



INDIGENOUS TECHNIQUE FOR PREPARATION OF DRY FISH AND PRODUCTS BY DEORI COMMUNITY

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ABSTRACT

The tribes of north-east India are store houses of traditional knowledge about food, medicine, agriculture etc. Among them, Deori tribe is such a group having unique ethnic foods preparation from freshwater fishes. These are old practice and common among the Deori community of upper Assam. Usually, womenfolk are involved in traditional dietary preparation from variety of dry fish. For the preparation of fermented fish product (*chucha*), medium and small fish species are commonly used. These fishes were washed and sun-dried for 2-3 days without salting. Later on dry fishes were ground in a wooden grinder and convert it in to a homogeneous powder. Again, it was mix up with either fresh or dry stem of *Colocasia esculenta* and grounded. Grinding continued until the mixture becomes a coarse paste. During the process, *Capsicum chinense*, ginger, garlic etc. were to be add for flavor and test and the products are served in bamboo cylinder. They are ready for consumption as well as used for to cure a variety of ailments and used as ethno-medicine.

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1 Introduction

Traditional processing of fish such as fermentation, salting, drying and smoking are the principal methods of fish preservation in Southeast Asia (Cooke et al., 1993). In the Indian subcontinent, the fermented fish, other food and beverages, prepared by using local food crops and other biological resources have been going on since time immemorial and is a common practice even today (Roy et al., 2004). Approximately 225 tribes out of the 450 tribes of India reside in north eastern India (Chatterjee et al., 2006). The people of these states (NE-India) have a very rich reserve of traditional knowledge, owing to their livelihood in the hilly terrains. These areas are most dominated by tribal peoples who shared about 75% of the population of the region (Agrahar-Murungkar & Subbulakshmi, 2006). Fermentation is one of the oldest and most economic methods of preserving the quality and safety of foods. Indigenous people have been using microbes unknowingly for various purposes (Sekar & Mariappan, 2007). Moreover, the fermented fish and its products have provided not only bio-nutrients, minerals and enhancement of flavour and aroma but also it increases digestibility and exert health promoting benefits (Jeyaram et al., 2009). The preparation of the fish drying practices and improvement of the product quality was followed in different tribal regions of India, have been studied by many workers (Kalaimani et al., 1988; Karthikeyan et al., 2007; Vijayan & Surendran, 2012).

As far as the north east India is concerned, there are a few reported on the preparation of dried fish and ethnic food items. Indigenous fermented foods contribute a large portion of daily food intake in the region. The fermented fish product has several names called *hukati* and *numing* in Assam; *shidal* and *sepa* in Tripura and Mizoram; *Tungtap* in Meghalaya; *ngari* and *hentak* in Manipur. The ethnic people of this region prepare and eat traditionally processed smoked, sun-dried, fermented and salted fish products (Thapa, 2002). Some of the notable workers of these-field are Sarojnalini & Singh (1988); Muzaddadi & Basu (2003); Das & Deka (2012); Muzaddadi & Basu; (2012), Kakati & Goswami (2013); Taye et al. (2013) and Sharma et al. (2013). Again, Jeyaram et al., 2009 recorded the traditional fermented foods of Manipur and fish product's associated with unique group of micro flora.

In Assam at least twenty ethnic tribe groups are found in plains and hilly region of the state. Their traditional knowledge regarding to agriculture, food, medicine and natural resource management was unique one and differ from the other peoples of the country. Deori is such tribes which have expertise in preparation of a wide variety of food items. One of the prominent fermented fish products is *chucha*, a unique cuisine prepared from dry fish and stem of *Colocasia macrorrhiza*. Dry fish is known as '*naduba siyan*' and *Colocasia* as '*midiji*' in Deori dialect. However, there is no such a record of the preparation of fermented dry fish by Deori tribe and the literature is scanty in the region and. Therefore, an attempt has

been made to describe the traditional preparation methods of *chucha* (fermented fish product) and *naduba siyan* (dry fish) by Deori tribe community.

2 Materials and Methods

An extensive field survey was carried out in Namdeori and Upordeori villages, Jorhat district of Assam, about 16 km away from Jorhat town during March, 2013 to January, 2014. The information and other related data were gathered and collected by interviewing the skilled villagers. Women folk were employed for interview and documentation, since they are primarily involved in the preparation of dry fish and their product. A slight variation in the procedure of preparation in *chucha* among the villagers was noticed during the study period. A common method has been worked out after eliminating the insignificant ones. The raw materials used were fish, pot, bamboo container, *Colocasia esculenta*, leaves *Pteridium acuilinum*, cover paste. Procedure of preparation, mode of consumption, ethno-medicinal uses were noted down at the time of study.

3 Results and Discussion

The Deori women prepared dry fish mostly in monsoon seasons either after recession of flood or after reduced water levels of various water bodies in winter. Miscellaneous varieties of fish species are used for this purpose. *Chucha* is fermented fish products and often made by woman in this time (September-November) using this surplus catch. Some of them prepared it round the year when the fishes are available for their own consumption. Preparation of *naduba siyan* (dry fish) and *chucha* (fermented fish product) involves various steps and womenfolk of the tribe mix some herbs to cure several ailments.

