

## **‘Chubitchi’- The native fermented rice beverage of the garos’ of west garo hills, Meghalaya**

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### **Abstract**

The West Garo Hills is one of the largest districts of the state of Meghalaya located in the western part of the State with Tura being the district headquarters. They are inhabited by tribal dwellers, the majority of whom are Garo people whose staple cereal food is rice. Also home brewed fermented rice beverage plays an important role in the life of the rural tribal folks. This traditional beverage constitutes an integral part of their dietary culture and has strong socio-cultural importance among these ethnic people. The prowess of preparation of this beverage involves starter culture preparation using locally available medicinal plants and fermentation in earthen pots. Some rural villages where the fermented rice beverage is prepared were visited and the traditional process was observed and documented. This article reflects the expertise of the ethnic Garos’ who are unwittingly exploiting the natural microbial consortium in fermentation of this beverage. At present, these products are prepared for local consumption only at house-hold level without much consideration to good manufacturing practise. Studies on this beverage would enhance its value addition, create public awareness with respect to nutritional value and help to modify, optimize and formulate this beverage aseptically with novel therapeutic properties thereby offering improved health benefits. Small-scale starter culture application, systematic and scientific approach would stimulate acceleration of the process of fermentation, produce high-quality stable product with increased shelf life and help to economically produce it at reduced production costs providing employment which would be a fillip to the rural economy of the area.

**Keywords:** rice beverage, garo tribes, medicinal plants, fermentation.

Fermented Rice beverages have played an important role in human spiritual and cultural life both in Eastern and Western societies. Alcoholic beverages fermented from rice are formerly exclusive to East Asian and Southeast Asian countries and is

popular in countries like Japan, China, Philippines, Korea, and Vietnam and some parts of India. Herbal formulation for yeast culture for brewing alcoholic beverage from cereals is probably the most ancient method. Alcoholic rice beverage is an integral part of life of several aboriginal communities and is known in different names in different places. It is known as *sake* in Japan, *lao-chao* in China, *tape ketan* in Indonesia, *khao-makin* Thailand. (Deka, *et al.* 2010), *ruou de* or *ruou nepin* Vietnam, *Makgeolli* in Korea (Kim, *et al.* 2013, Dung, 2004) etc. In India, an alcoholic beverage called *sura*, distilled from rice, was in use between 3000 and 2000 B.C. (Eraly, 2002).

The art of producing beverage from rice vests with the aboriginal tribes of Central and Northeast India. Traditional fermented rice beverages are encountered throughout the north eastern part of India, which constitute over 220 diversified ethnic groups who bear their own innate methods of fermenting rice by employing different starter cultures and different locally available medicinal plants. They are called as *apong* in Adi, *bunkchung* in Monpa, *chi* in Lepcha, *laopani* in Aka, *ijaduijang* in Naga, *jumai* by Bodos, *suze* by Deoris, *morpo* by Mikirs, *jou* by Meches and Dimasas, *zu* by Tiwas, *apong* by Mishings, *laopani* and *mod* by some other tribal communities. (Deka, *et al.* 2010).

Although rice-based traditional beverages have different compositions according to the formulation and processes used, the principle of their manufacture can be characterized as a biochemical modification that is saccharification of cereal starches brought about by microorganisms in which fungi (yeasts and moulds) play essential roles. Moulds produce the amylases that degrade the starch into dextrins and sugars, and yeasts convert these sugars to alcohol. The preparation and the use of fermentation starters as a source of inoculum are important in the manufacture of rice alcoholic beverage. These dried starters normally include yeasts, moulds and bacteria and convert starchy materials to fermentable sugars and subsequently to alcohol and organic acids. The use of different starter cultures with varying microbial content and rice variety has been associated with the production of wine with different tastes and flavours, the quantity and quality of wine. Glutinous or sticky rice for instance is a rich source of starch, protein and various microelements that are used by microbes during the fermentation process to produce more wine (Palaniveloo and Vairappan, 2013).

In the state of Meghalaya, the Garo hills make up the western part of the State. The entire Garo Hills comprise an area of approximately 8,000 sq kms which is densely forested and is one of the richest spots in biodiversity. They are inhabited mainly by tribal dwellers, the majority of whom are Garo people. The Garos are a tribe with a matrilineal society belonging to the Bodo family of the Tibeto-Burman race tribes (Miah S, 2012). The Garo community has a distinct food culture or dietary culture that symbolizes the heritage and the socio-cultural aspects of their ethnicity.

