

## Traditional knowledge of the 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 such as sausages and dried or smoked meats are sold in local markets contributing to 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 sausages and meat products such as *karyong*, *kheuri*, *satchu*, *suka ko masu*, *chilu*, *chartayshya*, *gemma* and *arjia*.

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

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Meat is a part of the daily diet for many ethnic people dwelling in the Himalayan regions of India, 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 but are mostly dried or smoked or fermented to prolong the shelf-life of perishable raw meat<sup>1,2</sup>. 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 fermentation<sup>3,4</sup>. 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, *nam* of Thailand, etc<sup>5-9</sup>. The domestic livestock species of the Himalayan regions of Sikkim, Darjeeling hills, Arunachal Pradesh, Kumaun hills and Ladakh in India, Nepal, Bhutan and Tibet in China are mostly cattle, sheep, goats, pigs, yaks, etc. which are mainly used for meat, milk and milk products<sup>10</sup>. Yaks (*Bos grunniens*) are reared mostly on extensive alpine and sub alpine scrub lands between 2,100-4,500 m altitude in the Himalayas for milk products and meat<sup>11</sup>. 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 Sikkim<sup>12</sup>. Effort has been made 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, Darjeeling hills and Bhutan in the Eastern Himalayas. Information were 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 many 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).

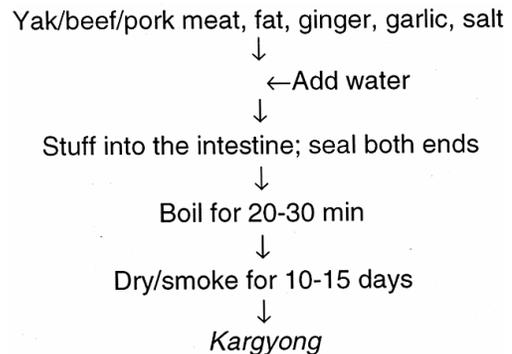
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Table 1—Indigenous Meat Products of the Himalayas

Products	Raw meat	Nature and uses	Regions of consumption
<i>Kargyong</i>	Yak/Beef/Pork	Soft or hard, brownish, sausage-like product; curry or side-dish	Sikkim, Darjeeling hills, Arunachal Pradesh and Ladakh in India; Nepal; Bhutan; Tibet in China
<i>Kheuri</i>	Yak/Beef	Meat product prepared in empty stomach of sheep; curry or side-dish	Sikkim and Ladakh in India; Tibet in China; Bhutan
<i>Satchu</i>	Yak/Beef	Hard, brownish, dried/smoked meat; curry or side-dish	Sikkim, Darjeeling hills, Arunachal Pradesh and Ladakh in India; Nepal; Bhutan; Tibet in China
<i>Suka ko masu (seakua)</i>	Buffalo/chevon	Hard, brownish, dried / smoked; curry or side-dish, grilled meat	Nepal; Sikkim and Darjeeling hills in India
<i>Chilu</i>	Fat of Yak/ Beef/Lamb	Stored animal fat into empty stomach of Sheep; used as edible oil for cooking	Sikkim and Ladakh in India; Tibet in China; Bhutan
<i>Chartayshya</i>	Chevon	Hard, brownish, dried/smoked; curry	Kumaun hills in India; Western Nepal
<i>Geema/Jamma</i>	Chevon	Soft; brownish, sausage-like product; curry	Kumaun hills in India; Western Nepal
<i>Arjia</i>	Chevon	Soft, brownish; sausage -like product, curry	Kumaun hills in India; Western Nepal

### ***Kargyong***

*Kargyong* is an indigenous sausage-like product prepared from yak/ beef/ pork meat, and is mostly consumed by the *Bhutia* of Sikkim and Ladak in India, and Tibetans of China. *Lepcha* and *Sherpa* 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*, the lean meat of yak/ cattle/ pigs with its fat are chopped finely, and combined with crushed garlic, ginger and required amount of salt and mixed with little amount of water. The mixture is stuffed into the segment of gastro-intestinal 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 other end is sealed after stuffing and boiled for 20-30 min. 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 (Fig 9). 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-vegetarian *Nepalis/Gorkha* of Sikkim and the Darjeeling hills of India, and Nepal.

