Preparation of rice beer by the tribal inhabitants of tea gardens in Terai of West Bengal

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Received 24 May 2004

The ingredients and the method of preparing starter mixture (Rānu Dābāi) and the fermentation of boiled rice for production of rice beer (Jhārā or Hārhiā) have been recorded as it is practiced by the Oraon and Santhal workers in Terai Tea Gardens. In addition to the use of five core plants (Oryza sativa, Coccinia grandis, Plumbago zeylanica, Vernonia cinerea and Clerodendrum viscosum), tribals use quite a few more plants to modify the taste and/or colour of Jhārā.

Keywords: Jhārā, Hārhiā, Oraons, Santhals, Rānu Dābāi, Rice beer.

IPC Int. Cl. 7: C12C11/00, C12C7/00, C12C1/00, C12C3/00, C12C5/00.

Rice beer (Jhārā or ‘Hārhiā) is extremely popular among the tribal people, viz. Santhals, Oraons, Mundas and similar other groups of people living over wide areas in India, mainly in difficult country terrains, especially in the eastern states of India. These tough but poor people generally live in forest villages and maintain a large number of traditional cultural practices. After whole day’s struggle for livelihood they drink rice beer in good amount and start enjoying with their traditional musical instruments, songs and dances. Rice beer is also consumed during festivals, marriages and other ceremonies regularly.

It is almost impossible to determine when these tribal people started preparing rice beer but certainly it is a good improvisation of natural and direct fermentation of boiled rice when kept for a few hours soaked in water. The main point of modification is the addition of a specially formulated starter mixture in the boiled rice.

When Tea gardens were established in Terai and Duars of Darjiling and Jalpaiguri districts of West Bengal (Fig. 1) in the later part of 19th century, numerous tribal people were brought from the Chhota Nagpur and Santhal paraganas areas of the then Bihar and from the western districts of West Bengal like Medinipur, Purulia and Bankura. So, they are now living here over 120 years and are certainly practicing their own traditional culture in their new home, situated in a completely different type of surrounding.
Rice beer, consumed by almost all the tribals in the area including children, is prepared in good quantity by the tribal families in Terai and Duars. However, only a few people produce it for sale. During the basic interaction with these people about the method of brewing ‘Jhārā’ or ‘Hārhiā’, a number of questions were asked including (i) nature of the basic ingredients and modifiers, (ii) actual method of preparation, (iii) method of storage, (iv) related social rites, and certainly (v) the underlying science behind the method. The rice beer is called ‘Jhārā’ by Oraons and ‘Hārhiā’ by Santhals. The starter preparation in the form of flat white tablets is known as Rānu Dābāi among the tribals in Terai-Duars, and is openly sold in local markets.

So, the processes starting from the collection of materials to the final dilution of the fermented product for drinking were recorded.

**Methodology**

The survey was made during 2003 – 2004 mainly among the Oraons and Santhals working in tea gardens in Darjiling Terai. Workers mainly from two Tea gardens were selected for the purpose (i) Gungaram Tea Estate and (ii) Hansqua Tea Estate. Both the gardens are situated
in the slightly undulating land of Darjiling Terai and with a very good size of tribal work force. Quite a few visits were made to these Tea gardens and good rapport was developed with them using contact persons.

The entire process of the survey was divided into three parts: (i) survey for the identification of basic ingredients among a large section of tribal Tea garden workers, (ii) observing the method of preparation of starter mixture and (iii) filling of the fermenter and diluting the fermented product.

**Identification of ingredients:**

A good number of people from the Oraon and Santhal communities engaged in the preparation and marketing of Rānu Dābāi and/or Hārhīā were interviewed quite informally. They were also asked to spot the useful plants in the field and the recorded information includes (i) vernacular name, (ii) useful part (iii) purpose of use and (iv) the amount used. Collected voucher specimens are deposited in the NBU-Herbarium.

**Method of Preparation:**

The Tigga family in Hansqua Tea Estate, known to produce best quality Rānu Dābāi in the area, explained the entire process of its preparation.

Other people, who provided valuable information include Mr. Sudarsan Kumar Tirki, Anna Kujur, Solani Kujur, Johan Kujur (Oraons), Surya Sauriya, Jyoti Kumari Ekka, Mashi Prakash Ekka (Santhals), Dildhare Baraik (Baraik), and others.

**Observation and Discussion**

The number of plants used in the process varied considerably from person to person. Interestingly, while the Tigga family accepted that all these plants can be used but they use only some of these. Apart from this, all other information was found to be almost same with all the resource persons [Plates I – III].

**Plants and their parts used:**

1. *Oryza sativa* L. [Gramineae; vern. Chaule, Chawor]: the machine dehusked raw rice grains are preferred to produce the main bulk of the starter mixture; rarely parboiled grains are also used; paddy straw is used as insulator.

2. *Coccinia grandis* (L.) Voigt [Cucurbitaceae; vern. Jangli kundri]: the elongated and constricted tuberous roots are very important constituent; its use develops sweetness.