In addition to their staple food which is rice, vegetable and meat, alcoholic rice beverage locally called '*Chubitchi/chubok*' is paramount to the Garo diet and their culture and constitutes the staple beverage of the Garos. In areas where rice is in short supply, or during lean years, millet usually forms part of their staple food and is also greatly used in the preparation of the beverage. Three important medicinal plants that are used viz leaves of plant called *achetra* (*Plumbago zeylanica* L) or leaves and roots of plant called *samaki* (*Clerodendrum cordatum* D. Don) or leaves of fern called *sarath* (*Thelypteris clarkei* C.F.Reed). The ethnic Garo tribes believed that the leaves of the plant locally called *achetra* used in the starter culture have the properties of aspirin. They are used for relieving head ache and body ache by applying the paste of the leaves directly on the affected region. It is also believed to possess the antiseptic properties similar to turmeric.

Similarly plants called *samaki* and *sarath* also believed possesses medicinal properties. According to traditional knowledge *Samaki* is used for treatment of snake bite. *Sarath* is used when rice beverage with higher alcoholic percentage is preferred. All these medicinal plants are yet to be identified with their scientific names. Nevertheless these tribes have been practising the fermentation techniques of rice beverage preparation immemorially. Locally home-brewed rice beverage is an integral part of the Garo festivals and ceremonies. Huge quantity of the rice beverage is prepared during the 'Wangala aka or the Hundred Drums Festival', a celebration of the annual crop harvest where during the thanksgiving ceremony rice beer is offered to the gods and goddesses. It is also considered as an item of great import for entertaining guests. Nevertheless, this fermented beverage has a protracted history of production confined only by tribalism. It remains a household art contributing to ménage nutrition and is handed-down from ancestors to the pedigree. Thus authentication of this knowledge is currently limited to only the tribal communities and scientific research on this autochthonous beverage in this part of Meghalaya is still naive catering a wide of scope for further research.

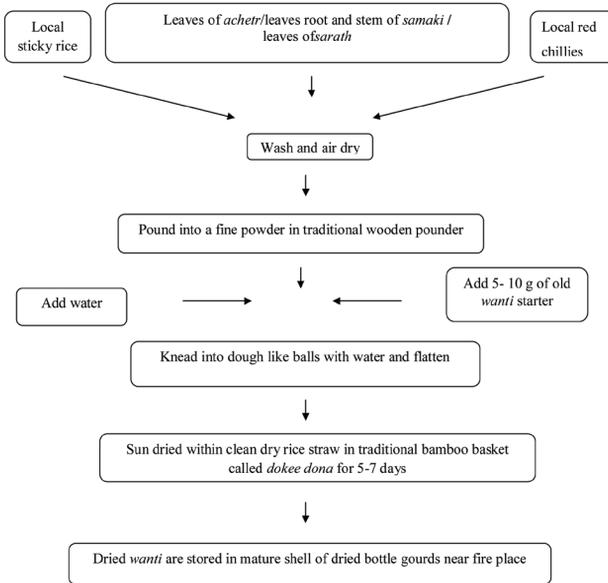
## **Methodology of preparation of *Chubitchi***

### ***Preparation of Starter rice culture***

Rice beverage is prepared from locally grown rice varieties. Usually the sticky rice called *menil* is preferred. The first step involves the preparation of the rice starter called *wanti*. The rice approximately 100g is washed and mixed with locally available medicinal plants and about 8 to 10 red chillies. The mixture of rice, red chillies and plant material is pounded and the powder so obtained is mixed with a little inoculum of 5- 10 g of old *wanti* starter. This is a classic model of traditional back-slopping. Further the rice- *wanti* mixture is kneaded with water into doughlike ball. The balls are flattened and sun dried by placing them within

clean dry straw in traditional bamboo baskets called *dokee dona* for at least five to seven days. Once the *wanti* is dried, it is stored and preserved in dried bottle gourds in the kitchen near the fire place and used for the beverage preparation whenever needed.