Fig. 1—Traditional method of preparation of *kargyong*

They use pig as well as goat intestine as natural casings to stuff the meat mixture (chopped pork/chevon) as described above.

*Kargyong* is eaten after boiling for 10-15 min, sliced and fried in edible oil by adding onion, tomato, powdered or ground chilies, and salt and is made into curry. It is also consumed as fried sausage with *raksi*, a distilled liquor or *chyaang/kodo ko jaanr*, mild-alcoholic finger-millet-based beverage<sup>13,14</sup>. *Kargyong* is also 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. *Kargyong* costs around Rs. 150-180/kg.

### **Kheuri**

*Kheuri* is a typical indigenous meat (yak/beef) product of Sikkim confined to the *Bhutia* and the *Lepcha*. 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 (Fig. 10). After pressing, it is kept for 1 to 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*, mixed with chopped ginger, onion, garlic, powdered or ground chilies, salt and made into thick curry. It is also eaten by boiling it for 10-15 min with salt. *Kheuri* dish is consumed with main meals by the *Bhutia* and the *Lepcha* as side-dish or curry with baked potatoes.

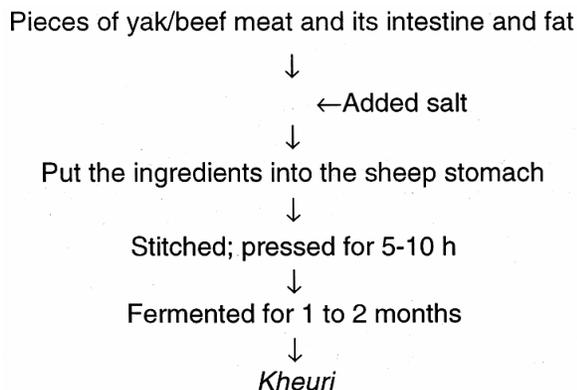


Fig. 2—Traditional method of preparation of *kheuri*

### **Satchu**

*Satchu* is a dried or smoked meat product of the Himalayas, mostly prepared from yak/beef meat (Fig. 11). Red meat of yak/beef is sliced into several strands of about 60-90 cm 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 as per the convenience of the consumers (Fig. 3). *Satchu* can be kept at room temperature for several weeks. This is a natural type of preservation

of perishable fresh raw meat in absence of refrigeration or cold storage.

*Satchu* is made into curry by washing and soaking in water briefly, squeeze, and fry in yak/cow butter with chopped garlic, ginger, chili and salt. Thick gravy is made which is consumed with *thukpa* (noodles in soup) and boiled or baked potatoes by the *Bhutia*, *Tibetan*, *Dhukpa*, *Lepcha* and *Sherpa*. Deep fried *satchu* is popular side-dish of the ethnic people which is eaten with traditional alcoholic beverages in every house, or in special occasions. *Satchu* is also eaten as such. *Yak satchu* (prepared from yak meat) is usually prepared for home consumption. *Lang satchu* (made from beef) is sold in the local restaurants and food stalls in Sikkim, the Darjeeling hills, Bhutan, etc. *Lang satchu* costs around Rs 250-300/kg. Some ethnic people are economically dependent upon this product.

