



RESEARCH ARTICLE

A STUDY ON INDEGENOUS RICE-BASED SNACKS OF THE ETHNIC TRIBES OF MEGHALAYA

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ABSTRACT

Background and Objectives: Food is a cultural activity and in many cultures, it defines relationships and cultural identity. Meghalaya, literally meaning “Abode of clouds” is one of the seven sisters’ states of the North eastern region of India and is a home of the Khasi, Jaintia and Garo tribes. The paper aims at focusing light on the indigenous knowledge of traditional rice-based snacks of the Khasis and the objectives of the study is to observe the processing methods, document the standardized recipe of the selected snacks and study their physical characteristics and proximate composition.

Methods: Production of “Ki Kpu” (a general terminology in Khasi dialect) is carried out only in the small cottage industries. Three industries were randomly chosen and visited for observation of the preparation process and interviewed the proprietors on the details of the industry.

Results: Putharo, Pumaloi, Pukhlien and Pusla are the commonly consumed traditional snacks. The diameter and calorie contribution of these recipes were found to be in the range of 9-9.5cm, 5-5.5cm, 5-5.5cm, 13-13.5cm and 408kcal/g, 407kcal/g, 494kcal/g and 402kcal/g respectively.

Interpretation and Conclusion: The processing of these snacks and associated dynamics are passed on from generation to generation. The mushrooming of fast food culture has taken the limelight and these recipes are losing its sheen to it but those who have roots in the villages or otherwise, still relish the traditional recipes. Hence documentation is important so that the traditional food knowledge systems can be preserved for future generations.

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INTRODUCTION

Cereals occupy the major part of the food groups in the diet. Central Rice Research Institute, Odhisa stated that rice production in India has increased during last 60 years by about 3.5 times from 250.3 lakh tons during the first Five-Year plan period to 857.3 lakh tons during the tenth plan period. It contributes 42 per cent of the total food grain production and 45 per cent of the total cereal production of the country (CRRI, 2011). The staple food for more than half of the world population is Rice (*Oryza sativa*). It is life for thousands of millions of people. It is deeply embedded in the cultural heritage of many societies (FAO, 2004). It is consumed in various forms, including plain rice, noodles, puffed rice, breakfast cereals, cakes, fermented sweet rice, snack foods, beer, wine and vinegar (Li, 2003).

Tucked away in the hills of eastern sub-Himalayas is Meghalaya, one of the most beautiful States in India. It is the homeland mainly of the Khasis, the Jaintias and the Garos – the ethnic tribes ([meghalaya.gov.in /state profile 2014](http://meghalaya.gov.in/state_profile_2014)) .A typical meal of the Khasis consists of a well-prepared non vegetarian dish with rice and a simple boiled accompaniment.

Besides the main meals, the people are habited to consume snacks along with their evening tea.

Snacking is more common today than ever before. People are consuming snacks more often. The traditional snack of the Khasi’s, in their dialect is generally called “Ki kpu” which in english is known as Rice cakes. Various forms of rice cakes are available in plenty and popular in Meghalaya. A much shorter term ‘Pu’- is commonly used and is pre-fixed to the distinct snack. The rice cakes are many viz., pu maloi, pu tharo, pu khlien, pu tyndong, pu jer, pu syep, pu doh, pu nei, pu sla, pu niang hali, pu saw, pu lum etc (Hamlet, 2001). History of the art of the manufacturing process is lost in antiquity but the traditional knowledge is handed down orally from one generation to the other through trial and error method. Production of “Ki Kpu” is carried out only in the small cottage industries in certain localities, however; it is consumed by all people of the state regardless of social status.

The traditional foods processed and prepared by women of north east region are intimately connected to their socio-cultural, ecological, spiritual life and health. The processed and preparation of ethnic foods not only demonstrate the creativity and treasure of food heritage of tribal women but also their

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incremental learning to sustain the life and ecosystem as a whole (Anamika *et al.*, 2007). Rice and water are the main ingredients employed; other ingredients and various flavorings to enhance the taste and nutritional quality are also used but are not significant to the production process. Till date no literatures are available on systematic study of traditional rice-based snack of Meghalaya. Therefore, the present study is undertaken with the objectives to observe the processing methods, document the standardized recipe of the selected snacks and study their physical characteristics and proximate composition.