3. *Vernonia cinerea* (L.) Lessing [Compositae; vern. Chhepra, Jurbula]: the whole plant including its fleshy and semi-tuberous roots is used; it also produces sweetness.

4. *Clerodendrum viscosum* Ventenat [Verbenaceae; vern. Ghato]: terminal young and soft leaves are used; it produces a bitter taste.

5. *Plumbago zeylanica* L. [Plumbaginaceae; vern. Chetoar, Chitawar]: leafy branches are used; it is a process enhancer.

6. *Stephania japonica* (Thunb.) Miers [Menispermaceae; vern. Inderparhi, Parhi, Karaiya]: root or tuberous root; as preservative if intended to store for a longer period.
7. *Stephania glabra* (Roxb.) Miers [Menispermaceae; vern. *Inderparhi, Parhi, Karaiya*]: same as *S. japonica*.


10. *Scoparia dulcis* L. [Scrophulariaceae; vern. *Barier, Mitha, Jangli Dhamia, Ghuma, Dar-chetowar*]: leafy twigs; to improve the sweetness.


13. *Wattakaka volubilis* (L.f.) Stapf (= *Dregea volubilis* (L.f.) Benth. ex Hook.f.) [Asclepiadaceae; vern. *Chhit Larang*]: bark of stem; develops a bitter taste.

Legends for the photo-plates:

**Plate I**
1. Mrs. Jhario Tigga cleaning rice
2. Washing of rice-grains
3. Sun drying of surface water from the collected herbage on roof
4. Plant materials and old *Rānu Dābāi* gathered together for use (note the chilli and charcoal)
5. Chopping off of plant materials
6. The plant paste
7. Grinding of rice and old *Rānu Dābāi*
8. Mixing of plant paste with rice flour
9. Sieving the mixed powder
10. Left over fibrous materials to be rejected

**Plate II**
1. Rice wash-water added to the rice-herbage mixed powder
2. The prepared paste
3. Gunny with chilli and charcoal
4. Tablets are prepared by hand
5. Stabilizing freshly prepared tablets
6. Soft tablets put in bamboo basket for incubation
7. Chilli and charcoal added in each layer
8. The basket is full
9. Final packing of the basket with gunny
10. After incubation, *Rānu Dābāi* tablets are dried under the sun.

**Plate III**
1. Grinding *Rānu Dābāi* to mix with cooked rice
2. Mixing of *Rānu Dābāi* powder with rice
3. Transferring the mixed rice into the fermenter
4. Little amount of water is added
5. Chilli and charcoal kept on the surface
6. The fermenter is nicely covered for proper incubation
7. Different sizes of *Rānu Dābāi* collected from local markets
8. An Oraon woman selling *Rānu Dābāi* in the market
9. Tribal women selling *Jhārā/Hārhiā* near a Tea Garden.
Plate I
Plate II
Plate III
In addition, few old Rānu Dābāi tablets are also added to the preparation.

Out of the recorded thirteen species of plants five (Oryza sativa, Coccinia grandis, Plumbago zeylanica, Vernonia cinerea and Clerodendrum viscosum) are must for the preparation of a good quality of starter mixture. Powdered grains (gundā) of Oryza sativa form the medium and bulk of the product. Rauvolfia serpentina if available in sufficient quantity, then it replaces Coccinia grandis. However, sometimes, they use only the bark of Wattakaka volubilis. This plant is rare but most of the other plants are easily available in the locality.

Except the above-mentioned five plants, the uses of other plants depend on the likings of the users and availability. These plants are either taste or colour enhancers. Use of a species of Stephania improves the storage quality of Rānu Dābāi. But, its use is very rare as the rate of consumption is very high and only few people are expert in good quality starter production. The proportion of different plants varies according to the preferences of the manufacturer.

Following ingredients are required for the preparation of Rice beer namely, Rice: 10 kg, roots of Coccinia grandis: c. 500 gm; tips of Clerodendrum viscosum: c. 300 gm; whole plant of Vernonia cinerea: c. 350 gm and Plumbago zeylanica: c. 250 gm. Tiggas generally do not use other plants. But c. 300 gm of Rauvolfia serpentina roots replaces Coccinia grandis roots. Other plants are used in much less quantity i.e. 50 – 100 gm only for 10 kg of rice. About 1 kg of the bark of Wattakaka volubilis is used if Rānu Dābāi is made only with this plant.

Methods of Collection

Low-priced raw rice (rarely parboiled) is purchased from the market. It may not be of good quality but need to be free from insect infestation. Oraons and Santhals collect these plants fresh from their surrounding locality. Generally, they do not use dry or preserved plants. Only the bark of Wattakaka volubilis is stored after drying. After collection, plants or plant parts are washed properly and spread under open sun for some time to remove the surface water. The dried bark of Wattakaka volubilis is available in the market and Plumbago zeylanica and Rauvolfia serpentina are sometimes grown.

