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Original article Some nonfermented ethnic foods of Sikkim in India

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ABSTRACT

Sikkim, the Himalayan state of India has several ethnic foods which have not been documented. A field survey was conducted in randomly selected 370 households in Sikkim representing the major ethnic communities, namely, Nepali, Bhutia, and Lepcha. Information was collected on different types of non-fermented ethnic foods, as prepared and consumed by these inhabitants, the traditional method of preparation, mode of consumption, as well as culinary, socioeconomic, and ethnic values. We have listed more than 83 common and uncommon nonfermented ethnic foods of Sikkim consumed by different ethnic groups in Sikkim, India. Some of these foods have been documented and include *achar, alum, chatamari, chhwelaa, dheroh, falki, foldong, kodoko roti, kwanti, momo, pakku, phaparko roti, phulaurah, ponguzom, suzom, thukpa* or gya-thuk, and wachipa. Nutritional analysis, process technology development and packaging of these ethnic foods may boost ethnic food tourism in the region, which could in turn enhance the regional economy.

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1. Introduction

The *Bhat*-dal-sabji-tarkari-dahi/mohi-achar combination, which corresponds to steamed rice-legume soup-vegetablecurry-curd/buttermilk-pickle, is a typical recipe of every meal in Sikkim, India [1]. Sikkim is the Himalayan state of India with a total land area of 7,096 km^2 , and the altitude ranges from 300 to 8,500 m. The state is composed of four districts: North, East, South, and West. Sikkim has a total population of 607,688, of which 455,962 live in rural areas and 151,726 reside in urban areas [2]. It is populated by three major ethnic groups: the Nepali, the Bhutia, and the Lepcha. The food survey shows that 11.7 % of people in Sikkim are vegetarian and 88.3% are nonvegetarians [3]. Sikkim is a mixture of both Hindu and Tibetan culture in India [4]. The daily life of a typical Sikkimese individual (in this case, a typical example of a Nepali of Sikkim) starts in the morning with a full mug of tea taken with sugar or salt with or without milk, and with or without a pinch of black pepper. The first meal eaten in the morning is a simple recipe containing bhat-dal-sabji-tarkari-dahi/mohi-achar. Tarkari, which means side dish or curry, includes different varieties of ethnic fermented and nonfermented food items. It is followed by light refreshment

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with mostly traditional snacks and tea in the afternoon. The second major meal is dinner, which is served early in the evening and consists of the same *bhat*–*dal*–*sabji*–*tarkari*–*dahi/mohi*–*achar*. In the food culture of "matwali" Nepali (alcohol drinkers, which are part of the social provision system), ethnic fermented beverages and distilled alcoholic drink are usually part of the evening meal [5]. This study is aimed to document some of the uncommon nonfermented foods of Sikkim in the Indian Himalayas.

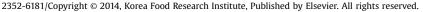
2. Materials and methods

2.1. Survey

A field survey was conducted in randomly selected 370 households in different villages of four districts of Sikkim in India: North (70 households), West (90 households), South (95 households), and East (115 households), representing the major ethnic communities, namely, Nepali, Bhutia, and Lepcha. Information was collected on different types of nonfermented ethnic foods, as prepared and consumed by these inhabitants, the traditional method of preparation, mode of consumption, as well as culinary, socioeconomic, and ethnic values using questionnaires, interviews, and direct observation. The collected data were documented.

3. Results and discussion

Every community in Sikkim has its own native dishes, prepared according to its own set of customs. We have catalogued about 83







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Table 1
Some Ethnic Nonfermented Foods of Sikkim in India.