MATERIALS AND METHODS

Selection of the sample

Among the handful varieties available in the market, four snacks namely - putharo, pumaloi, pukhlien and pusla were purposively chosen for the study. For certain preparation, only the local variety of rice namely “Khaw mynri” was used. The identification of this variety has not yet performed. Sub-categorization of the rice, based on the color was also noted. For putharo, two varieties of the local rice were employed for the preparation -the “khaw mynri” which is white and “khaw-saw” which is red in color. The white variety was taken for further study as it was more commonly used. For pumaloi, one product was made up of the white khaw mynri and another variety was a mixture of the same and black sticky rice in smaller quantity. The plain white product being commonly used was chosen for the study. For pukhlien, a term “khaw-khar” which means any variety of rice that was imported from other states was used for the preparation. And for pusla, the red locally available rice (khaw-saw) was used. The processing methods for the selected recipes was observed, noted and standardized.

Physical characteristics

Using a digital caliper (Vernier caliper, model ME1002, China) the diameter, length and breadth of the rice-based snacks were measured in centimeters. The weight was determined by digital weighing balance (Shimadzu Model AUX 220, Japan).

Sensory evaluation

The rice-based snacks prepared from 3 Small Cottage Industry were evaluated for different sensory attributes by a panel of 15 members. Appearance, taste, texture, flavor, color, aroma and overall acceptability were assessed using a nine point hedonic scale (Indian Standards, 1971). Hedonic scale was in the following sequence: like extremely-9, like very much-8, like moderately-7, like slightly -6, neither like nor dislike- 5, dislike slightly 4, dislike moderately-3, dislike very much-2, dislike extremely- 1 (Larmond ,1977).

Proximate composition

Moisture, fat, protein (using the factor 6.5 X N), ash, crude fibre and calorie content of the RBS were determined as per standard methods of AOAC (AOAC, 2000). Carbohydrate content of the snacks was found out by differentiation method. These estimation were done in triplicate and mean value were taken for interpretation.

Statistical analysis

Statistical analysis was done for the various parameters

Recorded for the prepared rice-based snacks by calculating the sample mean and standard deviation

RESULTS

Processing and preparation of the Rice-based snacks

Rice cakes have only two critical ingredients-rice and water. The rice itself needs certain characteristics to produce the best quality cake and limit breakage. The first three steps of production viz., soaking, pounding and sieving are common to all the varieties of “ki kpu”.



Figure 1 common step employed in the preparation of “ki kpu”

The soaked rice was pounded manually using a big wooden mortar and pestle which is operated by hands or feet depending on the amount of rice soaked. Lesser quantity is pounded by hand while more the quantity of rice, the pounding will be done by feet. This distinction is made as the former takes up more manual power as compared to the latter technique. Manual pounding is employed as the final pounded rice has to be grainy as opposed to the finely powdered product of machine grinding.

Putharo

Putharo is a snack prepared in dry heat of a pot- khiew sarow - an earthen pot made of black clay. The pre requisite for the preparation is the khiew sarow and the conventional fire place with a chimney. The procedure followed is summarized in the flow diagram (figure 2):

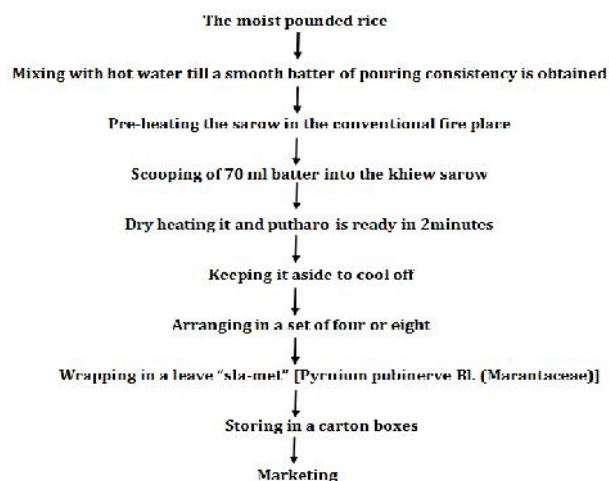


Figure 2 Preparation of putharo

Pumaloi

A steamed rice cake. The steaming vessel used was the empty tin of the 15 liter refined oil. A set of three small holes each was pierced at the three corners for the steam to escape and

cooked the *pumaloi*. The outline of the steps involved in the preparation is below (Figure 3).