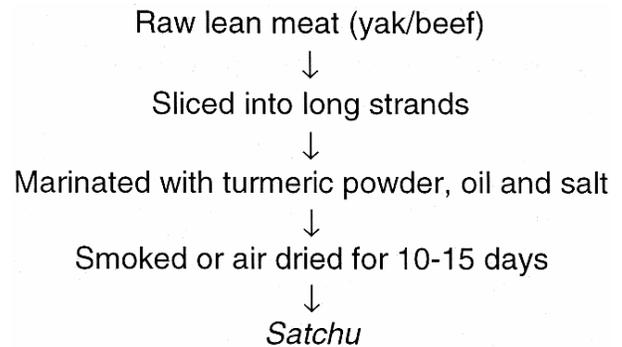


Fig. 3—Traditional method of preparation of *satchu*

### **Suka Ko Masu**

*Suka ko masu* is a dried/smoked meat product like *satchu*. It is air or smoke dried, strand like product. It is commonly consumed by the *Nepalis/Gorkha* of Darjeeling hills and Sikkim in India and Nepal. The *Newari* community belonging to the *Nepali* calls it *sheakua*. *Suka ko masu* is prepared by cutting the red meat of buffalo or goat into a stripe up to 25-30 cm and turmeric powder, mustard oil and salt are added and mixed thoroughly. Mixed meat stripes are hung above the earthen kitchen oven and smoked for 7-10 days (Fig. 4). After complete drying, the smoked meat product is called *suka ko masu* or *seakua*, which can be stored at room temperature for several weeks. *Suka ko masu* is washed and soaked in lukewarm water for 10 min, excess water is squeezed out and fried in heated mustard oil, with chopped onion, ginger, chili power and salt. Coriander leaves are sprinkled over

the curry and is eaten with boiled rice. *Seakua* is usually grilled in charcoal and a 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, 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.

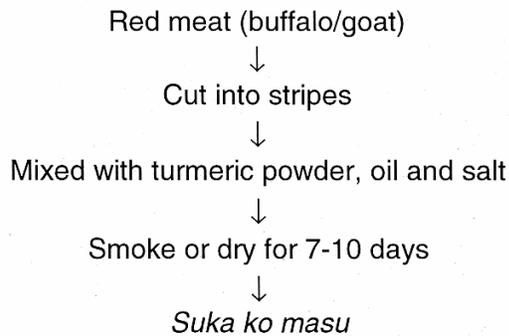


Fig. 4—Traditional method of preparation of *suka ko masu*

### *Chilu*

*Chilu* is a stored animal fat product prepared in North Sikkim, Tibet in China and Bhutan. 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 (Fig. 5). This stuffed meat is pressed with heavy stones for about 5-10 hrs,

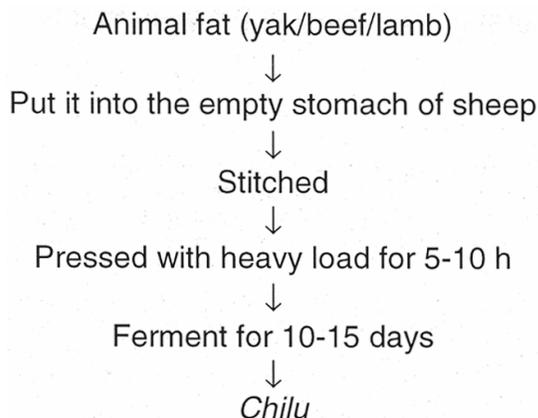


Fig. 5—Traditional method of preparation of *chilu* in North Sikkim

and are kept hanging in the corridor of the house in wooden plank for 10-15 days (Fig. 12). *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 *Bhutia*, *Lepcha*, *Tibetan*, etc.

### *Chartayshya*

*Chartayshya* is a traditional goat meat product of the Kumaon Himalayas, consumed by *Bhutia* of Dharchula and Munsiairy in the district of Pithoregarh. It is similar to *satchu*. 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 is kept in an open air in corridor of the house for 15-20 days (Fig. 13). It can be kept at room temperature for several weeks for future consumption (Fig. 6). In Western Nepal, a similar product called *sukha sikhar* is prepared from chevon. Curry is made by frying in edible oil with tomato, ginger, garlic, onion and salt. This is the most delicious meat item of the Kumaun Himalayas. The ethnic people of the Kumaun Himalayas prepare *chartayshya* curry especially during *kolatch* festival (worshiping the ancestral spirit) and offer to ancestors before eating.

