

Consumption Pattern of Traditional Fermented Foods in the Sikkim Himalaya

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In the Sikkim Himalayan regions of the Darjeeling hills and Sikkim the unique dietary culture of different ethnic groups of people use traditional fermented foods and beverages to provide basic components of diet with diverse characteristics of nutrition, flavour, palatability and texture. For many centuries the people of these regions prepare and consume varieties of traditional fermented and non-fermented food products (Tamang *et al.* 1988; Tamang 1998). The *Bhat-dal-tharkari-achar* (rice-legume soup-curry-pickle) constitute the daily food supply in the meal. Rice is the staple food. The cereal-based fermented products are mostly consumed as alcoholic beverages and the amount of consumption and product characterisation of various fermented beverages of the Sikkim Himalaya has been documented (Tamang *et al.* 1996). However, data on consumption amount of traditional fermented foods in the Sikkim Himalaya are not available so far. The aim of this research is to assess the consumption pattern of different non-alcoholic traditional fermented foods of these regions.

Survey was conducted in randomly selected 270 houses in three hill sub-divisions of the Darjeeling hills of West Bengal and 315 houses in four districts of Sikkim representing the ethnic communities of the Nepalis, the Bhutia and the Lepcha, using an questionnaire during 1996-97. Amount of fermented foods consumed in every meal by each person was weighed directly by portable weighing balance (Ishida, Germany) and daily per capita consumption was estimated as g/day. Feeding frequency of fermented foods by each family was also recorded in percentage. Annual home production of each fermented food was calculated on the basis of population as per census record (Census of India 1991a and b). A database was developed from the field data collection using FoxPro 3.1 software.

In the Darjeeling hills, average consumption rate of *Kinema* was 80.6 %, *Masyaura* 17 %, *Gundruk* 93.8 %, *Sinki* 86.1 %, *Chhurpi* (soft variety) 74.4 %, *Chhurpi* (hard variety) 59.5 %, *Dahi* 85.6 %, *Selroti* 88.6 %, and *Sukako masu* was 55.8 %, respectively (Fig 1). In Sikkim, average consumption rate of *Kinema* was 78.9 %, *Masyaura* 11.4 %, *Gundruk* 92.4 %, *Sinki* 85.2 %, *Chhurpi* (soft variety) 91.8 %, *Chhurpi* (hard variety) 44 %, *Dahi* 84.7 %, *Selroti* 74.7 %, and *Sukako masu* was 67.5 %, respectively (Fig 2). It was observed that *Kinema*, *Masyaura* and *Selroti* were not eaten daily. *Kinema*, fermented soybean which is a source of high plant protein food in the local diet is usually consumed 2-4 times in a week. Consumption of *Masyaura*, fermented blackgram is confined to very few places. *Selroti*, fermented rice batter which is deep fried, confectionery bread was found to be eaten mostly in festival and special occasions. The survey report showed that 45.3 % of people prepared the fermented foods for home consumption, and only 28.3 % purchased the fermented products from local markets in the Darjeeling hills. In Sikkim, 53.7 % prepared at home, and only 19.8 % purchased the fermented products from markets. These figures suggested that production of the traditional fermented foods is mostly done at the level of individual households, although some rural women are economically dependent

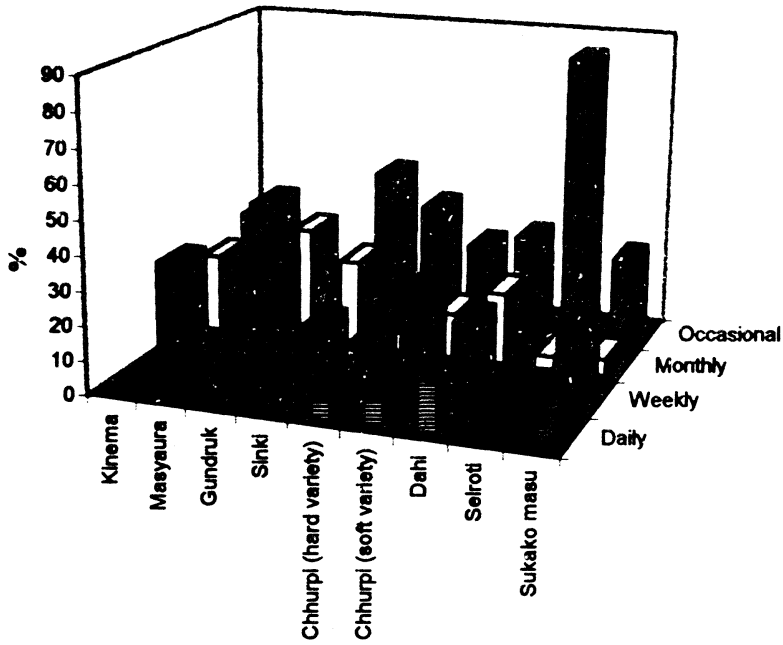


Fig 1. Feeding frequency of traditional fermented foods in the Darjeeling hills
Occasional means every 3 months.