Serial Number	Ethnic food	Ingredient	Nature and use	Major consumers
1.	Alum	Finger millet/buckwheat	Rolls, boil; staple	Tamang
2.	Aree	Wheat, potato, meat, salt	Cook wheat, meat, potato; staple	Sherpa
3.	Ban tarul	Bulb bearing yam (Dioscorea bulbiferai)	Boiled/roasted; staple	All
1.	Bhangrey sishnu	Nettle (Girardinia diversifolia)	Boiled young shoots/flowers; soup	All
5.	Bhatmas ko achar	Soybean	Pickle	Nepali
5.	Bauwa	Rice	Boil rice flour in more water; stew; staple	Rai
7.	Cha (ja)	Tea, butter	Tea in boiled water with salt and butter; beverage	Bhutia
8.	Chambray	Rice	Soaked, fried rice; staple	Nepali
).	Chimping	Sikkim herb (Heracleum wallichii)	Dried flowers/fruits; pickle	Nepali
0.	Chinday	Pentapanax leschnaultii	Young shoots; pickle	Nepali
1.	Chiura	Rice	Beaten rice; snack	All
2.	Chempo	Pork/beef	Liver cooked in sauce	Bhutia
3.	Cho-nyok	Rice, butter, vegetable	Cooked as porridge; staple	Lepcha
14.	Chakho	Rice, millet	Cooked; staple	Rai
15.	Chatamari	Rice flour	Rice pancake; snack	Newar
16.	Chhwelaa	Buffalo meat	Boiled, cooked meat curry	Newar
7.	Dalle khorsani	Green/red chili	Pickle	All
8.	Dheroh	Corn/millet	Cooked corn/millet; porridge, staple	Nepali
19.	Falki	Maize, legs/head of lamb	Cooked meat preferably more bones, gravy; staple	Gurung
20.	Foldong	Rice, cardamom, dry fruits, butter	Rice ball: staple	Tamang
21.	Fing	Vermicelli	Cooked with mushroom, meat; soup	Bhutia
22.	Gyathuk	Wheat noodle	Noodles in soup; staple	Bhutia, Lepcha
23.	Ghario sishnu	Nettle (Urtic adioica)	Boiled young shoots/flowers; soup	All
24.	Ghartarul	Greater yam (Dioscorea alata)	Boiled; staple	All
25.	Gyuma	Meat, rice	Stuffed sausage; side dish	Bhutia
26.	Halhalay	Yellow dock (Rumex nepalensis)	Vegetable	Nepalis
27.	Koirala	Bauhinia vareigata	Pickle	Nepali
28.	Kabra	Ficus virens	Unopened leaf buds; pickle	Nepali
29.	Khapjay	Wheat	Deep fried; snack	Bhutia, Tamang
30.	Kanney cheu	Mushroom (Pleurotus sajor-caju)	Curry	Non-Brahmin Nepal Bhutia, Lepcha
31.	Khalo dal	Black gram	Thick dal mixed with jimmu	Nepali
32.	Khoreng	Wheat/millet/buckwheat/maize/rice flour	Baked bread roti; staple	Limboo
33.	Khir	Rice-milk-butter-sugar	Rice Pudding	Nepali
34.	Kodoko roti	Finger millet	Baked millet flour; staple food	Nepali
35.	Kukur daine	Greebriet (Smilex zeylanca)	Pickle	Nepali
36.	Kegu	Peas	Pickle	Newar
37.	Kasalok	Sweet potato/yam	Boiled; staple	Lepcha
38.	Khuri	Millet/buckwheat flour	Roll with meat and vegetables; snack	Bhutia
39.	Kachila	Meat, spices, ginger, oil	Raw minced meat, mixed with spices and mustard oil; side dish	Newar
40.	Khuzom	Wheat, millet, maize	Baked on hot stone; staple	Lepcha
41.	Ken-tsong	Maize flakes	Roasted; snack	Bhutia
42.	Kwanti	Legumes	Cooked sprouted legumes	Newar
43.	Lakhamari	Wheat flour, sugar	Deep fried cookies	Newar
13.	Lauwa	Rice, vegetable	Cooked rice with vegetable; staple	Rai
45.	Laharay Timbur	Xanthoxylum oxyphyllum	Fruits, seeds; Pickle	Nepali
46.	Lapsi	Hog plum (Choerospondis axillaries)	Fruits; Pickle	Nepali
47.	Мото	Wheat flour with meat/vegetable	Steamed dumpling; staple	All
48.	Mongarbuk	Sweet potato	Boiled: staple	Lepcha
40. 49.	Malpua	Wheat flour, molasses, dahi, spices, <i>gheu</i>	Fried sweet pancake	Nepali
49. 50.	Nakima	Campylandra aurantiaca	Vegetable, pickle	Bhutia, Lepcha
50. 51.	Nya phachung	Fish	Fish grilled in bamboo; side dish	Bhutia, Lepcha
52.	Nya phachung Nya cham	Barley flour	Roasted; snack	Bhutia
52. 53.	Nya cham Nambongmuchi	Silam	Fried, ground, mixed with chili; dry pickle	Limboo
	•			Limboo Nepali
54.	Phaparko roti Phulaurah	Buckwheat Buckwheat	Baked buckwheat flour; staple	1
55. 56.	Phulauran Piranlu		Deep-fried, snack Boiled: staple	Nepali All
57.	Piraniu Patlesishnu/Souchya	Colacasia Nettle (<i>Urtica parviflora</i>)	Boiled; staple Boiled young shoots/flowers; soup	All
	, ,	Niger (Guizotia sp.)	Pickle	
58.	Philingo Phituk	5 (1)		Nepali
59.	Phituk	Rice/barley flour	Porridge with meat; staple	Bhutia
50.	Phashyagyari	Pork	Cooked pork; curry	Bhutia Lengha
51.	Po nguzom	Rice, fish, vegetable	Grilled in bamboo; staple	Lepcha
52.	Phaktoo	Macaroni	Macaroni, cooked with meat; soup	Bhutia
53.	Phando	Soybean	Whole soybean fried, grounded and cooked as <i>dal</i>	Limboo
54.	Rigichoboo	Potato	Boil and cooked well; staple	Sherpa
65.	Rayo sag	Mustard leaves (Brasicca spp.)	Fried vegetable; side dish	All
66.	Simaltarul	Cassava	Boiled; staple	All
57.	Shimrayo	Water cress (Rorippa nasturtium-aquatium)	Cooked young leaves; curry	All
58.	Sauneyningro	Fern (Diplazium polypodiodes)	Vegetable with chhurpi curry	All
69.	Siltimbur	Szechwan pepper (<i>Litsaea citrate</i>)	Fruits; pickle	Nepali

