Traditional knowledge of the ethnic Himalayan people on production of indigenous meat products

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Ethnic people of the Himalayan regions of India, Nepal, Bhutan and China (Tibet) prepare various types of indigenous meat products using their traditional knowledge. Some of these ethnic meat products as sausages, dried or smoked meats are sold in local markets contributing local economy. There is no literature on traditional processing of indigenous meat products of the Himalayas. The paper is aimed to document the traditional knowledge of the ethnic Himalayan people on preparation of various traditionally processed meat products such as kargyong, kheuri, satchu, suka ko masu, chilu, chartayshya, gemma and arjia.

Keywords: Traditional knowledge, Traditional food, Indigenous meat products, Himalayas

Meat is a part of the daily diet for many ethnic people dwelling in the Himalayan regions of Indian, Nepal, Bhutan and China (Tibet). Raw meat gets spoiled at high ambient temperatures within a few hours due to its high moisture and protein contents, and are mostly dried or smoked or fermented to prolong the shelf-life of perishable raw meat1,2. In developed countries, a wet-curing process for meat has been evolved which involves use of a solution of salt, sodium nitrate/nitrite, whereas in under-developed and developing countries preserving meat is done by curing with salt followed by drying or smoking or fermentation3,4. Many traditional fermented meat products of different countries have been well documented and studied such as alheira of Portugal, androlla of Spain, salsiccia and soppressata of Italy, jerky of USA, nham of Thailand5-9, etc. The domestic livestock of the Himalayan regions of Sikkim, the Darjeeling hills, Arunachal Pradesh, Kumaun hills and Ladakh in India, Nepal, Bhutan and Tibet in China is mostly cattle, sheep, goats, pigs, yaks, etc. which is mainly used for meat, milk and milk products10. Yaks (Bos grunniens) are reared mostly on extensive alpine and sub alpine scrub lands between 2,100 to 4,500 m altitude in the Himalayas for milk products and meat11. Ethnic people of the Himalayas are mostly non-vegetarians, except few castes of the Nepalis. The food survey showed that 11.7% of rural people are vegetarians and 88.3% are non-vegetarians in Sikkim12. The aim of the paper is to record the traditional knowledge of the ethnic people of the Himalayas on production of indigenous meat products.

Methodology

A field survey was conducted in different places of the Kumaun hills and Nepal of the Central Himalayas and Sikkim, the Darjeeling hills and Bhutan in the Eastern Himalayas. Information was sought directly from the local people including the village elders of the respective places on the types of indigenous meat products, traditional knowledge of preparation, their culinary skills and socio-economy of the products.

Results and discussion

The diverse ethnic groups of the Himalayan people prepare and consume a variety of traditionally processed smoked/sun-dried/fermented meat products for long centuries. They use their indigenous knowledge of meat preservation and processing without using starter culture and chemicals. Some villagers sell the products in the local markets and earn their livelihood. Eight types of traditionally processed meat products of the Himalayas have been listed (Table 1).

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Kargyong

Kargyong is an indigenous sausage-like product prepared from yak/beef/pork meats, and is mostly consumed by the Bhutias of Sikkim and Ladak in India, and Tibetans of China. Lepchas and Sherpas of Sikkim, and Dhukpa of Bhutan also prefer this type of product. It is usually prepared during November to December. It is soft or hard and brownish in colour. During traditional method of preparation of kargyong, yak/ beef/ pork lean meat with its fat are chopped finely, and combine with crushed garlic, ginger, required amount of salt and mix with a little amount of water. The meat mixtures are stuffed into gastrointestinal tract of animal (yak/ox/pig) locally called gyuma, used as natural casings with 3-4 cm in diameter and 40-60 cm length. One end of the casing is tied up with rope, and after stuff with meat mixtures, other end is also sealed and boil for 20-30 minutes. Cooked sausages are taken out and hung in the bamboo stripes above the kitchen oven for smoking and drying for 10-15 days or more to make kargyong (Fig. 1). Due to use of natural casings, kargyong has a natural curve shape. Three varieties of kargyong are prepared and consumed: yak kargyong (prepared from yak meat), lang kargyong (prepared from beef), and faak kargyong (prepared from pork). Yak kargyong is a popular fermented sausage in North Sikkim, Ladak and Tibet. Faak kargyong is also prepared by the non-vegetarians Nepalis of Sikkim and the Darjeeling hills of India, and Nepal. They use pig as well as goat intestine as natural casings to stuff the meat mixture (chopped pork/mutton) as described above.

