

A study on scenario of consumption of fermented foods and beverages in Barak valley region

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In Northeast, rich cultural diversity and Ethnic Groups are found in Barak valley of Assam. For the presentation, taste and nutritional enrichment, each Ethnic Group possesses its own technique of fermenting food materials and has been carrying this tradition from time immemorial. These lesser acknowledged fermented foods and beverages are at the risk of extermination due to the impact of globalization and its documentation is very requisite fragment before its further application in food processing industry. Fermented foods have also great potential in maintaining health and preventing diseases. A variety of traditional fermented foods and beverages at the household level are produced in the Barak Valley region. These include cereal based fermented food (Jilepi, Amriti, Pantabhat), fermented legumes (Kumrabori), fermented vegetable (Gunder and Sinki Matta), fermented bamboo shoot, fermented fish and alcoholic beverage (Laupani, Ju). Mainstream of Ethnic population such as Bengali, Dimasa, Manipuri, Nepali, Assamese live in the forest eco-system having own socio-cultural pattern, tradition and typical food habits. Increase in intake of fermented foods in the regions during the lockdown period in connection with the Pandemic COVID-19, has proved that people can survive taking fermented foods irrespective of all categories of income level. A petite effort has been made through this paper in providing written record about the fermented foods and alcoholic beverage along with its socio-cultural significance of the region.

Key Words : Fermented foods, Fermented beverages, Traditional knowledge

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INTRODUCTION

The Barak valley in Southern Assam is comprised of three districts namely Cachar, Hailakandi and Karimganj. Among these, Cachar is the largest and Hailakandi is the smallest districts with total geographical areas of 3786 sq. km and 1327 sq. km, respectively and that of Karimganj district is 1809 sq. km as per 2001 Census. It is also inhabited by various Ethnic Communities such as Bengali, Dimasa, Manipuri, Nepali, Assamese

with the Bengali Community as the dominant group. It is a large reservoir of tradition of fermented foods owing to its rich ethnic diversity and also due to the availability of surplus bio-resources in the region. Fermentation preserves the food and produces beneficial enzymes, B-Vitamins, Omega 3 fatty acids and various strains of pro-biotics.

Natural fermentation of foods has also been shown to preserve nutrients in the food and break the food down to a more digestive form. Without having any scientific knowledge about micro-organisms, local people develop many foods of their choices and know what really need to be done to get the desired products. The fermented foods consumed by the people of this region are intimately

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connected to virtually all aspects of their socio-cultural, spiritual lives and health.

Hence, the paper aims to document the various properties followed by different ethnic communities of the Barak Valley region in the production of their respective fermented products.

METHODOLOGY

Explanatory Research Design was followed to carry out the study. To study the socio-cultural and ecological dynamics of traditional foods, fermented foods, the qualitative approach was adopted. A multistage sampling procedure has been applied to select the final sample of the study. Total village sample including AAGY Villages was 28 with the help of GP Presidents, Block Development Officers, Junior Engineers of Block Level and rural people were selected randomly (Total 140) for the interview and focus group discussions.

Cereal based fermented food:

Panta bhat:

It is a rice based dish prepared by soaking rice, generally leftover, in water overnight which is traditionally served in the morning with salt, onion and chilli. It is consumed in Assam, West Bengal, Bangladesh, Bihar, Odisha and Tripura. It is a popular dish on the day of Paila Baishak (Bengali New Year) and covers all the classes of people (High, middle and low income groups). It has been described in documents from 17th Century, Panta bhat has more micro-nutrients than fresh rice. It is traditionally considered as beneficial in feverish conditions.



Jelebi:

It is a sweetened fermented product prepared by use of maida (refined wheat flour), *Dahi* and water. The fermented batter is deep fat fried in oil in spiral shapes and immersed in sugar syrup for a few minutes. This traditional food is prepared during marriage ceremonies and festivals *Lactobacillus fermentum*, *L. Buchneri* *Streptococcus lactis*, *S. faecalis* and *Saccharomyces* are found in the fermented batter. The pH decreases from 4.4 to 3.3 and there is a 9 per cent volume increase in the batter. During fermentation both amino nitrogen and free sugar decreases.