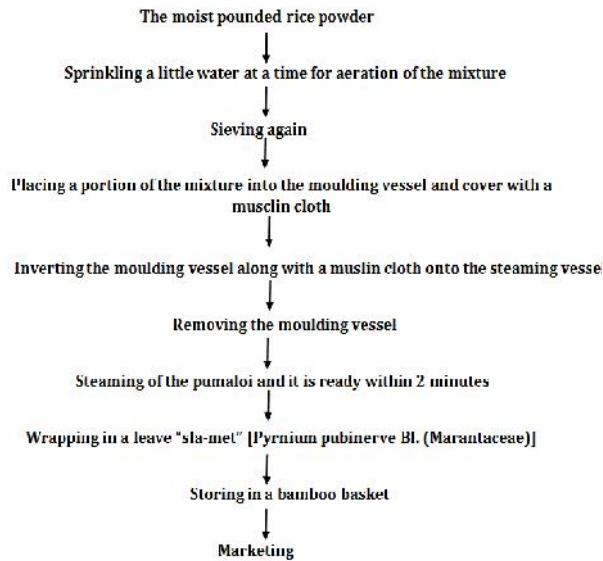


Figure 3 Preparation of pumaloi

Pukhlien

A deep fried snack made up using a mixture of any variety of rice (*khaw khar*), jaggery and cooking soda. Cooking soda is added to the mixture for a deeper brownish color and crispiness and glossy finish of the final product. The detailed procedure followed is summarized in the flow diagram (Figure 4):

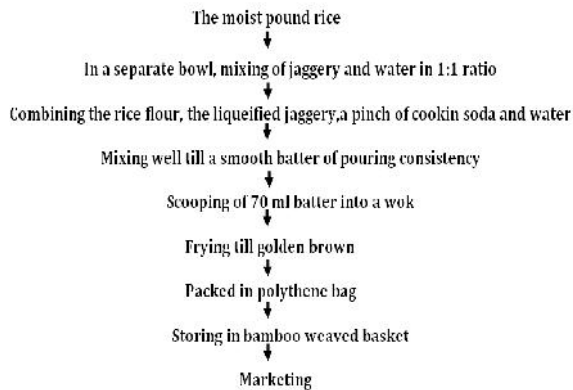


Figure 4 Preparation of Pukhlien

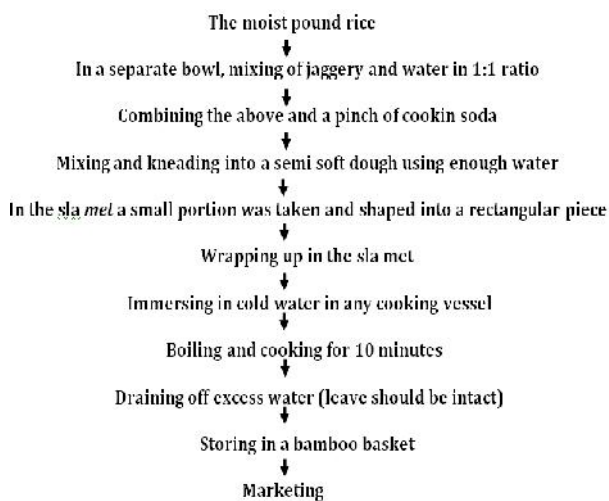


Figure 5 Preparation of Pusla.

Pusla

It is a boiled rice based snacks wrapped in the leaf and boiled in water. There is an art in the folding of the leaves to give shape to the final product, the art needs years of practice for its perfection. The detailed procedure followed is summarized in the flow diagram (Figure 5):

Physical characteristics

The mean value of the RBS per portion size is presented in Table 1.

Each snack was different in their respective shape and size and this is contributed to the methods of preparation employed. Additional contribution is the water ratio of the mixture (rice+water). The amount of water added to attain the specific consistency has been perfected through trial and error and has taken years of practice and now the proprietors does not required any measuring equipment for this. Pusla being rectangular in shape, its length and breadth are measured as opposed to the diameter of the round snacks i.e putharo,pumaloi and pukhlien.

Sensory Evaluation

Table 2 represents the average score for the sensory characteristics of the RBS per portion size.

Being an indigenous food item the score given by the panelist for the various parameters are on the higher side of the hedonic scale .The sense of familiarity and security has a role to play in identifying and recognizing one’s own traditional recpies. The appearance of putharo was scored highest while in term of taste, pumaloi ranked maximum. The texture of pukhlien peaks as compare to the other snacks. Pusla’s color was appreciated and the aroma of putharo made it to the top. For the score on overall acceptability putharo bags the top rank.

Proximate composition of the Rice-based snacks

Triplicate estimate was performed and the mean was taken and presented in Table 3.

