

# Indigenous Knowledge In Preparing Rice Based Foods By The Tribes Of Meghalaya

Magdaline Umdor

Eugenia Kyndiah

Hilda Mary Lyngdoh Mawlong

Department of Botany, Sankardev College,  
Bishnupur, Shillong, Meghalaya, India

**Abstract:** *Traditional foods with their unique flavour and taste form an integral part of the diet of ethnic races and tribal people throughout the world. The diversity of traditional foods is related to culture, availability of raw materials and the indigenous knowledge of preparation which has been passed from one generation to another. Meghalaya a state in the north eastern part of India is inhabited by three distinct tribes viz the Khasi, Jaintia and Garo each having their own food habits and cultural identities. Rice based foods are very popular in the tribal and rural areas of the state and the Khasi and Jaintia tribes have a tradition of relishing a variety of rice cakes, locally called kpu or tpu mainly eaten as snacks at tea time, breakfast, festivals, marriage, rituals and special occasions.*

*The field study conducted from June, 2013 to March, 2015 through direct observation and interview methods in the selected areas of the six districts of Meghalaya revealed the indigenous knowledge related to the preparation of Putharo/TPusain, Pusyep, Pumaloi/TPulangdong, Pusla/TPumakrut,, Pudoh, Pupnah,, Pukhleini/TPuphniang and Pujer which are popular rice based foods among the Khasi and Jaintia tribes throughout the region and the indigenous preparation of Pusaw by the Khasis of West Khasi Hills District, Putyndong, Pulainsaw and Pusyrtap by the Khasis of Ri Bhoi District and Punei/TPunai, Tpu Khadu by the Jaintias. The study indicates the uniqueness of the indigenous knowledge in preparing the rice based foods with diversity from each other and the confinement of the knowledge only to household level.*

*An attempt has been made to document the overall knowledge of the processing and preparation of the fourteen ethnic rice based foods recorded which prevailed in the region as there is a threat to this knowledge with the change of life style of the community and the emergence of various fast foods.*

**Keywords:** *Indigenous knowledge, kpu, Khasi, Jaintia, India, rice based foods.*

## I. INTRODUCTION

Rice is a staple cereal crop and varieties of rice are cultivated by the *Khasi* and *Jaintia* tribes. According to Bareh (1985), "The practice of wet-rice cultivation since time immemorial by the *Pnars* and *Khasis* indicate that the forefathers of these people came here in search of good rice fields". Rice is also an integral part of social rites, rituals, festivals and medications (Hedge et al., 2013). During the survey in the areas where indigenous food habits and

preparation are still practicing it was observed that rice is the main food item and diverse rice based food items in the form of cakes locally called "*ki kpu*" which are of various kinds of delicacies are prepared using indigenous knowledge. The prevalence of such food products is largely linked to availability of raw materials and the presence of different ethnic tribal groups. The common indigenous cakes are *puthoro*, *pumaloi*, *pusyep*, *pusaw*, *pukhleini* made of pounded rice (Bareh, 1985, 2007). Similar studies related to preparation of indigenous ricebased foods known as *idli* which is a

fermented steamed product of India, widely consumed as snack (Desikachar et al., 1960), *selroti* a cereal based ethnic fermented food of the *Nepalis* (Yonzan and Tamang, 2009), *aenkadu* and *patande* which are the festive dish made of rice flour by the tribals of Himachal Pradesh (Savitri and Bhalla, 2007) and *sez*, a traditional semi fermented food used by the *Bhotiyas* of Uttaranchal of India (Roy et al., 2004) indicates the existence of various delicacies of rice prepared in a different set of directions for making a dish. A study conducted by Hegde, Yenagi & Kasturiba (2013), revealed that “hand pounded rice used for consumption in the past had several significant implications on health and nutrition especially on the mother and child”. According to Agrahar- Murugkar and Subbulakshmi (2005), “these rice based snacks are very cheap and healthy since it has very little oil or sugar content”. A nutritional evaluation of traditional recipes done by Blah & Joshi (2013), revealed that “the calories and carbohydrates content of all the traditional snacks are high since these snacks are rice based”. According to Steinkraus (1994), “a global interest in rice and its fermented product is increasing due to their calorie value, unique quality characteristics and high acceptability”. A review by Das, Raychaudhuri and Chakraborty (2012), states that “in today’s world the development and utilization of different cereal based functional foods is a challenging task and invention of newer technologies for processing of cereals to improve the nutritional value *vis a vis* their acceptability by the end users will be the focus area in the near future”. During the field study conducted, an interaction with the interviewees revealed their indigenous knowledge of preparation of varieties of rice based foods and also highlighted their uses for different social purposes. It can also be pointed out that women have been the key social actors in preserving, transferring and practicing indigenous food knowledge (Nongkynrih, 2013).