Kargyong is eaten after boiling for 10-15 minutes, sliced and fried in edible oil by adding onion, tomato, powdered or ground chilies, and salt and is made into curry. It is also eaten as fried sausages with raksi, a distilled liquor or chyaang/kodo ko jaanr, mild-alcoholic finger-millet-based beverage. Kargyong may also be eaten as cooked sausage before fermentation. Yak kargyong is not sold in the market; it is usually prepared for home consumption, and also during marriages and festivals. However, lang kargyong and faak kargyong are sold in the local restaurants and food stalls in Sikkim, the Darjeeling hills, Bhutan, etc. per kilogram of kargyong costs around Rs. 150/-Rs. 180/-.

Yak/beef/pork meat, fat, ginger, garlic, salt
↓
Add water
↓
Stuff into the intestine; seal both ends
↓
Boil for 20-30 min
↓
Dry/smoke for 10-15 days
↓
Kargyong

Fig. 1—Traditional method of preparation of kargyong
Kheuri

Kheuri is a typical indigenous meat (yak/beef) product of Sikkim confined to the Bhutias and the Lepchas. It is prepared during winter or depending upon the availability of meat. During the preparation of kheuri, yak/beef meat, its intestine and fat are chopped into pieces, mixed with required amount of salt. The meat mixture is filled into an empty stomach of sheep, locally called khyabo (previously cleaned and cleared sheep stomach), stitched the opening, and pressed with a heavy load for 5-10 hrs. After pressing, it is kept for 1-2 months in an open air outside the kitchen for fermentation (Fig. 2). Now-a-days, the people of North Sikkim have stopped preparing kheuri because of unavailability of the sheep stomach due to ban on slaughtering high altitude sheep. Kheuri dish is prepared by frying in yak or cow butter locally called maa, mix with chopped ginger, onion, garlic, powdered or ground chilies, salt and made into thick curry. It is also eaten simply by boiling for 10-15 min with salt. Kheuri dish is consumed in main meals by the Bhutias and the Lepchas as side-dish or curry with baked potatoes.

Satchu

Satchu is a dried or smoked meat product of the Himalayas, mostly prepared from yak/beef meats. During preparation, red meat of yak/beef is sliced into several strands of about 0.608-0.912 m, and is mixed thoroughly with turmeric powder, edible oil or butter and salt. The meat strands are hung in the bamboo stripes or wooden stick and are kept in an open air in corridor of the house or are smoked above the kitchen oven for 10-15 days (Fig. 3). After dried, the smoked meat product is called suka ko masu or seakua which can stored at room temperature for several weeks for consumption. Suka ko masu is washed and soaked in lukewarm water for 10 min, drain out excess water and is squeezed, fry in heated mustard oil, with chopped onion, ginger and chili power, salt. Coriander leaves are sprinkled unto the curry and is eaten with boiled rice in main meals. Seakua is usually grilled in charcoal and is popular side-dish in Nepal. Regular consumption of meat is expensive for a majority of the rural people. They slaughter domestic animals usually on special occasions.
occasions, festivals and marriages. During dasain (a festival of Nepali), goats are ritually sacrificed to please the goddess Durga. After the ceremony, the meat is cooked and eaten. The remaining flesh of the meat is preserved by smoking to make suka ko masu for future consumption. It is sold in the local markets, costing Rs.350/kg.

Red meat (buffalo/goat)
↓
Cut into stripes
↓
Mixed with turmeric powder, oil and salt
↓
Smoke or dry for 7-10 days
↓
Suka ko masu

Fig. 4—Traditional method of preparation of suka ko masu

**Chilu**

Chilu is stored animal fat product prepared in North Sikkim, Tibet in China and Bhutan. During preparation of chilu, fatty portions of freshly slaughtered meat (yak/ beef/ lamb) are separated, kneaded by hand and pressed into the cleaned and empty stomach of sheep (previously slaughtered) and then stitched. The stitched filled up stomach is pressed with heavy stones for about 5-10 hrs, and are kept hanging in the corridor of the house in wooden plank for 10-15 days (Fig. 5). Chilu can be used for a year or more. It has been noted during survey that chilu production has declined in North Sikkim due to unavailability of sheep stomach. Chilu is used in place of edible oil for cooking by the Bhutias, Lepchas, Tibetans, etc.