**Steps involved in the preparation of *Wanti*– a classic model of traditional back-slopping**



**Flow chart 1**

**Preparation of alcoholic rice beverage *Chubitchi***

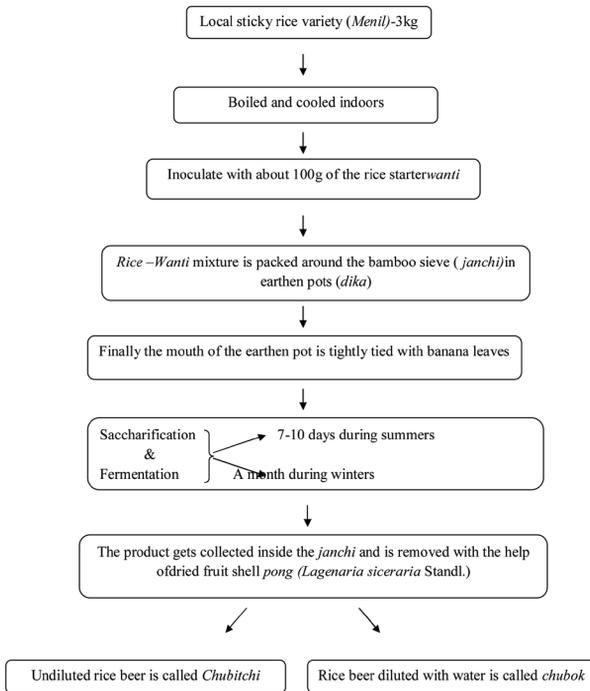
Local sticky rice variety called *Menil* is boiled. Either the unpolished red variety of menil or the polished white variety is used. Each type gives its own characteristic trait to the end product with the beverage made from the red variety being sweeter. Sometimes the rice is also roasted to impart its unique smoky flavour to the final product. Earthen pots are used for fermentation of rice. It is very crucial that the pots need to be washed properly with clean water and sun dried completely. The pots are then kept over the fire place for further drying and smoking. These pots are then ready for fermentation. Rice is washed and cooked by boiling. The boiled rice is cooled indoors on a bamboo mat. The cooled rice is mixed well with *wanti*, the dried starter culture. About 10g of starter is sufficient to caused fermentation of 4-5 kg of boiled rice. The rice –*wanti* mixture is then packed around a bamboo sieve placed inside an earthen pot called *dika*. Finally the earthen pot is covered tightly with banana leaves and left for fermentation to take place

at room temperature. During the summers it usually takes a week for the rice to ferment and produce the beverage while during the winters it takes about a month.

During fermentation a mild fruity sweet aroma is given off within first two to three days followed by the characteristic strong fruity pungent odour after 7 to 10 days of fermentation. This characteristic odour attracts the fruit fly, the *Drosophila sps.* The appearance of maggot of these flies can be noticed in the earthen pots. The rice beverage is ready for consumption usually after a week's fermentation but it is usually left to mature in the earthen pot.

The drink whenever desired is extracted by using dried bottle gourds (*Lagenaria siceraria* Standl.) called *pong*. A hole is made at the bulb shaped venter portion of the dried mature fruit into which the beverage gets collected when the *pong* is inserted into it. The beverage can be kept for about a month in the earthen pots after which it is usually transferred into clean bottles and can be stored for even up to four or five years. The beverage can be consumed directly or by diluting it with water. The undiluted rice beverage is called *chubitchi* and the beverage consumed by diluting in water is called *chubok*.

### Steps involved in the preparation of *Chubitchi*



**Flow Chart2**

**Step wise preparation of the starter culture *wanti* using the leaves of the medicinal plant *Achetra* (*Plumbago zeylanica*L)**

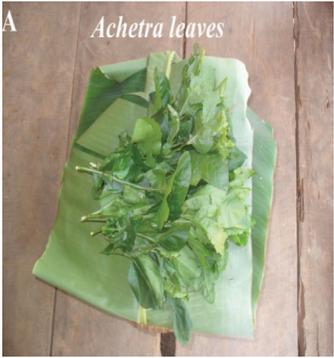
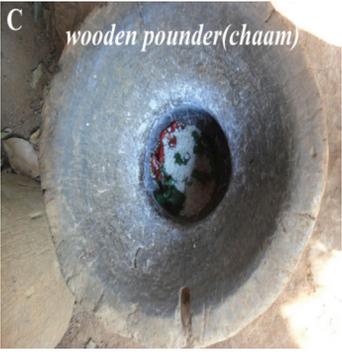
 <p>Achetra leaves</p>	 <p><i>wanti</i> <i>achetra</i> local sticky rice red chillies</p>
<p><b>Fig. A <i>Achetra</i> leaves</b></p>	<p><b>Fig. B Ingredients for starter culture</b></p>
 <p>wooden pounder(<i>chaam</i>)</p>	 <p>wodden motor(<i>rimol</i>) wodden poulder</p>
<p><b>Fig. C Rice, redchillies and <i>achetra</i> leaves in wodden poulder locally called <i>chaam</i></b></p>	<p><b>Fig. D a <i>Garó</i> woman pounding rice, chillies and <i>achetra</i> leaves</b></p>
	 <p>powder of rice, chilli &amp; <i>achetra</i> old <i>wanti</i></p>
<p><b>Fig. E Powder obtained after pounding</b></p>	<p><b>Fig. F pounded powder and old <i>wanti</i> inoculum</b></p>