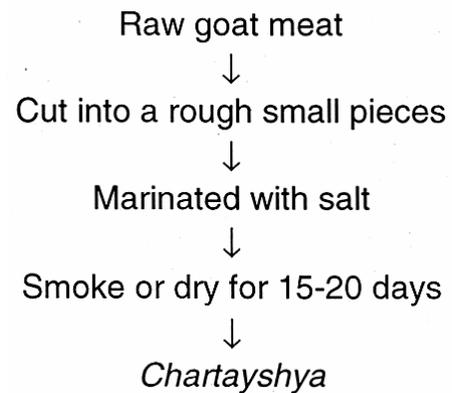


Fig. 6—Traditional method of preparation of *chartayshya*

### *Geema* or *Jamma*

*Geema* or *Jamma* is a traditional fermented chevon-sausage of the Kumaun Himalayas (Fig. 14). Red goat meat is chopped into fine pieces; ground 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 stuffed into the small intestine of goat of about 2-3 cm in diameter and 100-120 cm length with the help of funnel, and tied 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 beverages. Sometimes, *gemma* may be eaten as cooked sausage.

**Arjia**

*Arjia* is also a sausage-like product made from goat meat (Fig. 15) of the Kumaun Himalayas consumed by the *Bhutia*. The method of preparation of *arjia* is similar to *jamma*. However, in *arjia* preparation, a mixture of chopped lungs of goat, salt, chili powder, *timbur* (*Zanthoxylum* sp) and fresh animal blood are stuffed into the large intestine of goat, instead of small intestine, and boiled for 15-20 min. As in *jamma*, 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*

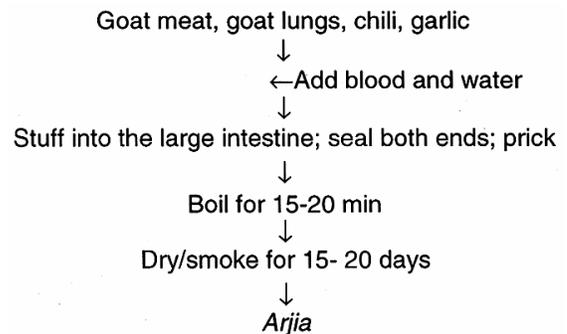
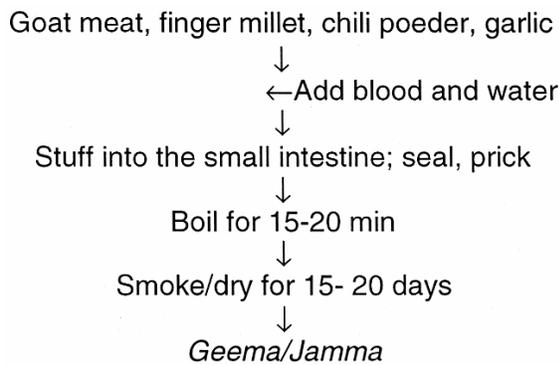


Fig. 7—Traditional method of preparation of *gemma* or *jamma*

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



Fig.9 Yak-kargyong

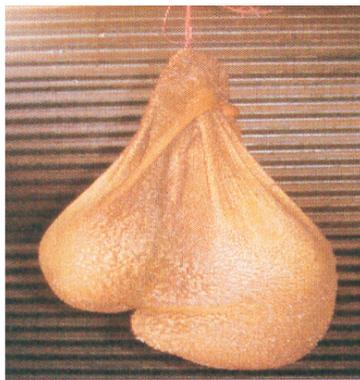


Fig.10 Yak-kheuri



Fig.11 Beef-Satchu



Fig.12 Yak-Chilu



Fig.13 Chartayshya



Fig.14 Jamma



Fig.15 Arjia

is consumed as curry or deep fried sausage along with main meal.

### Conclusion

Drying or smoking or fermentation of perishable meat is a remarkable step in the traditional meat processing as bio-preservation in the Himalayas. They are preserved for several months without refrigeration and can be consumed at anytime. Fermented meat and sausages are considered safe for consumption due to low pH and water-activity which inhibit the growth of pathogenic bacteria<sup>5</sup>. All these eight indigenous meat products of the Himalayas are naturally cured without using starter cultures or addition of sodium nitrites/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 a common practice among the Himalayan 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 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.

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