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Review Article

Some Indigenous Fish Preservation Techniques Practised in Jorhat District, Assam, India.

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ABSTRACT:

Preservation and processing is a very important for the commercial uplift of fisheries. When the catch is very large beyond the local demand, it becomes essential to preserve the excess catch. Generally, the fish farms or other fish capturing sites are located far off from the market place and there is chance of fish decomposition and the uncertainties of their sale in market. Again, many people consume preserved food as favourite delicacy. As being aquatic organisms fishes are very delicate and are vulnerable to microbial growth as well as enzymatic degradation. Due to these the fishes are preserved to keep them fresh for a long time, with a minimum loss of flavour, taste, odour, nutritive value and the digestibility of their flesh. Addition of some extra flavours also takes place during preservation as various traditional spices are added as preservatives.

Preservation of fishes is an age old practice in Assam and North eastern part of India. It is traditionally practiced mostly by the tribal people and ethnic groups of the region. This practice helps to fulfil the nutrient demands of families during the dry seasons when fish is least available. This paper attempts to find out various fish preservation techniques practiced by the local fisherman of Jorhat district. This indigenous technique may be helpful in employment generation if proper measurement is taken by the concerned authorities and NGOs.

Key words: Fish- preservation, processing, traditional, ethnic- community, economy.

[I] INTRODUCTION:

Assam - the land of the red river and blue hills is endowed with vast fresh water resources comprising of Brahmaputra and Barak river systems with their large number of tributaries. Beels, swamps, ditches and wet lands also provide a good amount of freshwater fishery resources which comprises a surface area of 3.91 lakh hectares[1]. As the state is situated in subtropical area, it receives a good amount of rain fall throughout the year which helps the fishes to grow in natural water bodies. Fish is one of the prime ingredients of Assamese cuisine. There is no ethnic community in the state which does not eat fish. Fish is marketed in Assam in three forms, viz. Fresh fish, dry fish and fish seed. These different forms of fish marketing play a very important role in state's trade and economy. Though the state has high demand for fish, yet it produces just about 5.7% of the total freshwater fish production in India. The State Fishery Sector has made consistent growth during the 11th Plan period registering an average growth of 6.4% in fish production and reached the level of 232 million kg in 2010-11.[3] Now a day a major part of fish demand of the state is satisfied by the fishes imported from other fish producing states like Andhra Pradesh, West Bengal, etc. of the country. But this gap between fish supply and daily demand is of course for large sized fishes.

A sizable quantity of small sized local catch of the state is preserved traditionally by way of drying, salting, fermentation and other local specific methods as there is lack of sophisticated fish storage and preservation facilities in the state[2]. Moreover, after recession of recurring flood and during community fishing fishes of different sizes are abundantly caught and sold at a cheaper rate and a lion's share of this are salted and sun-dried for preservation. Popularity of such products in the North-Eastern states is reflected by Jagiroad dry fish market of Morigaon district of Assam, which is considered as one of the largest dry fish markets in South East Asia and plays a key role in distribution of such dried and other preserved products in NE region. [4, 5]

Most of the producers of dry fish include poor fishermen and cultivators of the state. Tribal labourers and weaker sections of the society working in tea plantations, estates and coal mines etc. also go for part time fishing during rainy seasons. Their socio-economic and educational background compels them to go for low cost food rather than high cost quality products.

[II] THE STUDY AREA:

Jorhat district is situated in the eastern part of Assam state between 26°20'N and 27°11'N latitudes and 93°58'E and 94°33'E longitudes. It occupies 273047.15 hectares area with a mean annual rain fall of 2029 mm. It is bounded on the north by Lakhimpur district of Assam and on the south by Wokha and Mokakchung districts of Nagaland. The river Brahmaputra flows along the northern side of the district separating Majuli sub-division from the main land. All rivers in the district are of perennial nature.

[III] MATERIALS AND METHOD:

The study was done in Jorhat district which included village from all the six Tehsils of the District, which are Jorhat East, Jorhat west, Titabor, Teok, Marioni, and Majuli. The district covers an area of 2,852 square kilometres. 16.13% area of the district is covered by wet lands. People fish in these wet lands and preserve the extra collection for future use or sell them. Data were collected from the local people who practice fish preservation traditionally.

[IV] RESULTS AND DISCUSSION:

During the study it was observed that for preservation small sized fatty fishes having low market value are generally preferred. The large and medium size catches directly go to the local or nearby markets for fresh consumption. Moa (*Amblypharyngodon mola*), puthi (*Puntius sp.*), singora (*Mystus vittatus*),kawoi (*Anabus testudineus*), goroi (*Channa punctatus*), karati (*Gadusia chapra*), punga (*Tetradon*), chanda (*Chanda nama*), khalihona (*Colisa fasciatus*), darikona (*Rasbora daniconius, Danio rerio*), Tora (*macrognathus punctatus*), Boriala (*Aspidoparia morar*) are fishes of smaller variety which were seen to used for preserved food preparation.

Fishes are preserved as dry fish, semi dry fish, salted fish, smoked fish, fermented fish, etc. according to the quality, quantity, local environment and tradition of the community. The following traditional systems of fish preservation were observed during the study.