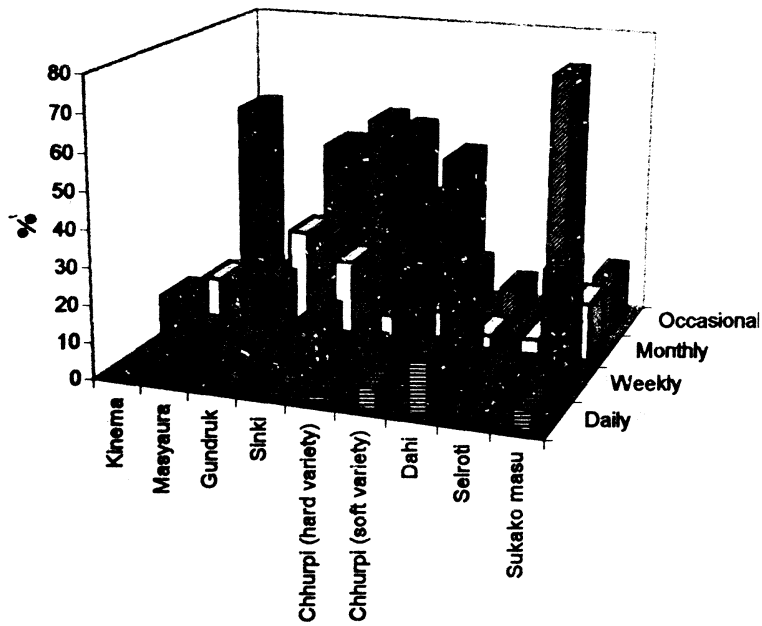


Fig 2. Feeding frequency of traditional fermented foods in Sikkim

on these products. Average per capita daily consumption of various types of traditional non-alcoholic fermented foods along with annual home production of each product is given in Table 1.

Table 1. Per capita consumption and annual home production of some fermented foods

Product	Darjeeling hills		Sikkim	
	g/day	Production ton/annum	g/day	Production ton/annum
Kinema (fermented soybean food; side-dish curry)	3.3 (2.3-4.7)	829	2.2 (0.7-3.7)	327
Masyaura (fermented blackgram; condiment)	0.04 (0-0.06)	10	0.06 (0-0.08)	9
Guṇḍruk (fermented leafy vegetable, sour taste; soup/pickle)	0.6 (0.4-0.7)	151	0.4 (0.2-0.8)	60
Sinki (fermented radish, sour taste; soup/pickle)	0.3 (0.2-0.5)	75	0.3 (0.1-0.4)	45
Chhurpi (soft variety) (fermented milk cheese-like product; curry)	6.9 (5.4-9.8)	1734	9.9 (8.1-11.7)	1469
Chhurpi (hard variety) (fermented milk product; chewy hard mass)	1.3 (0.8-1.7)	327	0.6 (0.2-1.1)	189
Dahi (fermented milk product; savory beverage)	40.0 (30.0-52.4)	6974	60.5 (38.0-80.0)	8976
Selroti (fermented cereal product, deep fried confectionery)	4.0 (3.6-7.3)	1005	3.6 (2.0-6.0)	534
Sukako masu (fermented smoked meat; curry)	4.5 (2.8-6.4)	1131	10.0 (6.5-15.0)	1513

Data represent the mean values. Ranges are given in parentheses

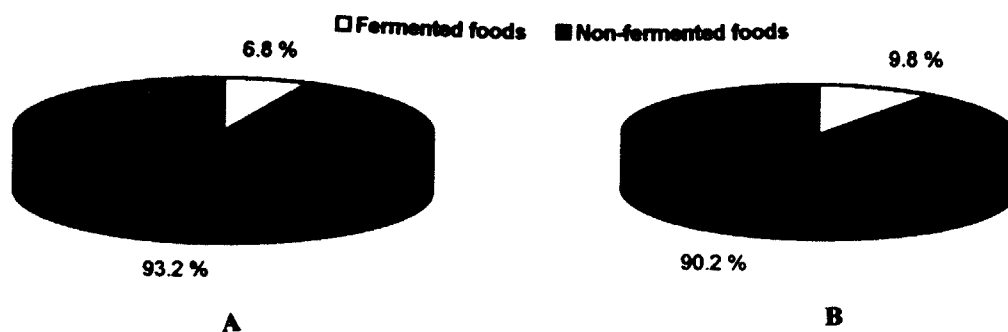


Fig 3. Percentage of daily total food consumption in local meal (A) in the Darjeeling hills and (B) in Sikkim

Amount of per capita consumption of non-fermented foods in Sikkim was 897.1 g/day as recorded by PFNDAI (1997). Approximate amount of daily per capita consumption of non-fermented foods in the Darjeeling hills was about 900 g/day. The estimated amount of non-alcoholic fermented foods consumed was 60.9 g/capita/day in the Darjeeling hills, and 87.6 g/capita/day in Sikkim, respectively, thus representing 6.8 % and 9.8 % of the total daily food consumed in local diet, respectively (Fig 3). However, few fermented pickles such as *Mesu* (fermented bamboo shoot) and *Khalpi* (fermented cucumber) have not been included in this study. Nutritional profile of most of these traditional fermented foods are yet to be analysed, undoubtedly these lesser-known traditional fermented foods play an important role as source of protein, calories, minerals and vitamins in the diet. Since such fermented foods have been rooted in a long tradition as part of dietary culture, their consumption might not be effected from year to year.

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