Fig. G and H show water being added to the pounded powder-wanti mixture and the mixture is being kneaded



Fig. I and J show the rice-wanti mixture kneaded into a ball and flattened



Fig. K shows the startercake kept for sun drying on clean straw in traditional bamboo basket near the fire place

Fig. L shows the dried wanti stored in dried fruit shell of *Lagenaria siceraria* Standl.

Step wise preperation of *Chubitchi*



**Fig. 1: Boiled rice**



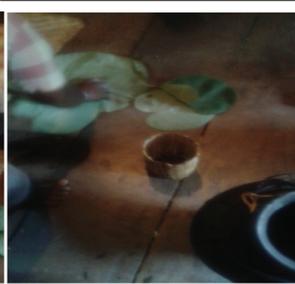
**Fig. 2: Rice spread on**



**Fig. 3: Rice is being cooled bamboo mats**



**Fig. 4: *Wanti* mixed with rice**



**Fig. 5: shows *wanti* to be place in the earthen pot**



**Fig. 6: Rice-*wanti* mix is being transferred into the pot**



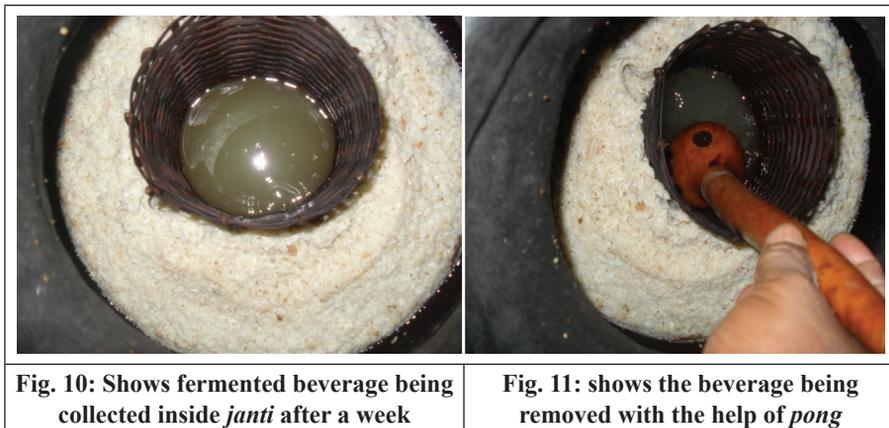
**Fig. 7**



**Fig. 8: The mouth of the pot**



**Fig. 9: is covered with *Ficus* leaves**



## Conclusion

*Chubitchi* is consumed on a regular basis daily by the ethnic Garo tribes. Due to the incorporation of the indigenous medicinal plant parts in the starter culture preparation this beverage is believed to possess medicinal and therapeutic properties. However, these products are prepared at house-holds only in remote villages where the ethnic Garo tribal population is predominant without much consideration to GMP (good manufacturing practise) and HACCP (*Hazard analysis and critical control points* guidelines). So far minuscule information is available on the methodology of this traditional fermented beverage of Garo tribes. No scientific documentation is available on physico-chemical, sensory, microbial or even nutritional aspects of this indigenous beverage. Hence research on this native beverage is an absolute requisite which can prognosticate many general and specific benefits upon consumption of this beverage. Studies on the herbal and medicinal plant parts used may reveal and prove some other important medicinal properties and beneficial effects of this traditional beverage. Further systematic and scientific approach in the process of fermentation would stimulate acceleration of the process, produce high-quality and stable product with increased shelf life. Thus improved production methods will help to upgrade the present status of the traditional beverage and help to economically and feasibly produce it at reduced production costs in future. The information would provide an input to the respective government to take up measures in line with the findings. Initiative of the concerned government to help the rural poor to market their product would be a fillip to the rural economy.

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