Preparation of Rānu Dābāi

Six distinct stages are recognised in the process:

Washing of rice and storing of wash-water: After cleaning the rice grains on a ‘Soop’, (a flat traditional utensil generally made of sliced bamboo) it is taken in a vessel (made of clay/metal/PVC) for washing. Clean water is poured in it, stirred and decanted. The decanted wash-water is preserved in a bucket for future use.

Mixing and grinding: It is done with a traditional wooden husking machine called ‘Dhiki’. At first, all freshly collected plant materials (i.e. except rice grains) are chopped and ground properly and taken out on a ‘Soop’. Rice grains are then put in the pit of Dhiki and when partially powdered a few (3–4 large tablets
for 10 kg of rice) old Rānu Dābāī tablets are added. After some time, the plant paste is also added to it and allowed to mix properly. When the rice grains are properly powdered and mixed with plant paste, it is then taken out on a sieve (Chakni) and the coarse part is returned to the Dhiki. After completing sieving, woody and fibrous materials are rejected.

**Tablet preparation:** The powdered material (Gūndā) is now taken in a large vessel (Dikchi) and made into paste using the previously stored rice wash water. The paste becomes slightly greenish-white and emits the smell of mixed herbage.

Clean gunny bags are then spread on the floor under shade or inside the rooms. No die is used for preparing the tablets; these are completely hand made. The standard size is 4.5–7 cm in diameter, which are arranged in rows on the gunny bags, where these are kept for 40–60 minutes. Tablets loose some amount of water and become little tough. Very small sized tablets of around 1.5–2 cm in diameter are prepared, some times. Tablets of 14–15 cm in diameter are also prepared.

**Incubation:** It is done inside a large basket (Dhakiya) made of sliced bamboo. Clean and dry straw is spread on the bottom of the basket and some tablets are kept on it. These are then covered with straw and another layer of tablets is kept on it. The process is repeated until the basket is full. Then a larger amount of straw is added at the top. The entire set is covered with polythene sheet and/or gunny bags and stored in a dark and warm place. The incubation period varies from 2 to 3 days in warm season and 4–6 days in winter. The inside temperature rises considerably (bukhar) and the set starts emitting pungent Hārhiā-like smell. During this, a layer of cottony mycelia develops on the tablets. The fungal mycelia produce a mat of black sporangia in damp weather or if stored for a slightly longer period.

**Drying:** The tablets are taken out of the basket and are kept in single layer on large sized circular flat bamboo basket called ‘Dāgrā’ and get dried under the sun for 7–8 days. Now, the Rānu Dābāī is ready for storing and for use.

The average size and weight of these dry tablets are presented in Table 1.

<table>
<thead>
<tr>
<th>Diameter in cm</th>
<th>Thickness in cm</th>
<th>Weight in gm</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5</td>
<td>0.8</td>
<td>112.79</td>
</tr>
<tr>
<td>6.00</td>
<td>0.65</td>
<td>24.28</td>
</tr>
<tr>
<td>1.5</td>
<td>1.5</td>
<td>1.67</td>
</tr>
</tbody>
</table>

**Storing:** Dried Rānu Dābāī is kept in small bamboo baskets and stored in a dry place. These can be stored up to one year.

**Preparation of Jhārā**

Besides the manufacturers of starter mixture, other people also purchase these tablets and produce Jhārā for domestic consumption and/or for sale. The process is having following steps:

**Boiling of rice:** Generally low priced raw rice grains are taken, washed properly and boiled in water. The grains become very soft without decantation.
Adding starter mixture: It is generally done in a metallic or earthen container (the fermenter) with a wide bottom to facilitate proper spreading of the boiled rice. Rānu Dābāi, at the rate of one large-sized (or 6–8 small) tablet per kilogram of rice is taken, powdered on a clean surface and then mixed with the cooked rice on a Soop. After proper mixing, it is then transferred to the fermenter with a little amount of water.

Incubation: The lid of the fermenter is placed properly and the entire set is covered to keep it warm. The total incubation period varies from 3 to 5 days. When the fermented stock starts emitting a strong alcoholic smell, it is considered ready for use.

Diluting the fermented stock: The fermented stock is then diluted with drinking water at the rate of 5 litre per kilogram of rice. The Jhārā or Hārhīā is now ready for consumption.

The safety rites

Though the practice of only one rite has been observed during the entire process, they maintain it very seriously. The tribals always keep one or few dry chillies and a piece of charcoal on the raw materials and on products of different steps of the entire process in order to keep all the evil forces away which may damage the product or deteriorate its quality.

Conclusion

The second part of Hārhīā preparation i.e. the fermentation of rice appears to be less attractive from the scientific point of view. On the other hand, selection of only few plants from the area which is well known for its rich flora is certainly a difficult task. Recognition of proper combinations and use of alternatives are the result of their testing through trial and error and of prolonged analytical observation. The total amount of each plant used in Rānu Dābāi and the amount of starter used during fermentation of cooked rice are certainly providing materials for further research.

References