Meghalaya, a Sanskrit word meaning “the abode of cloud” is located in the north eastern part of India comprises of 11 districts (Paul, 2014) i.e South Garo Hills, West Garo Hills, East Garo Hills, North Garo Hills, South West Garo Hills, East Khasi Hills, West Khasi Hills, South West Khasi Hills, Ri Bhoi District, West Jaintia Hills and East Jaintia Hills. It is bounded on the north, east and west by the state of Assam and on the south by Bangladesh. The state lies between 25°02’ – 26°06’ N latitude and 89°50’- 92°50’ E longitude (Singh, 1994) and covers an area of 22,429 km<sup>2</sup> with an estimated population of about 29, 66, 889 according to Census of India 2011.

Ahmed (2005) stated that “Meghalaya is divided into three hilly regions (a) The Khasi Hills (Central Meghalaya) (b) The Jaintia Hills (Eastern Meghalaya) and (c) The Garo Hills (Western Meghalaya)”. The state is inhabited by three distinct tribes, viz *Khasi*, *Jaintia* and *Garo*, whereby, the *Khasi* and the *Jaintia* tribes mainly inhabited the Central and Eastern of Meghalaya and the *Garo* tribe occupies the Western part of Meghalaya. These tribes comprised of various sub-tribes differentiated only by geographical location rather than by race. The ethnic tribal groups live in an environment characterized by defined areas with specific food habits, dialects, cultural homogeneity and a unified social organization (Agrahar et al., 2004).

The paper deals with indigenous knowledge of preparation of indigenous rice cakes commonly consumed by the *Khasi* and *Jaintia* tribes in various regions of Meghalaya. The main objective of this study is to shed light on the preparation methods and to document the information of the knowledge involved in the production of varieties of “*Kpu*” which has been transferred from one generation to the next through word of mouth as the know-how of indigenous processes and technologies involved in the production of these indigenous rice based foods are unique and different from other areas and has been limited to household level and written records are scarce. Documentation of the knowledge is an urgent need as with globalization and commercialization there is an inevitable loss of much valued resources and traditional practices.

## II. METHODOLOGY

The study was conducted in June, 2013 to March, 2015 in the rural and tribal areas located in the six districts of Meghalaya which include East Khasi Hills, West Khasi Hills, South West Khasi Hills, Ri Bhoi District, West Jaintia Hills and East Jaintia Hills of Meghalaya (Fig.1).



Figure 1: Map of study area

Preparation of ‘*Kpu*’ is usually carried out in small scale cottage industries at household level, as such, homes in the selected areas were randomly chosen and visited. Prior to field visit in the selected areas where indigenous practice of preparation of ‘*Kpu*’ is popular, the local people were briefed about the purpose of visit with the help of middle persons and when permission is granted, the individuals who practice the indigenous methods of preparation of rice snacks (*Kpu*) were approached and an interview method is used to acquire prominent information pertaining to the method of preparation of each variety of “*Kpu*”, raw materials and equipments used and socio-cultural importance. In addition direct observation of the indigenous preparation was also carried out on the spot to get a clear illustration with the various steps involved in the process. During investigations details about the indigenous knowledge of preparation of varieties of “*Kpu*” was documented and some photographic records were made.

### III. RESULTS

The indigenous knowledge in preparing varieties of rice based foods by the *Khasi* and *Jaintia* tribes of Meghalaya involved popular methods of cooking like steaming, boiling, baking and frying. Nutritional evaluation by Blah & Joshi (2013), revealed that “traditional snacks where oil has been used as a cooking medium have more fat content while those prepared without oil as cooking medium are rich in calories and carbohydrates but a minor source of fat, fibre and protein”. These rice snack items or “*Kpu*” in short *Pu* were prepared from different varieties of pounded rice and the amount of ingredients, size of the product and type of utensils used differ from one region to another depending on one’s choice and taste but the method of preparation remains the same. These special indigenous foods are prepared from local varieties of rice like *khawmynri*, *khaw Manipur*, *khawpnah* and local red rice and in some varieties of *Kpu* other ingredients like *gur*, *neilieh*, sugar, pork, baking soda, coconut etc. are used to add taste to the snacks. Rice based foods are consumed by the tribes of Meghalaya and form an integral part of their socio-cultural life and source of income in their livelihood. Following are the popular varieties of rice based food indigenously prepared and consumed in different parts of Khasi and Jaintia Hills of Meghalaya.