Table 1 (continued)

Serial Number	Ethnic food	Ingredient	Nature and use	Major consumers
71.	Sorongbeetuluk	Rice and nettle	Cooked as porridge; staple	Lepcha
72.	Shyaphaley	Wheat flour-meat	Stiff, fried, mixed with meat	Bhutia
73.	Thotne	Aconogonum molle	Young shoots; pickle	Nepali
74.	Takha	Buff meat	Cooked; pudding	Newar
75.	Tsampa	Barley	Ground roasted barley grains; snacks	Bhutia
76.	Titeningro	Fern (Arundinaria intermedia)	Vegetable with chhurpi curry	All
77.	Tama	Young bamboo shoot	Boiled, fried; curry, pickle	All
78.	Thukpa	Wheat noodle	Boiled, mixed with minced meat; stew/soup; staple	Bhutia, Lepcha
79.	Wa	Pulses, soybean	Roasted; snack	Newar
80.	Wachipa	Feather of hen; flowers of <i>damlapa</i> plants with rice	Fried with boiled rice; side dish	Rai
81.	Yamari	Rice, spices	Steamed rice dumpling	Newar
82.	Zebre	Rice, gheu, milk, molasses	Sweetened rice rings	Nepali
83.	Zhero	Wheat	Deep fried; snack	Bhutia, Tamang

types of common and uncommon nonfermented ethnic foods produced and consumed by different ethnic groups in Sikkim in India (Table 1). Some of these ethnic foods have been commercialized and have become popular among all communities and even in other parts of the country. Some of these ethnic foods are documented in the following sections.