Table 1 Mean Physical Dimension of the RBS per portion size

Rice based snacks (RBS)	Mean ± Standard Deviation			
	Weight (g)	Thickness (cm)	Length (cm)	Breadth (cm)
Pusla*	120 ±0.60	134.26±0.60	25.28±0.32	33.72±0.13
	Weight (g)	Thickness (cm)	Diameter (cm)	
Putharo	81.4±0.46	97.04±0.67	9.39±0.54	-
Pumaloi**	62.5±0.34	54.93±0.53	17.06±0.54	-
Pukhlien	94.2±0.29	58.92±0.68	30.59±0.52	-

*Rectangular in shape

**Round in shape

Moisture content of putharo was the highest and is above 50 percent. The energy contribution of pukhlien was highest and that of putharo and pumaloi are almost the same due to the fact that the same variety of rice (khaw mynri) were employed for the preparation. Fat content for putharo (1.42%), pumaloi (0.8%) and pusla (2.51%) are almost negligible and the contribution to the fat content of pukhlien was bound to be higher,it being a fried item. Total ash and crude fibre of all the snacks shows a meager value.

DISCUSSION

The rice-based snacks (RBS) collected from three small

Table 2 Sensory evaluation of the RBS per portion size

Rice based snacks (RBS)	Mean ± Standard Deviation						
	Appearance	Taste	Texture	Flavor	Color	Aroma	Overall Acceptability
<i>Putharo</i>	8.58±0.50	8.55±0.50	8.36±0.47	8.51±0.47	8.45±0.50	8.49±0.47	8.63±0.36
<i>Pumaloi</i>	8.47±0.52	8.58±0.50	8.25±0.39	8.31±0.43	8.51±0.50	8.31±0.41	8.41±0.37
<i>Pukhlien</i>	8.53±0.52	8.47±0.47	8.45±0.50	8.40±0.44	8.31±0.46	8.33±0.42	8.40±0.41
<i>Pusla</i>	8.40±0.51	8.47±0.49	8.04±0.11	8.05±0.18	8.56±0.48	8.13±0.27	8.33±0.34

Table 3 Proximate composition of the Rice-based snacks

Parameters (%)	Putharo	Pumaloi	Pukhlien	Pusla
Moisture	55.65	35.52	29.4	43.3
Energy (kcal)	408	407	494	402
Carbohydrates*	91.2	90.9	81.4	86.5
Fat	1.42	0.8	15.6	2.51
Protein	8.2	9.0	6.99	8.33
Ash	0.23	0.35	0.6	1.25
Crude fibre	0.6	0.16	0.02	0.10

Cottage industries were taken up for the study. A general small Variation was seen in the values due to the differences in the molding and measuring vessel employed in the respective industries. However standardization was done and the evaluation for the various characteristics was carried out to which a favorable result was obtained. The proximate composition analysis was done on the standardized products.

CONCLUSION

In this research, the recipe of putharo, pumaloi, pukhlien and pusla were documented; the physical characteristics and proximate composition of the same were studied. Only slight variation was seen in the physical characteristics of the RBS, the reason being the molding vessel employed by the different small cottage industries. The sensory evaluation scores are on the higher side of the hedonic scale which connotes the snacks are popularly known. These snacks are commonly consumed by the tribal population and as the ingredients used for preparation is mostly only the local paddy and water hence there is a tremendous scope to value add and enrich them to meet the standards of the other snacks. The snacks may then be use therapeutically and may be employed as adjunct therapy to alleviate malnutrition and the like.

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References

1. Vision 2030 .Central Rice Research Institute, Indian Council of Agricultural Research, Cuttack (Odisha) 2011.
2. Food and Agriculture Organization (FAO), 2004. All about rice. Downloaded from: <http://www.fao.org/rice2004/en/aboutrice.htm>.
3. Li Jiming. "Rice as a Food." Encyclopedia of Food and Culture. 2003. Retrieved November 06, 2014 from Encyclopedia.com: <http://www.encyclopedia.com/doc/1G2-3403400513.html>
4. <http://meghalaya.gov.in:8080/megportal/stateprofile>, Retrieved October 30, 2014
5. Hamlet Bareh, Encyclopaedia of North East India: Meghalaya, Reprint Edn, Vol IV, Mittal Publication, 97, (2001).
6. Singh A, *et al*, (2007). Cultural significance and diversities of ethnic foods of north east India, Indian J Traditional Knowledge 6 (1): 79-94
7. Indian Standard, Indian Standard Institution, Guide for sensory evaluation of foods (IS:6273 Part I and II- 1971), Manak Bhavan , New Delhi, (1971)
8. Larmond, E. Laboratory methods for sensory evaluation of foods, Canada Department of Agriculture Publication, Ottawa, (1977).
9. Association of Officials Analytical Chemists, Washington, D.C. Official Methods of Analysis, , 14th edition , Washington, (2000).