✓ **PUTHARO:** Is a traditionally dry cooked, oval or disc shaped snack (Fig. 2) prepared in a special earthen dish called “*Saraw*” in Khasi and “*wieng*” in Jaintia (Fig.3). In this preparation non-sticky rice locally called “*khawmynri*” and sticky rice locally called “*khawpnah*” (in ratio  $1 : \frac{1}{4}$ ) are soaked separately in water for few hours (1 ½ h). The water is drained and the rice is hand pounded separately with the help of wooden pestle and mortar locally called “*Synrei*” and “*thlong*” and the pounded rice is then sieved (Fig. 4). To the sieved non-sticky rice, hot boiling water is added to make the rice soft and mixed thoroughly with hand, then the sieved powdered sticky rice is added to it and mixed together with cold water to form a batter. In a cup the paste is taken and poured on a previously burnt “*saraw*” covered with a burnt *saraw* lid and baked on fire till the dough is raised. In the process the “*saraw*” should be very hot. “*Putharo*” is a traditional local rice snack which is commonly available in the markets and in many homes and in rural areas it is used as a special snack on occasions.



Figure 2: Putharo



Figure 3: Saraw



Figure 4: Sieving of pounded rice

✓ **PUSYEP:** Is a traditionally steam cooked bowl-shaped snack prepared in a steam over the mouth of cylindrical tin or earthen dish having a hole on its lid (Fig. 5) where water is continuously boiled inside during preparation. The process of soaking, pounding and sieving is similar to the preparation of *putharo* but in this case only non-sticky rice is used and the sieved powdered rice is moistened by sprinkling cold water and mixed by hand thoroughly avoiding making it sticky. Then transferred to a bowl of required size almost same like the size of the the mouth of the cylindrical tin and covered with a muslin cloth. When steamed on the earthen dish, any size can be taken. The mouth of the covered bowl is then placed on the hole of the earthen pot or cylindrical tin and the bowl is removed allowing the steam to penetrate the shaped powdered rice (Fig. 6) till it reaches the top. *Pusyep* (Fig.7) is taken as a common snack anytime of a day along with tea and also prepared during marriage ceremonies and local festivals.



Figure 5: Earthen pot with a hole on the lid



Figure 6: Shaped powdered rice



Figure 7: Pusyep

- ✓ **PUMALOI:** Is a traditionally steam cooked snack round in shape similarly prepared like *pusyep* but smaller in size and much softer than the former as more water is added to make the powdered rice slightly sticky. *Pumaloi* (Fig. 8) is very much like *idli* available commonly in southern India (Bareh, 2007). In Jaintia, this snack is locally called “*Tpulangdong*” and is commonly taken as breakfast food with tea and also prepared during festivals.



Figure 8: Pumaloi

- ✓ **PUTYNDONG:** This indigenous cylindrical rice based food is commonly prepared by the *Khasi* tribe of Ri Bhoi. Hand pounded non-sticky rice is used and the powdered rice is sieved twice, then moistened with cold water, mixed thoroughly crushing the lumps and sieved again.

After sieving the moistened powdered rice is packed inside a cleaned fresh bamboo pipe and the mouth of it, is sealed with fresh leaf of *Phrynium pubinerve* locally called *slamet* (Sohliya et al., 2009). The packed bamboo tube is then placed in a slanting position over the fire allowing the flame to reach the whole surface of the bamboo to burn it (Fig. 9). While burning, the side of the bamboo have to be turned frequently and the water drained from the mouth of the bamboo, showing that it is nearly cooked. The rice snack i:e *Putyndong* (Fig.10) is ready when the bamboo surface becomes black and when the rice inside stick to the bamboo wall. The bamboo is then removed from the fire and after cooling, the burnt portion of bamboo is sliced and the snack is taken out from the bamboo case at the time of serving. This snack is prepared during occasions.



