is used in the preparation of other Mizo traditional dishes like Sa-bai and Sa-bawl.

**Peret-oring:** Pork pieces with blood and offal marinated with salt, spices and condiments. The meat mix is slightly fried in vegetable oil, then peret (black dal) soaked in water over night and some tender leaves of *Colocasia* spp. is added along with soda prepared from ash of dried banana leaves. Then it is further cooked under low flame to get a required consistency. This particular dish is prepared during Ali-aye Ligang and some other special occasion of the Mising community. It is usually served with Purang-Apin (sticky rice wrapped in a special kind of leaf and boiled to cook).

**Namsing:** Powdered dry fish. At first, fishes are dried on the kitchen's fireplace. Then the dried fishes are grinded and incorporated with some tender leaves of *Colocasia* spp. at their wooden grinder (ki:par). The ground fish mix is then



stuffed into a bamboo container and tightened usually with locally available leaves. This product can be kept for more than a year at ambient temperature.

### Some traditional meat product preparation of Mising tribe



Fig 1: Eea-atung adin



Fig 2: Banam eag-adin

### Wild plants and herbs used in various meat product preparation by Mising tribe



S1 (*Ficus* spp.)



S2 (*Sarchoclams pulcherrima* Gaud)



S4 (*Meliosma pinnata* Roxb.)



S5 (*Dillenia indica* Lin.)



S6 (*Calamus tenuis/rotang/erectus*)



S7 (*Spilanthes acmella* Lin.)

### Conclusion

From the present investigation it was found that the traditional meat products have unique sensory attributes and usually has a good shelf-life. Mising people consumes variety of wild plants and herbs which was found to have different medicinal properties as reported by various studies. A study on effects of cooking on the nutritional and medicinal values of these plants would provide information regarding the impact on our health. At present the traditional meat products and their method of preparation are not scientifically standardized due to which there are no comprehensive information available for commercialization. Therefore, further studies with respect to medicinal properties of these plants, formulation, process optimization, commercial production and distribution would definitely put potential of these traditional items on the world map.

### References

1. Borah S, Das AK, Saikia D, Borah J. A Note on the use of Ethnomedicine in Treatment of Diabetes by Mising Communities in Assam, India. *Ethnobotanical Leaflets* 2009;13:1348-1352.
2. Boutaud JJ, Becuț A, Marinescu A. Food and culture. Cultural patterns and practices related to food in everyday life. *International Journal of Reviews and Research in Social Sciences* 2016;6(1):1-3.
3. Census of India, Office of the Registrar General, India, 2011.
4. Das P, Rahman I. Medicinal plants traditionally used by scheduled caste community of Lakhimpur district of Assam. *Journal of Frontline Research in Arts and Science*

- 2011;1:54-57.
5. Deori C, Begum SS, Mao AA. Ethnobotany of Sujen- A local rice beer of Deori tribe of Assam. *Indian Journal of Traditional Knowledge* 2007;6(1):121-125.
  6. Dutta B, Borthakur SK. A new variety of *Phlogacanthus curviflorus* (Wall.) Nees from Assam, India. *Bangladesh Journal of Plant Taxonomy* 2016;23(1):71-74.
  7. Gam NK, Gam J. Studies on some wild plant species used by the Mising (Miri) tribe of Assam in their traditional food items. *International Journal of Pharma Sciences and Research* 2012;3(12):543-547.
  8. Islam S, Koly S. A review on phytochemical and pharmacological potentials of *Antidesma bunius*. *J Anal Pharm Res* 2018;7(5):602-604.
  9. Jain SK, Goel AK. *A manual of Ethnobotany*, Scientific Publishers, India, 1995, 142-153.
  10. Kaman R, Doley M. Priesthood among the Misings tribe of Assam. *Int. J of Sci. Research* 2013;2(12):265-266.
  11. Kanjilal UN, Kanjilal PC, Das A, Bor NL, De RN. *Flora of Assam*; Periodical Expert Book Agency (published under the authority of the government of Assam), D-42, Vivek Vihar, Delhi-110095 (India) 1992, 1-5.
  12. Khuankaew S, Srithi K, Tiansawat P, Jampeetong A, Inta A, Wangpakapattanawong P. Ethnobotanical study of medicinal plants used by Tai Yai in Northern Thailand. *Journal of ethnopharmacology* 2014(3);151(2):829-838.
  13. Kumari P. Kitchen and Dining Space: As A Way of Eating Manner in Mising Community. *IOSR Journal of Humanities and Social Science*. 2012;4(5):23-28.
  14. Lalawmpuii R, Lalhriatpuii TC, Ghosh SK. *In vitro* anticancer activity of *Callicarpa arborea* roxb. and *Buettneria aspera* colebr., a traditional medicinal plant from Mizoram, Northeast India. *European Journal of Biomedical and Pharmaceutical sciences* 2017;4(3):362-367.
  15. Lalchamliani L, Hazarika P, Singh TP, Talukder S. Effect of curing ingredients and nisin on product characteristics of Vawksa rep (smoked pork product). *J Nutr. Food sci* 2015;45(4):634-645.
  16. Lalthanpuii PB, Lalruatfela B, Lalthanzara H. Traditional food processing techniques of the Mizo people of Northeast India. *Sci Vis* 2015;15(1):39-45.
  17. Pegu R, Gogoi J, Tamuli AK, Teron R. Apong, an alcoholic beverage of cultural significance of the Mising community of Northeast India. *Global Journal of Interdisciplinary Social Sciences* 2013;2(6):12-7.
  18. Reddy G, Van Dam RM. Food, culture, and identity in multicultural societies: Insights from Singapore. *Appetite* 2020;149:1-12.
  19. Sonowal S, Sonowal R. Survey and Documentation of Locally Available Medicinal Plants Used by the Mising Tribe in Majuli River Island, Assam. *Indian J of Applied Research* 2017;7(10):186-187.
  20. Zaman Arifur. Mortuary Rite among the Mishing Tribe in a Rural Context of Assam. *Cultural and Religious Studies* 2015;3(4):177-184.