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Substrate Utilisation in Traditional Fermentation Technology Practiced by Tribes of North Cachar Hills District of Assam

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Abstract

Utilisation of locally available agricultural and livestock produces into edible products known as ethnic fermented foods and beverages is common among different tribes of North Cachar Hills of Assam. Some of the familiar fermented foods are bekanthu (prepared from soybeans), miya (from bamboo shoot), saphak and satu (prepared from pork fat) and some common alcoholic beverages prepared from rice are judima, zunak, dekuijao and distilled liquor juharo. These ethnic foods and drinks are important contents in local diets of the people of N.C. Hills. Traditional methods of preparation with flow sheets, their mode of consumption and some social importance of these ethnic fermented foods and beverages of N.C. Hills have been documented, which may be useful to understand the traditional knowledge of food production in rural Assam.

Key words : Fermentation Technology, North Cachar Hills, Tribes.

Introduction

A fermented food is defined as an edible product prepared from raw or cooked materials of plant or animal origin by microorganism(s) either spontaneously or by adding mixed or pure culture (Hansen 2002, Hulse 2004). Fermented foods provide the bio-nutrients, minerals and fortified with bio-actives compounds, enhancing the flavour and aroma and exert health-promoting beneficial (Darby 1979, Campbell-Platt 1994, Steinkraus 1996, Tamang 2009). Utilisation of locally available agricultural and livestock produces into edible products known as ethnic fermented foods and beverages is common among different tribes of North Cachar Hills of Assam. Varieties of fermented foods and beverages are traditionally prepared and consumed, and even marketed locally in North East India (Tamang 2001). Some of the ethnic fermented foods and beverages of North East India were extensively studied (Tamang 2005a,b). This paper will focus on documentation

of traditional methods of preparation with flowsheets, their mode of consumption and some social importance of ethnic fermented foods and beverages.

It was interesting to observe that method of preparation of fermented beverages (local rice beer) is almost similar. The most important part of the traditional fermentation was the use of starter culture for the preparation of local rice beer.

Starter culture preparation

During traditional method of starter culture preparation, bark of *Glycyrrhiza glabra* L. (papilionaceae) is used. Brown rice was soaked for 10-12- hrs. at room temperature and there after it was crushed with bark of *Glycyrrhiza glabra* L. The mixture was then made into paste by adding water and prepared cakes of different sizes and sun dried.

Traditional methods of preparation of fermented food with flow sheet

Tribe	Local name	Substrate used
1. Dimasa	Judima (local rice beer)	Rice
	JuharO (distillted liquor)	Rice
	Miya mikhri	Bamboo Shoot
2. Jeme Naga	Dekuijao (local rice beer)	Rice
	Nduijao (local rice beer)	Rice
3. Hrangkol		Pork fat
	Saphak	Rice
	Zunak (Rice beer)	
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4. Vaiphei	Bekanthu	Soybean
	Sathu	Pork fat/beef extract

Table 1 Types of fermented food beverages of different tribes of N.C. Hills district.

Flow sheet of starter culture preparation

Biron Rice

Soaked for 6-8 hrs

added bark of Glycyrrhiza glabra

Mixed

Made in to paste and made flat cake.

Sun dried for 2-3 days (starter culture prepared)

Dimasa called the starter as Humao, Jeme Nga called as Nduhi

The local rice - beer is most popular fermented beverages

among all hill tribes of this region.

Method of preparation of Judima

It is prepared by Dimasa tribes. At first rice is cleaned and washed. Then cooked and dewatered. Then made it moderate cool and properly mixed with starter culture (Humao). After that spread the mixture in a Banana leaf for overnight and transferred this mixture in a earthen pot & made partially air tight and fermented for 3-4 days at ambient temperature (summer) and in winter it will take 6-7 days, then juices comes out called Judima.

Flow sheet of Judima Preparation

Rice

$$\downarrow$$

Cleaned and washed
 \downarrow
Cooked
 \downarrow
Dewatered
 \downarrow
Made it moderate cool
 \downarrow
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Mixed with starter Culture

Spread the mixture in a Banana leaf for overnight

Transferred this mixture in a earthen pot made partially air light

Fermented for 3-4 days at ambient temperature

Juice comes out called Judima

Method of preparation of Juharo

At first Biron rice is cooked and mixed with starter inoculum (Humao) and then allowed to ferment for 5-6 days and filtered through a cloth. Filtrate

is boiled and then distillate is collected in a small colleting vessel and bottled for drinking. This preparation method is by the Dimasa tribes.

Flow sheet for Juharo preparation

Biron rice is cooked

Mixed with starter inoculum

Allowed to ferment for 5-6 days

Filtered through a cloth

Filtrated is boiled

Distillate is collected in a small collecting vessel

Bottled for drinking

Juharo prepared

Method of preparation of saphak

Fats of pork is boiled about 50% upto is 15 -20 min and then Keep in a airtight container for 10-

15 days and then gets ready to consumption. It is used by Hrangkol.

Flow sheet for saphak

Pork fat

Boil up to 50% (15-20 min)

Keep in an air tight container for 10-15 days

Saphak (ready for Consumption).