3.1. Achar

Achar (or pickle) is a highly spiced condiment perfumed with ginger, garlic, and hot chilies, and is considered indispensable to a complete Sikkimese meal. Achar may use either raw or cooked vegetable, and it may be preserved or prepared fresh. Common traditional achar dishes include silam ko acchar, bhatmas ko achar (ground dry seeds of soybeans), sidra ko achar, timur ko achar, philingey ko achar, tama ko achar (young bamboo shoot), and dhania ko achar (cilantro pickle).

3.2. Alum

Alum (Fig. 1b) is a special dish of the Tamang caste of the Nepali community and is mostly consumed during festivals. It is a paste of



Fig. 1. (a) *Phulaurah* is split black gram-based fritter eaten as a snack. During preparation of *phulaurah*, split black gram is soaked overnight; seed coats are removed and ground to a paste. Asafoetida (hing, cumin seed (jeera), ginger, chilies, salt and cup of water are mixed to make a thick batter, and is deep fried until it becomes golden brown. It is served hot with *silam ko achar*. (b) *Alum* is a special dish of Tamang caste of Nepali community mostly consumed during festivals. During preparation of *alum*, seeds of finger millet or buckwheat are ground into thick paste, molded and made into rolls, and placed in boiling water for 1 hour. *Aum* will be ready for consumption. In Sikkim it is commonly consumed during *Sonam losar*, the New Year festival of Tamang.

finger millet or buckwheat made into rolls then placed in boiling water until it is ready to eat.

3.3. Chambray

Chambray is typical Nepali-type *pulao* rice prepared from local varieties of rice. It is prepared by soaking rice with bay leaves and cinnamon for 20 minutes. First, ghee is heated in a wok, then all ingredients are added; next, soaked rice is added, and the mixture is fried for 5 minutes until the ghee separates. Water is poured in slowly, and the dish is left to simmer until the rice is cooked. *Chambray* is eaten with *tilkoalu*.

3.4. Chatamari

Chatamari is a rice pancake common to the Newar caste of the Nepali community. During the preparation of *chatamari*, rice flour is mixed with water and a smooth batter is made. The batter then is spread on hot butter, and the pancake is prepared. *Chatamari* is served plain or with a topping of ground meat.

3.5. Chhwelaa

Chhwelaa is a typical boiled buffalo meat dish of the Newar community. During its preparation, a whole lump of meat is boiled and cut into pieces. It is mixed with a paste of spices, kneaded thoroughly, and then fried in oil. Fried fenugreek seeds and turmeric are garnished with meat. It is served with *chiura* (beaten rice) during festivals, feasts, or special occasions. There are two types of *chhwelaa*; *hakuchhwelaa* is plain, whereas *manuchhwelaa* is prepared by roasting the buffalo meat on charcoal. Besides *chhwelaa*, Newar cooks are also known to prepare other meat dishes such as *sypati, kimila, gorma, chula, tahkha, naga,* and *pupala*.

3.6. Dheroh

Dheroh is a popular porridge-like staple food among the farmers of Sikkim, who find it more filling and nutritious than the common staple diet of rice. Millet flour is sometimes substituted for corn flour. Dheroh is eaten with vegetables, achar, dahi, and mohi. Dheroh and gundruk together form the most typical food combination among the peasants in Sikkim. Dheroh is prepared by boiling the corn flour and cornmeal with butter and salt, and cooking until the porridge thickens and starts separating from the edges of the pan. It is served hot.

3.7. Falki

Falki is a special meat-based dish of the Gurung caste of the Nepali community. During its preparation, legs or head of sheep,

preferably parts with more bones, is fried with green boiled-dried maize, tomato, onion, ginger, and turmeric powder, and then cooked to make curry. It is consumed with boiled rice.