Animal fat (yak/beef/lamb)
↓
Put it into the empty stomach of sheep
↓
Stitched
↓
Pressed with heavy load for 5-10 h
↓
Ferment for 10-15 days
↓
Chilu

Fig. 5—Traditional method of preparation of chilu in North Sikkim

**Chartayshya**

Chartayshya is a traditional goat meat product of the Kumaon Himalayas, consumed by Bhutias of Dharchula and Munsyari under the district of Pithoragarh. It is similar to satchu. During preparation of chartayshya, red goat meat is cut into small pieces of 3-4 cm, mixed with salt, sewed in a long thread and is hung in the bamboo stripes or wooden stick and are kept in an open air in corridor of the house for 15-20 days (Fig. 6). It can be kept at room temperature for several weeks for future consumption. In Western Nepal, a similar product called sukha sikhar is prepared from mutton. Curry is made by frying in edible oil with tomato, ginger, garlic, onion and salt. This is the most delicious meat item of the Kumaon Himalayas. The ethnic people of the Kumaon Himalayas prepare chartayshya curry especially during kolatch festival (worshiping the ancestral spirit) and offer to ancestors before eating.

Raw goat meat
↓
Cut into a rough small pieces
↓
Marinated with salt
↓
Smoke or dry for 15-20 days
↓
Chartayshya

Fig. 6—Traditional method of preparation of chartayshya

**Geema or Jamma**

Geema or Jamma is a traditional fermented mutton-sausage of the Kumaon Himalayas. Red goat meat is chopped into fine pieces, grinded finger millet (Eleusine coracana), wild pepper locally called timbur (Zanthoxylum sp), chili powder and salt are added and mixed. A little amount of fresh animal blood is also added. Meat mixture is made semi-liquid by pouring water and stuff into the small intestine of goat of about 2-3 cm in diameter and 100-120 cm length with the help of funnel, and ties the both ends of the long intestine. It is pricked randomly to prevent bursting while boiling. After boiling for 15-20 min, stuffed intestine are smoked above the kitchen oven for 15-20 days (Fig. 7). It is consumed as curry by mixing with onion, garlic, ginger, tomato and salt. It is also deep-fried and is eaten with local alcoholic.

Animal fat (yak/beef/lamb)
↓
Put it into the empty stomach of sheep
↓
Stitched
↓
Pressed with heavy load for 5-10 h
↓
Ferment for 10-15 days
↓
Chilu

Fig. 7—Traditional method of preparation of geema in North Sikkim
beverages. Sometimes, *gemma* may be eaten as cooked sausage.

Goat meat, finger millet, chili, garlic  
\[\downarrow\]  
\[\leftarrow\] Add blood and water  
\[\downarrow\]  
Stuff into the small intestine; seal, prick  
\[\downarrow\]  
Boil for 15-20 min  
\[\downarrow\]  
Smoke/dry for 15-20 days  
\[\downarrow\]  
*Geema/Jamma*

Fig. 7—Traditional method of preparation of *geema* or *jamma*

**Arjia**

*Arjia* is also a sausage-like product made from goat meat of the Kumaun Himalayas consumed by the Bhutias. The method of preparation of *arjia* is similar to *gemma*. However, in *arjia* preparation, a mixture of chopped lungs of goat, salt, chilli powder, *timbur* (*Zanthoxylum* sp) and fresh animal blood are stuffed into the large intestine of goat, instead of small intestine, and boil for 15-20 min. As in *gemma*, pricking of stuffed large intestine is necessary to prevent bursting while boiling. It is dried for 15-20 days or smoked above the kitchen oven (Fig. 8). *Arjia* is consumed as curry or deep fried sausage in main meal.

Goat meat, goat lungs, chilli, garlic  
\[\downarrow\]  
\[\leftarrow\] Add blood and water  
\[\downarrow\]  
Stuff into the large intestine; seal both ends; prick  
\[\downarrow\]  
Boil for 15-20 min  
\[\downarrow\]  
Dry/smoke for 15-20 days  
\[\downarrow\]  
*Arjia*

Fig. 8—Traditional method of preparation of *arjia*

**Conclusion**

Drying or smoking or fermentation of perishable and quick-spoilage fresh meat is a remarkable step in the traditional meat processing as biopreservation in the Himalayas. They are preserved for several months without refrigeration and can be consumed anytime. Fermented meat and sausages are considered safe for consumption due to low pH and water-activity which inhibit the growth of pathogenic bacteria. All these eight indigenous meat products of the Himalayas are naturally cured without using starter cultures or addition of sodium nitrates or nitrates as in commercial sausages production. Dried or smoked meat products are comparatively lighter than the weight of fresh meat and can, therefore, be carried easily while traveling, which is still common practice among the Himalayan ethnic people. Today, these particular indigenous meat products of the Himalayas are associated with culture and tradition, yet they are not known outside the regions. The paper has revealed that traditional sausage-making is not only confined to Europe, the Himalayan people have also practicing the age-old sausage-making technology in their own way. Traditional knowledge of the Himalayan ethnic people on production of meat products justifies their skill and expertise for building up a global approach of traditional foods.

**References**