Figure 9: Burning the bamboo pipe in fire



Figure 10: Putyndong

- ✓ **PULAIÑ SAW:** Is an indigenous steamed cake which is almost round in shape prepared by the *Khasi* tribe of Ri Bhoi. The indigenous method of preparation is similar to *pumaloi* but here two local varieties of rice – white variety which is non-sticky and red variety which is sticky is used and sugar is added to sweeten it. Rice is soaked and water is drained then pounded separately. The powdered rice is sieved separately and to it cold water is added and mixed thoroughly avoiding making it sticky. The moisten white rice is filled almost half of a big bowl then a thin layer of moisten red rice is spread evenly over the surface of white rice and on top of it the moisten white rice is filled up to the brim of the bowl and a muslin cloth is wrapped on it and this is placed on the mouth of a vessel almost the same size as the bowl in an inverted position. Inside the vessel water is continuously boiled over the fire. The cake is cooked by the steam passing through the muslin cloth and it is ready when the base of the bowl becomes hot. The cake is cut when it is cool.

*Pulaiñ saw* (Fig.11) is a special rice based food prepared only during festivals, marriage and occasions.



Figure 11: *Pulaiñ saw*

- ✓ **PUSYRTAP:** Is an indigenous two layered dry baked pancake of the *Khasi* in Ri Bhoi prepared from soaked, drained and pounded sticky rice. The powdered rice is sieved and cold water is added, mix thoroughly with hand crushing the lumps and sieved again. One big spoon of the sieved powdered rice is put in the middle of a hot “*saraw*” placed on the fire and with the help of a round base vessel the rice is spread uniformly and a mixture of grated coconut and sugar is sprinkled on one side and with a flat size of baked rice is turned upward and bounded with the edges forming two layers (Fig.12), While baking the rice powder should not be burnt. *Pusyrtap* (Fig.13) is an indigenous rice cake similar to local rice cakes called “*Pitha*” (Roy, Mohtan & Sarkar, 2007), of other tribals of India which is prepared during different festival.



Figure12: Layering of baked rice



Figure 13: *Pusyrtap*

- ✓ **PUSLA:** This is a traditionally boiled snack, rectangular in shape, prepared by mixing the pounded non-sticky rice with melted *gur* (jaggery) in ratio 2:1 and a pinch of baking soda. A small portion of the mixture is taken on a fresh leaf (*Phrynium pubinerve*), wrapped properly with it and keep in the vessel containing boil water and steam or boil till the leaf turns brown. This snack called “*Pusla*” (Fig. 14) in *Khasi* and “*Tpumakru*” in *Jaintia* is

commonly available in many of the markets and usually prepared during festivals, marriage, occasions, etc.



Figure 14: *Pusla*

- ✓ **PUDOH:** This traditional boiled, pork patty (Bareh, 2007) is prepared by stuffing inside the powdered rice paste boiled pork cut into small cubes (2 -3 cm) with little salt. The starting preparation is same as *putharo* and the rice paste stuffed with pork is wrapped in a fresh leaf (*Phrynium pubinerve*) and dip in boiling water and steam till the leaf turns brown. This rectangular shaped rice snack called *Pudoh* (Fig. 15) is usually prepared in occasions.



Figure 15: *Pudoh*

- ✓ **PUNEI:** This indigenous fried rice snack is very popular in Jaintia Hills and is traditionally prepared by mixing grinded sesame seed called ‘*neilieh*’ (*Anisomeles indica* (L) *O Kuntze, Syn. A. ovata R. Br.* (Lamiaceae) (Ahmed & Borthakur, 2005), and salt into the powdered rice paste. The starting preparation is same as *putharo* till the formation of rice paste. If required turmeric powder can also be added to the mixture. The ratio of the rice paste to the *neilieh* is 8:1. The mixture is mould into round shape size approximately 5 cm. in diameter and shallow fry in refined oil. *Punei* (Bareh, 2007), (Fig. 16) is usually taken as snack food with tea and is mostly prepared during festivals and occasions.



Figure 16: *Punei*

- ✓ **PUPNAH:** Is a traditionally fried rice snack prepared by mixing powdered sticky rice and cold water to make a dough. To the mixture salt is added to taste and small round moulds of 5 cm. in diameter is shaped and shallow

fry in refined oil. This indigenous rice food i.e *Pupnah* (Fig.17) is usually taken with tea and prepared mostly in occasions.