3.1 Preparation of naduba siyan (dry fish)

As discussed and interviewed Deori tribe, dry fish is prepared by a combination of method like salting-drying and drying-smoking. Most of the fishes were collected from water bodies like local ponds, wetlands and rivers. Normally preferred fish species are *Puntius sophore*, *Mystus tengra*, *Trichogaster fasciata*, *Trichogaster labiosa*, *Amblypharyngodon mola*, *Heteropneustes fossilis*, *Clarius batrachus*, *Lepidocephalous guntea*, *Channa punctatus*, *Channa gachua*, *Gudusia sp.*, *Labeo bata*, *Macrognathus aral*, *Macrognathus pancalus* etc. After collection, fishes were dressed to remove scales, fins, intestines except small size fishes and washed 2-3 times with clean water. Then fishes were mixed with salt and spread uniformly on a bamboo tray (round and perforated) known as *saloni*. Then *saloni* was either sundried for 2-3 days or might be extended upto few more days depending on the prevalence of weather condition of the particular region or it can be dried over kitchen fire place (*xuhal* or *dudepati*) on a bamboo rack known as *giso* in their dialect.

There is another method in which both clean dressed and undressed fishes were not mixed with salt and allow to sundried. After sun drying for 2-3 days they were placed over fireplace on bamboo rack. Drying and smoking was continued until fish become moderately hard. After proper drying they preserved the dry fish in air tight earthen or wooden container for future use.

3.2 Preparation of chucha (fermented fish product)

For the preparation of *chucha*, small fish species (Table 1) are commonly used and it may be dressed or fresh after cleaned (Figure. 1A) and sun-dried without salting for 2-3 days (Figure. 1B). Then, placed over fireplace (*dudepati*) on a round perforated bamboo tray (Figure. 1C) until fishes becomes moderately hard.



Figure 1A Fresh fish species.



Figure 1B Sun-dried without salting.



Figure 1C Dried fish on perforated bamboo tray.

Later, dry fishes are ground with the help of wooden grinder called *dhekee* or *uraal* and the dry fishes reduced to a homogeneous powder. At the same time stem of *Colocasia esculenta* were peeled and sliced into short pieces and sun dried for one day.

Table 1 Fishes used in *chucha* preparation.

Scientific name	Local name
<i>Gudusia chapra</i>	Karati
<i>Amblypharyngodon mola</i>	Moa
<i>Aspidoparia morar</i>	Bariala
<i>Chela laubuca</i>	Laopota
<i>Esomus danricus</i>	Darikon
<i>Parluciosoma doniconius</i>	Danikona
<i>Salmophasia bacaila</i>	Selkona
<i>Botia dario</i>	Gethu
<i>Lepidocephalichthys guntea</i>	Botia
<i>Mystus tengara</i>	Ronga singora
<i>Chanda nama</i>	Chanda
<i>Glossogobius giuris</i>	Patimutura
<i>Trichogaster fasciata</i>	Kholihona
<i>Puntius sophore</i>	Puthi
<i>Puntius ticto</i>	Sakari puthi
<i>Labeo bata</i>	Naro



Figure 1D Products in bamboo cylinder.



Figure 1E The contents covered by dry paddy straw.

Flame dried dry fish powder and *Colocasia* stems are again grounded using dhekee or uraal. Grinding continued until the mixture becomes a coarse paste. The resultant deep green coloured paste is then manually stuffed in bamboo cylinder locally called *bahor chunga* (Figure. 1D). Some of products also add *bhoot jolokia* (*Capsicum chinense* Jacq), ginger, garlic etc for flavour and tasty. After filling, the content is covered with raw leaves of bladder fern locally known as *biholongoni* belonging to the genus *Cystopteris* or dry paddy straw (Figure. 1E) or by dry banana leaves or covered the mouth of the bamboo cylinder air tight with fire ash to prevent it from microbes. The sealed bamboo cylinders are placed on the *giso* (bamboo made rack on the kitchen fire). After 3-4 months the prepared chucha is ready for consumption.

Preparation of dry fish and fermented products is done generally in monsoon and post monsoon months when fishes especially the small sized fish are available in plenty and comparatively cheaper. However, these economically important small fishes are highly perishable and are spoilt within a short period of time. Preservation of small fishes by drying and making by-products out of them is obviously a highly effective way for sustainable utilization of limited fishery resource of the state.

The Deori community preserves these for lean season when availability of the small fishes declines sharply and consequently, prices become beyond the reach of general masses. Since most of the people of the tribes are economically under developed, they cannot afford to buy fish during this season. Consumption of chucha and dry fish is an alternative protein diet during this season.

During the preparation, it was observed that proper hygiene, maintenance and cleanliness of processing were strictly followed. Otherwise it leads to reduction of quality and medicinal value. It also reveals that the fermented products were prepared without salt. No salt is added during the processing indigenous fermented fish product of Southeast Asian countries (Muzaddadi & Basu, 2012). The traditional salt-free fermented fish product available in the markets of North Eastern states have a high nutritive value, as the protein, fat and ash content are observed to be high (Kakati & Goswami, 2013).

Various ethnobotanical resources are used in the preparation of *chucha*. They used bamboo container for packaging the material which is eco friendly and gives a particular flavour. It also protects the product from insects, rat, cats etc due to having a hard surface. Use of fern leaves (*Pteridium aquilinum*) during drying and packaging of the product has significance. They incorporate fern leaves as insect repellent and it is used as local painkiller. The Deori people use chucha to cure various ailments. It is generally used in local remedy for malarial fever. It is more effective in this case that the chucha prepared from naro (*Labeo bata*). Since *biholongoni* (fern leaves) is incorporate to *chucha*, it is believes that it also effective against pain. So far, there is no record of scientific

proof on this belief. Cuisines prepared from *chucha* contain less oil, no artificial colour, flavour and preservative. Therefore it is a healthy food product for heart and high blood pressure patients.

Conclusion

Preparation of *chucha* is an eco-friendly method and it may consider as healthy food product. But its popularity is confined to particular tribes only. If prepared scientifically with attractive packaging for retail sale, these would add the value of products. Finally, it would definitely capture the urban markets of this region and women get more economically benefitted.

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