Method of preparation of Bekanthu (Prepared from Soybean)

It is used by vaiphei tribes soybean is boiled and then keep within a container or basket after dewatering and wrapped it by a Banana leaf and the ashes of firewood is covered by another piece of Banana leaf which is also kept in the middle of the container for faster (rapid) fermentation. The container is kept at a fire place or fire side for 3-4 days. They keep it for the whole season and use it as a pickle by mixing with ginger, garlic etc.

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Soybean

Washed

Boiled (10-12min)

Excess water drained off.

Kept it in a Basket wrapped with Banana leaf

Fermented (3-4 days)

Bekantha (ready for consumption)

Method of preparation of sathu

(It is prepared for pork fat / beet fat).

It is used by Vaipai tribes. The pork fat is cut into small pieces and makes it half boil. The half boil pork fat/beef fat is keep inside the sathu-um i.e.,

(gourd) by capping the gourd (i.e. centainer) air tight. The gourd is keep near the fire place or fire side for 4-5 days. They keep if for the whole season & use it as a pickle.

Flow sheet preparation

Pork fat/Beef fat Make it Boil upto 50% (1/2 Boil) Keep it in a air tight container for 4-5 days Sathu is ready for consumption.

Method of preparation of Miyamikhri

Make small pieces of Bamboo shoot. Then wrapping the pieces by banana leaf placed in a earthen pot and is left for 4-5 days. When smells

comes out it is shifted in a glass vessel. They use it for a year even. They use it as a pickle or mix with curry & serve it,

Flow Sheet

Bamboo shoots are cut into small pieces

Wrapped with Banana leaf & keep it in an earthen pot for 4-5 days

Miya Mikhri prepared

Method of preparation of Dekuijao

Jeme Naga tribes of N.C. Hills prepare two types of rice beer Dekuijao and Nduijao. For the preparation of Dekuijao, paddy seeds are taken in

Ntui and soaked in water and wrapped with Banana leaf below and above. Kept it for 3 days and it is sprouted. Rehi is prepared. Sprouted Rehi are sun dried and ground it to make powder. Sieving is done to remove husk and the process is repeated three to 4 times. Rehi is prepared and add it into luke worm water and mixed properly by Hetatang (Bamboo stick) in kepup (Bamboo container). There after cold water is added and kept it into Keladia (container made of Bamboo) and closed the mouth of Keladia by a cloth to make it airtight for 3 days. After 3 days it is ready for consumption.

Flow Sheet preparation

Paddy seeds are taken in Ntui

Soaked in water and wrapped with Banana leaf below and above

After 3 days

Partially sun dried and ground it to make powder

Sieving is done to remove the husk and the process repeated for 3-4 times.

Add it into luke worm water

Mixed by Hetatang (Bamboo stick) in Kepup (Bamboo container)

There after cold water is added and kept it into Keladia (a basket)

After 3 days

Ready for Consumption (Dekuijao)

Method of preparation of Nduijai bung

Biron rice is cooked occasionally along with a cultivated crop seeds, and spread over in a Bamboo flat pan and Nduhi (starter) is mixed properly. Then transfer it to a vessel covering it with Banana leaf and mouth of the container is tightly packed. Then kept the vessel near the fire place for 2-3 days. Then filter through a mycelia cloth and the filtrate (Nduijao) is ready for use.

Flow sheet

an Nga taon in



Filter through a cloth

Filtrate (Nduijao) is ready for consumption.

Method of preparation of Zunak

Biron rice is boiled and then allows it to cool. Mix with Humao. Keep it for 7-8 days in a gourd or in an earthen pot having hole in lower side. The juice comes out through lower side of the vessel is called Zuhing and the residual rice is called Zunak. It is serving, mixing with water.

Flow Sheet

Biron rice ↓ Cooked

Mix with Humao

Keep it for 7 days in a Gourd having hole in lower side

Make it air tight

Kept it for 7-8 days

The juice comes out in lower side is called Zuhing

The residual rice is called Zunak

Mode of Consumption

The most of the tribes are dependent on agriculture which is the backbone of their economy. Rice is their staple product, they produce it for food and preparation of rice-beer (ZU) ZU is very popular drinks among all the tribes of N.C. Hills. They offer it in their own festival like Harvesting, their marriage ceremony, their Shhradha ceremony. Traditionally, new married tribal bride visits her parent's house once in a year. When she returns back to her husband's house she should carry the "ZU" Naga people use Dekuijao mixing with milk and rest all beverages serve to the guest as a traditional drink Miyamikhri is used to give in curry preparation or mix up with acchar they take. Rest all fermented foods are used to take with rice (cooked)

Socio Economic Importance

The Preparation of fermented foods and beverages is an art of technology and is a family secret passed from mother to daughter. All tribal women prepare it and men help them in pounding the soaked rice. Survey result indicated that all the traditional foods and beverages are prepared at home. The 'ZU' and starter are sold in the market, local food stalls and restaurants. Some people are economically dependent upon on this product. They sell it in the market and is the only source of their earning.

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