Figure 17: Pupnah

✓ *PUKHLEIÑ*: The traditional brown and round shaped fried rice snack is called “*pukhleĩñ*”<sup>3</sup> (Fig.18) in *Khasi* and “*Tpuphniang*” in *Jaintia*. It is prepared by mixing the powdered non-sticky rice with melted *gur* (jaggery) in ratio 2:1, a pinch of baking soda and cold water to make a batter. The batter is mixed thoroughly and rounded spoon the batter is taken and it is dropped into the refined oil and deep fry in slow heat. This indigenous fried snack is very popular in all markets of *Khasi* and *Jaintia* Hills and taken with tea anytime. It is mostly prepared in festivals, marriage ceremonies and occasions.



Figure 18: Pukhleĩñ

✓ *PUSAW*: Is an indigenous cake baked in oil, mostly prepared by the *Khasi* tribes of West *Khasi* Hills. Hand pounded non-sticky red rice is used and the powdered rice is sieved and to it a pinch of baking soda and sugar is added and mixed with cold water to form a smooth batter. After greasing the inside of the pot with little oil the mixture is poured and covered. This snack is baked in slow heat and on top of the lid burnt charcoal is placed. The cake is ready when it no longer sticks to the side of the pot. *Pusaw* (Fig.19) is usually prepared during festivals and marriage ceremonies.



Figure 19: Pusaw

✓ *PUJER*: Is a traditionally fine powdered uncooked rice prepared during naming ceremony by the *Khasi* tribe who follows the traditional religion i.e. “*niam Khasi*”. For this purpose a good variety of non-sticky rice is soaked overnight in a special dish called *khiew ranei* (black earthen vessel) covered by the banana leaf. Early in the morning in the verandah of the house, the soaked rice is hand pounded in a wooden pestle and mortar. The powdered rice is then shifted from the mortar to a flat wooden or cone shaped bamboo basket /carrying basket with a wooden flat ladle never with hand. After the naming ceremony is over, the powdered rice now called *Pujer* (Passah, 2012) (Fig. 20) is served raw, without sieving and cooking, to all the relatives, friends and guests.



Figure 20: Pujer

✓ *PU KHADU*: This traditional fried rice snack of bangle-shaped is commonly prepared by the *Jaintia*. The method of preparation is similar to “*pukhleĩñ*” but the rice powder used should not be too smooth and the paste/dough is rolled into bangle-shaped with hand and shallow fry in refined oil. “*Pu khadu*” (Fig. 21) in *Khasi* and “*tpukhadu*” in *Jaintia* is an indigenous snack which is prepared in most festivals and occasions of the *Jaintia*.



Figure 21: Pukhadu

#### IV. DISCUSSION

The *Khasi* and *Jaintia* tribes of Meghalaya are eminent practitioners of the indigenous knowledge in preparing rice based foods since time immemorial. The custom of practice is mainly in a heirarchical manner for social-cultural indigenous commemoration where no detailed records are available. The indigenous knowledge possessed by the ethnic tribes indicate that the process and technologies of preparation were similar in most respect except in the materials used depending on the availability of raw materials and the production which are

diverse from one area to another. The availability of good, fertile rice fields enabled the *Khasi* and *Jaintia* tribes to bring out ample supply of rice which lead them to administer rice as an integral food item, be in social rites, rituals, festivals or medications. From the study it was observed that rice is the main food item and diverse rice based foods in the form of cakes locally called *kpu* in *Khasi* and *tpu* in *Jaintia* which are of various kinds of delicacies are prepared using indigenous knowledge. In the present study, fourteen varieties of rice based foods preparation was recorded and listed under result. It can be pointed out that women of the *Khasi* and *Jaintia* tribes are the main steering force in preserving, transferring and practicing the indigenous knowledge. The utensils used like *saraw/wieng*, *khiewranei* etc are unique and the technique of preparation is noteworthy which may not be found elsewhere. The simple cooking technique of steaming, baking and boiling with limited ingredients used indicates that the product is highly acceptable. However, absent of documentation and limitation of the indigenous knowledge to household level may bring about a gradual erosion of this valued resources and practices in this era of technological advancement. Thus, the needs to documentation of the indigenous knowledge of preparation is crucial as with the globalization and commercialization there is a threat and inevitable loss of the forefather's knowledge and traditional practices.