3.8. Foldong

Foldong is a rice ball commonly consumed by Tamang people. Rice is mixed with clove, cardamom, dry fruits, and butter, and then made into a round flat shape. It is consumed as cake. *Foldong* is an essential food item to be presented to a bride's parents to solemnize the marriage among Tamang people.

3.9. Kodoko roti

Kodoko roti is typical pancake prepared from finger millet locally called *kodo*, which is served with different varieties of pickles. The finger millet flour sugar is mixed with one cup of lukewarm water and then kneaded to make a thick paste. *Ghee* is first heated in a frying pan, then a tablespoon of this paste is spread into the greased frying pan. It is cooked over medium heat and then removed. The same process is repeated with the remaining mixture. *Kodoko roti* is served with pickles.

3.10. Khuzom

A bread or *khu* is prepared from buck wheat, millet, and corn or wheat powder. The powder is mixed with water to make a liquid. The liquid powder is placed on a hot flat stone, which is then kept in an oven (this smooth flat stone is taken from a riverbank). The liquid is baked on the hot stone and becomes a *khu*. It is eaten with vegetable and mixed ground chili. Corn powder mixed with a small amount of water, salt, and ground chili is packed with green leaves and placed inside a burning fire covered with ashes and charcoal. It is baked for 20 minutes, but the stronger the fire, the shorter the baking time. This is commonly consumed by Lepchas.

3.11. Kwanti

Kwanti is a special food among Newar. This is prepared by mixing nine varieties of sprouted pulses and beans. Generally, there should be nine types of beans in *kwanti* (Fig. 2), namely, white gram (*kabulichana*), dry peas, soybeans, black-eyed beans (*lobhia*), white kidney beans (*safedrajma*), green gram, black gram, lentil, and moth beans. Soybeans are soaked in water for 4–9 days, whereas other



Fig. 2. Nine types of beans packed together for preparation of Kwanti.

beans are soaked only for 1–2 days. Sprouted beans are cooked with butter and spices to make a thick soup. It is served with boiled rice. It is eaten in "kwantipurnima," which usually falls in August.

3.12. Momo

Momo (Fig. 3), steamed dumpling prepared from wheat flour and meat or vegetable, is a very common Tibetan food. Momo has already entered commercial production and is well placed in menus of local hotels and restaurants. First, tomato is boiled, then crushed and ground with green chilies in a stone mortar. Salt is added and mixed well to give a thick paste of tomato acha. Next, it is mixed well with wheat flour with two cups of water and kneaded into a stiff paste, then rolled out on a floured board until it flattens into a very thin sheet. The rolled dough should be about 2 ft². Then it is cut into a circular shape with the rim of a teacup. Place a circle of dough on your left hand, slightly stretch the edges, and place about a teaspoon of filling in the center. Then, with your right thumb and forefinger pleat the dough together over the center of the meat, forming a pinwheel design. Your left thumb is used to tuck the minced meat down as you go, and the dumpling turns on your palm as you pleat around it. A special steamer locally called moktu is required. Filled-up dumplings are placed on oiled racks, slightly separated in the moktu. The bottom part of the moktu is filled with water, and the dumplings are steamed for 20-25 minutes. Momo are ready to serve hot. They are eaten with meat or vegetable soup, dipped in tomato achar.

3.13. Pakku

Pakku, a typical mutton curry of this region, is served with cooked rice or *selroti*. First, mutton pieces are marinated with paste, then salt and turmeric powder are added, and the mixture is left to stand for 20 minutes. It is fried in edible oil and cooked for an hour in low heat. It is served hot with cooked rice or *selroti*.

3.14. Phaparko roti

Phaparko roti is a traditional buckwheat *chapati*. First, all ingredients are mixed with one cup of water and kneaded to make a thick paste. A heap of paste is spread over a big banana leaf, then covered by another banana leaf, and finally baked in a pan for 1 minute. Next, the partially baked dough is transferred with the



Fig. 3. Momo is served with hot soup.

banana leaf to an earthen oven in a vertical position and left for 3 minutes; the banana leaf is removed while eating. *Phaparko roti* is served with *Philinge ko achar* or *Silam ko achar*.