4.1 Fermented fish:

4.1.1 Preparation1: Simple Fermentation:

In an earthen pot, the required quantity of fish are put air tightly and after pressing it, the post is covered with the mud and left for over 3-4 months for fermentation. Sometimes, the whole earthen pot is covered with banana leaves or *tora* (a marshy plant with big sized leaves) leaves and mud to make it airtight. Then the earthen pot is opened and fermented fish is taken out for use. It is consumed along with fermented bamboo shoots and seasonal vegetables.

4.1.2 Preparation2 : Fermentation with oil:

Small sized fishes (mainly *Puntius* species) are washed with water using porous bamboo based baskets and allowed to drain. Next day morning, the head and bones are removed and

squeezed using gunny bags to remove excess water. These are kept in oil layered earthen pots. In old pots, only one coat is sufficient for fermentation, but for new pots 8 to 19 layers are coated in an interval of one week. Oil coating creates an anaerobic environment inside the pot by making it non porous. The dry fish is packed tightly inside the pot. After packing, pots are sealed with polythene sheet, fish scales, oil slurry, mud and cow dung slurry. These packed pots are kept in dark up to 6-12 months at room temperature. These fishes are used to prepare curry or used as curry additives.

4.1.3 Preparation 3: smoked fermented fish:

Small fishes are used as a whole and big ones are cut into smaller pieces. Fish is washed and put inside a bamboo inter node and tightly plugged with leaves and kept over the traditional wooden fire place for fermentation. Within few days, the fish becomes fermented and ready for use as a taste maker for vegetable curry. The fermented fish can only be stored for a period of one month as it rots gradually and becomes unpalatable.

4.2 Dried fish:

4.2.1 Preparation 1: Numsing- a traditional preparation of Mishing community

Numsing is a semi dried smoked paste like product prepared by Mixing fish, petioles of edible arum and spices. Small sized fishes are used to prepare numsing after cleaning and drying them.[5,6] Fishes are dried over specially made fire place or at the traditional kitchen smoking rack over the cooking platform till they become moderately hard. Tender leaves of Colocasia are dried under the sun for one or two days after proper cleaning. The dried fishes and the arum stems are then mixed at a ratio of 4:1 and red pepper (*Bhot Jolokia*), green chilli, ginger, garlic, etc. are added to it and made a coarse paste by grinding in traditional grinder (*Dhekee/ Ural*). Now this paste is shifted to a bamboo tube made up of a single inter node. Then it is stuffed with few edible fern leaves and dry straw. Then the upper part of the cane is sealed with clay and kept in the traditional kitchen rack over the clay oven for one month to allow maturation and then consumed. The product can be stored in the same bamboo tree container for 2- 3 years. Numsing is consumed with hot rice either by steaming it with other spices or by preparing curries with certain vegetables or simply with potato.

4.2.2 Preparation 2: Hukoti- a traditional preparation of community like Kaibarta, Moran,Motok, Deuri, Tea tribes, etc.

Small fishes are cleaned and mixed with salt and turmeric and over night. They are washed in the next morning and some salt and turmeric is again added and dried for a few days either by keeping under sun or by keeping over the traditional kitchen oven rack till the fish become hard. Then these are grind using traditional grinder (*Dhekee/Ural*) to a coarse powder and sieved to remove big bones and scales. Now edible colocasia stems or milk hedge stems are mixed with it and grinded again to make paste. It then stored in bamboo tubes by covering with banana or *tora* leaves and sealing with clay. Now the stuffed bamboo tubes are dried over the kitchen flame 5-6 times a day for few minutes. It is generally done after each preparation of meal or snack over the flame for convenience. The process is repeated for 2-3 months for proper fermentation and smoke drying. The product can be stored for 1-2 years at room temperature. Hukoti is consumed with rice by steaming, roasting or adding to meshed potato. It is sometimes added to chutnies as taste maker. Hukoti is used as ethnic medicine by the villagers to relief pain and to cure malaria.

4.3 Salted fish:

The fish (*Puntius sophore, Colisa spp, etc.*) is rubbed with salt, dried in the sun for 4-5 days, pressed tightly in an earthen pot, sealed airtight and then stored at room temperature for 4-6 months. These salted fish is taken as side dish with hot rice or semi fermented rice.

Sometimes the salted fishes are dried by keeping over kitchen clay oven rack for 10- 15

days preparing smoke dry fish. Few dried fishes are roasted with lavish amount of green chillies, tomatoes, ginger and garlic and then made paste using pastel – mortar to serve with rice. This type of preserved fish is very popular among the tea tribes of the studied area.

[V] CONCLUSION:

Considering the popularity and high demand of smoked, fermented, salted sun-dried fish among the tea tribes, tribal communities, ethnic groups in Assam as well as in other NE states, it becomes important to produce good quality salted-dried fish products. It is expected that such type of products if prepared scientifically with attractive packaging for retail sale, it would definitely capture the urban markets of this region and other parts of the country too. Small scale enterprises for such dried and fermented fish are important both for stimulating sustainable development in rural and peri- urban areas of the state and for making food available for the increasing population in the urban areas. Such type of enterprises can play an important role in strengthening livelihoods of millions of people and render their vulnerability to poverty, through some income generation and by making an important contribution to dietary variety and food security.

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