Milk based fermented foods:

Dahi :

Dahi is a naturally fermented milk product obtained from boiled cow or buffalo milk and soured using lactic cultures as *Lactococcus lactis* spp. *Lactis*, *Lactococcus lactis* spp. *Cremoris* and *L. diacetylactis* it used separately or in combination. It is used in daily diet as a potential source of B-complex vitamins, folic acid and riboflavin. *Dahi* is rich in lactic acid bacteria and demonstrates the probiotic effect, which helps in intestinal health as helps in controlling diarrhea in children. Lactic acid bacteria produce bioactive compounds such as diacetyl, hydrogen peroxide and reuterin suppress the normal growth of undesirable flora especially *E. coli*, *Bacillus subtilis* and *Staphylococcus aureus*.



Mattha:

It is also known as *Chass* is one of the most traditional and favourite coolants of India. In English, it is known as buttermilk. It is made from yoghurt. It is one of the best resources of calcium for vegetarians and is also rich in proteins and vitamin B. It is made by natural bacterial fermentation of milk, In this process, the lactose of milk gets converted into lactic acid and this makes yoghurt more easily digestible than milk. It is very good coolant during summer. It helps to protect against sunstroke in the burning summer afternoon.



Legumes based fermented foods:

Kumra bori:

The necessary ingredients which are required to prepare this are pulse/grain legumes (Mash Kolo Dal), white pumpkin (Chal Kumra), water and salt. Bori making is a labourous process. Pulses are soaked in water the night before their skin loosens easily. The soaked pulses are pestled to dough and mixed with grated, smashed white pumpkin, water and salt proportionally to achieve the sticky texture required. After completing this process, Boris are prepared and dried on clean, rough cloth or bamboo sheets in the sun. It takes 3-4 days to make these usable.



Amriti :

It is a dessert popular in Bangladesh, West Bengal, Barak Valley that is made by deep-frying black lentils or Mung Dal flour batter in a kind of circular flower shape which then soaked in essence sugar syrup. This dish is not to be confused with Jilepi, which is made of comparatively thinner material and is sweeter than Amriti. Black Lentils or *Mung dal* is soaked in water for few hours, stone-ground into a fine batter and put aside for few hours. The batter is then poured into oil or *Ghee* in geometrical patterns. Before frying the batter, sugar syrup is prepared, usually flavoured with cardamom and saffron. The fried material is then dipped in sugar syrup until it expands in size and soaks up a significant amount of the syrup.



Fish based fermented foods:

Fermented fish is a traditional preservation of fish. Fish rapidly spoils or goes rotten, unless some method is applied to stop the bacteria that produce the spoilage. Fermentation is a method which attacks the ability of microbial to spoil fish. It does this by making the fish muscle more acidic, bacteria usually cease multiplying when the pH drops below 4.5.

Shidal:

It is a very popular fermented fish product due to its strong flavour. The appearance of the product is soild, bilaterally compressed and pasty and shape of the fish remains almost unchanged except little disintegration near the belly and caudal portion. The colour of the best quality product is dull white that gradually becomes slightly brownish to deep brownish on continuous exposure to air.



Vegetable based fermented foods:

Gundru and sinki:

Gundru and Sinki are traditional fermented food products prepared from leafy vegetables by the Nepali Community. The raw materials involved are mustered leaves, radish leaves, cauliflower leaves, earthen pots or buckets. During the month of November or December after harvesting mustard, the green mustard leaves radish leaves and cauliflower leaves are collected allowed to wilt, dried for 3-4 days, and then crushed. The crushed

leaves are kept in an earthen pot or bucket with some amount of water and then left for fermentation. The pot is kept in warm place, covered well and after 7 days, a mild taste indicates the completion of fermentation process. It is then taken out and sundried.

The material used in making sinki are radish tap roots, bamboo mat and grinder. First the tap roots of radish are cut into small pieces, washed with hot water and then sundried in bamboo mats for 3-4 days. The dried pieces are then packed in containers and kept inside the pit. The pit is covered with soil paste and left for 12 days for fermentation. Later sinki is taken out and put in aluminium pots and covered well with cloth. Both gundruk and sinki are good appetizers and mixed with soups and other dishes.