3.15. Phulaurah

Phulaurah (Fig. 1a) is split black gram-based fritter eaten as a snack. Split black gram is soaked overnight; seed coats are removed and ground to a paste. Asafoetida (hing), cumin seed (jeera), ginger, chilies, salt, and a cup of water are mixed to create a thick batter. After heating oil, a tablespoon of the batter is deep fried until it becomes golden brown. It is served hot with *silam ko achar*.

3.16. Ponguzom

Ponguzom is also a traditional food of the Lepcha. This food is prepared in a bamboo. Any raw food such as rice, fish, and vegetable is placed inside a green bamboo, and salt is added. The open edge of the bamboo is covered by green leaves, which are then tied with a string. The bamboo is then placed over a burning fire and is continually turned until the green bamboo changes color (usually brown). The bamboo is taken out from the fire and cut open horizontally so that the item inside the bamboo remains undisturbed. The baked food inside the bamboo is ready to be eaten.

3.17. Su zom

Su zom is a traditional meat-based food of the Lepchas. In ancient days, meat was baked under the earth. This food is called *suzom*. Depending on the quantity of the meat, a pitch is prepared with a depth of at least 2 ft. Flat stones are placed at the bottom of the pitch. Then, banana leaves or other leaves are placed on the stone. The chopped meat pieces are placed inside the pitch and hot stones burned in the fire are kept on the meat. The hot stones are covered with leaves and the pitch is filled with earth. The hot stones bake the raw meat within a night or a day. The meat inside the pitch is then taken out.

3.18. Thukpa

Thukpa or *Gya-thuk* is a typical Tibetan-style noodle soup. *Thukpa* or *Gya-thuk* is a very popular local dish that is also available in all restaurants and hotels in these regions. First, chopped onions are fried with garlic and green chilis; then minced meat is added. The mixture is fried for 10 minutes, and salt is added according to taste. Then it is kept aside after cooking. Next, 4 L of water is boiled vigorously, and noodles are dropped in. Boiling continues for 2 minutes, with occasional stirring. After boiling, the noodles are drained through a large sieve and cold water is poured over them to prevent the noodles from sticking. After squeezing out the extra water, the noodles are transferred to a serving bowl. Hot soup is then poured into the bowl with noodles. Finally, the fried meat—onion mixture and finely chopped green onion leaves are placed on top of it. *Thukpa* or *Gya-thuk* is ready to serve hot.

3.19. Wachipa

Wachipa (Fig. 4) is a typical Rai (caste of the Nepali community) food consumed as a side dish. There are two types of *wachipa*. (1)



Fig. 4. Wachipa is served in fig leaf.

Nonvegetarian *wachipa* dish, which is fried rice with minced chicken and then mixed with powder made from burnt chicken feathers, is consumed during special occasions. (2) Vegetarian *wachipa* dish is very similar to *wachipa* fried rice, except that it does not contain meat or the powder from burnt feathers. Leaves or flowers of a type of plant called *Damlapa* is mixed in place of meat. This type of *wachipa* is usually prepared during May–June and August–September. The Rai people believe that consumption of *wachipa* cures body aches.

The tradition and culture of food preparation at the household level have to synergize with regulatory standards. It is important to interface traditional foods with health, safety, nutrition, and cost. Value addition to traditional foods through interface of food science and technology for better products is the need of the day. We need to adopt a much larger perspective for the ethnic foods of Sikkim with a global approach. Traditional food has to be traditional and has to be promoted while also considering ethnic demand and cultural interface, and we also have to respect the skill and expertise of ethnic peoples for building up a global approach to traditional foods. Nutritional analysis and process technology development including safety and packaging of these ethnic foods of Sikkim are in the pipeline. This may boost ethnic food tourism in the region, which could in turn enhance the regional economy.

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