Mustard based fermented foods:

Kharoli:

It is a fermented food product prepared from mustard seeds (*Brassica campestris*) by the Assamese Community. The raw materials include black mustard seeds, earthen pot, cover plate and grinder. At first, mustard seeds are washed and dried. They are then grinded in *Dheki* (Traditional grinder). The grinded mustard seeds are then transferred to the earthen pot called Koloh. If the pot is new, it is hardened by burning it in furnace and locally made alkali called Khar, is added to this mixture. Next, the mixture is pressed properly and its mouth is covered by a plate. It is then for fifteen days for fermentation in the kitchen. After this due course of time, the desired product is formed. Kharoli can now be taken out and cooked as condiment and eaten as a side dish with rice. Ethno medicinally, it is also considered beneficial for gastrointestinal problems.

Beverages based fermented foods:

Fermented alcoholic beverages of different kinds are consumed by the tribal population of this district. Each tribe has its own traditional method of preparing fermented alcoholic beverages that has been passed on generation to generation. This customary has its roots in their socio cultural life and is found to be associated with many occasions like merry making, ritual ceremonies, festivals, marriages and funerals. These beverages have less significant health effects upon the hard working tribal population which may be credited to the medicinal properties of the herbs used in the preparation of starter cultures.

Traditional alcoholic beverages have immense socio

cultural significance and are used during various special occasions like marriages, birth ceremonies, festivals and funerals. These beverages stand for their unity, togetherness, integrity, friendship and affection.

Ethnic fermented foods and alcoholic beverages and drinks have been consumed by the ethnic people of northeast India for more than 2500 years. All the fermented foods are region-specific and have unique substrates and preparation methods. Locally available materials such as milk, vegetable, bamboo, soybean, meat, fish, and cereal are commonly fermented (Das and Dekka 2012).

Areca nut (Goimozza, mozatamul) based fermented foods:

Raw areca nut and betel leaves locally called Tamul pan or Goi Phatai is an important symbolic element in all the sections of people in Assam where it is considered as an offering of devotion, respect and friendship. It is used as a sign of welcome or thanks giving and is served on a special utensil called Sorai or Batha. It is also used in ritual purposes like pujas and in marriages as a symbol of togetherness. The fermentation of areca nut is done to preserve it for a long time, give a specific taste and remove the systemic effects of raw areca nuts. The raw materials include areca nut, leaflet of areca nut, jute bag, and cow dung. The fermentation of areca nut is done in two ways. In one method, a pit of 2.5 feet is dug and leaflet of areca nut are placed surrounding the side and bottom of the pit. Some amount of cow dung is spread over it where the nuts are put, covered with jute bags along with some soil and left for 3-4 months to ferment. After the due fermentation time, the areca nuts are taken out from the pit. If the method is done properly, areca nuts can be preserved for about 2 years or more. In other method of fermentation, the raw areca nuts are collected and then put in a jute bag. The mouth of the bag is made air tight and then this bag is soaked in water. A specific smell indicates the completion of fermentation by which areca nuts can be preserved for 3-4 months.

Bamboo based fermented foods:

These are quite popular among different tribes in many parts of Northern East India. There are many edible varieties of bamboos like *Arundinaria callosa*, *Bambusa nutans*, *B. pallida*, *B. polymorpha*, *B. tulda*,

Dendrocalamus hamiltonii, *D. giganteus*, *D. brandisii*, *Melocanna bambusoides*, *Dendrocalamus hookeri*, *D. sikkimensis*, *D. stictus* and *Phyllostachys manni*. Bamboo shoots are prepared by Dimasa, Naga, Manipuri and other tribes.

Fermented bamboo shoots products are rich in bioactive nutrients and possess functional probiotic properties as well as B-vitamin supplier to human body (Jeyaram *et al.*, 2010 and Jeyaram *et al.*, 2010).

The fermentation process is carried out in the months of May and June, when the new shoots form. The young bamboo shoots are collected, sheaths removed and are pounded or sliced into small pieces and put into a conical bamboo basket or in a silver sauce pan lined with banana leaves for two weeks. After two weeks, the fermented bamboo shoots are used in many ways, often in cooking meat and fish dishes. Dried fermented bamboo shoots are used for preparing various curries and pickles.

Khoricha:

It is fermented bamboo shoot product prepared by the Assamese Community. The raw materials include bamboo shoots, hollow matured bamboo stems opened from one side (Bambusa Balcoa), earthen pot, bamboo tray, dheki (traditional grinder) and banana leaves. First, the bamboo shoots are washed properly, peeled and then grinded. This grinded material kept in the earthen pots called koloh. Some amount of water is added to it and the mouth of earthen pot is covered with banana leaves and kept for 6-7 days for fermentation. This pot is kept in bamboo racks inside the kitchen. Another method of preparing Khoricha is by transferring the grinded bamboo shoots in hollow bamboo cylinder with a mouth closed with a piece of wood or piece of bamboo itself, which is then kept under a pond or spring safely for 6-7 days for fermentation. In due course of time, fermentation gets completed and it is ready to be used as food. For dry Khoricha, the fermented bamboo shoots are taken from the earthen pot, the water content is squeezed, and then sun dried in bamboo trays called Saloni. The dried Khoricha is then pickled by adding mustard seeds and locally available Raja or Naga Chillies (*Capsicum chinense*). The mode of consumption of Khoricha is similar to other bamboo shoots products and can be added in vegetables, dish, meat etc. to give a distinct flavour and tangy taste to the food. Khoricha pickle can also be eaten as a side dish.

Soiboom :

It is a traditional fermented bamboo shoots product prepared by the Manipuris which has a typical sour-acidic taste flavour and taste. It is mostly used for cooking with mustard oil, potatoes and spices for making curry. The preparation consists of various steps viz., selection and cutting of tender.

Shots from the grooves, removal of the outer skin, washing, cutting/slicing, fermentation inside the earthen pots and cooking. Initially, when the bamboo shoots are about 40-50 cm long, they are chopped off from the main stem. Properly cleaned bamboo shoots are cut or sliced into slices and then packed in banana leaves. The packets containing cut/sliced bamboo shoots are filled tightly inside the earthen pots, which are then closed and kept in a corner of the house for fermentation, which takes about 12-14 months. On the Indian subcontinent, the fermented foods and beverages are a primary part of traditional heritage and culture. Even today indigenous fermented food such as soybean products, bamboo shoots, fish, meat, vegetables, leaf etc. contribute to the large proportion of the daily intake of the people of the northeastern states of India (Jeyaram *et al.*, 2009).

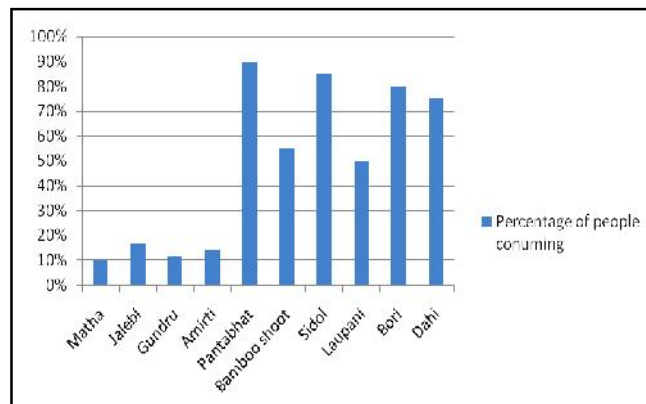


Fig. 1 : Graph of percentage of food consumption

Conclusion:

Fermentation Technologies play a vital role in ensuring the food security to all sections of people, particularly marginalized and vulnerable groups, which is achieved by combating malnutrition by providing protein supplements and other nutrients. Fermentation increases the range of raw materials that can be used as edible food products and removes the anti-nutritional factors. In this study, diverse forms of traditional fermented foods and beverages prepared by various ethnic groups have been noticed. Hence, the contribution of the fermented foods helps in sustainability of regional economy by boosting the livelihood of the rural people.

During the fear of pandemic COVID-19, it has been discovered that there is increase in intake of fermented foods in the regions during the lockdown period which has proved that people can survive taking fermented foods.

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