#### V. SIGNIFICANCE OF STUDY AND SOME CONSTRUCTIVE RECOMMENDATIONS

The present study aims at documenting the indigenous knowledge of preparing rice based foods in the *Khasi* and *Jaintia* community and to preserve the rich indigenous delicacies whose existence is otherwise threatened by the fast food culture. The various methods of preparation of ethnic foods not only demonstrate the creativity and treasure of food heritage but it is also a mean of sustaining life. Thus, there is an urgent need to invent, document, conserve and improve the indigenous technologies, to popularize and commercialize the food products through markets to uplift the local economy. Further, it was observed during the study that the number of tribes who practice the knowledge of preparing rice snacks is limited and is a dying culture in larger parts of the region. Thus the need of the hour is to revive and revitalize the indigenous practice that the community possessed by formulating policies with the help of the local bodies, NGOs and the Government. It was also noticed that rice snacks (*kpu*) get spoiled in a day or two, as such scientific technological approaches are required to overcome this problem and further investigation by nutritional experts on the nutrient content and health benefits is required to improve the quality and safety of the products.

#### VI. CONCLUSION

Findings revealed that women are the indigenous holders in the preparation of ethnic varieties of rice snacks while men help in pounding the rice. It was also noted that some varieties

of rice snacks are indigenously prepared only in certain area like *Pusaw* indigenous to the *Khasi* of West *Khasi* Hills District, *Putyndong*, *Pulainsaw* and *Pusyrtap* indigenous to the *Khasi* of Ri Bhoi District and *Punei / Tpunai*, *Tpukhadu* indigenous to the *Jaintia*. The other varieties like *Putharo / Tpusain*, *Pukhleim / Tpuhphiang*, *Pumaloi / Tpulangdong* and *Pusla / Tpumakrut* are the common rice snacks available throughout the region. The present study recorded the indigenous preparation of fourteen- ethnic varieties of rice snacks (*Kpu*), which was not recorded before and out of those, three-ethnic varieties *i.e* *Pulainsaw*, *Pusyrtap* and *Tpukhadu* are newly reported for the first time. These rice based foods are unique to Meghalaya and the prevalence of such products is largely linked to availability of raw materials and the presence of different ethnic tribal groups. Further, preparation and selling of these products generate income and support to the family. Therefore, dissemination of these technologies of food preparation is likely to uplift the economy and help in preservation of this traditional knowledge which has an additional effect of reaffirming cultural identity.

#### ACKNOWLEDGEMENT

Authors gratefully acknowledged the financial support from the University Grants Commission in the form of a minor Research Project (vide Sanction No.F.S-01/2012-13(MRP/NERO/11663). Authors are indebted to Mrs. Piam Sohtun (Puriang Village, East *Khasi* Hills District), Mrs. Nah Iakai (Khlieh Shnong, Jowai, West *Jaintia* Hills District) Ms. Amabilis Kahit (Pdeng Shnong, Mawlai, East *Khasi* Hills District), Mrs. Diamon Syiem (Umden Diwon, Ri Bhoi District), Mrs. Blancy Iawphniaw ( Mawkyrwat, South West *Khasi* Hills District) who have demonstrated the process of preparing the rice snacks (*Kpu*) and to numerous Interviewees who willingly shared their indigenous knowledge and providing information during the survey in the study areas.

#### REFERENCES

- [1] Ahmed, A. A., & Borthakur, S. K. (2005). *Ethnobotanical Wisdom of Khasis (Hynniew Trep) of Meghalaya*
- [2] Agrahar – Murugkar, D., & Subbulakshmi, G. (2004). Nutritional Value of edible wild mushrooms collected from the *Khasi* Hills of Meghalaya. *Food Chem*, 289 (4), 599 – 603.
- [3] Agrahar – Murugkar, D., & Subbulakshmi, G. (2005). Nutrition values of wild edible fruits, berries, nuts, roots and spices consumed by the *Khasi* tribes of India. *Ecol Food Nutr*, 44, 207 – 223.
- [4] Bareh, H. (2<sup>nd</sup> Ed.), (1985). *The History and Culture of the Khasi People* (pp. 307, 37, 308). Guwahati: Spectrum Publications.
- [5] Bareh, H. M. (2007). *Encyclopedia of North-East India, Meghalaya*, Volume IV (pp.97). New Delhi: Mittal Publications.
- [6] Blah, M. M., & Joshi, S. R. (2013). Nutritional Content Evaluation of traditional recipes consumed by ethnic

- communities of Meghalaya, India. *Indian J Tradit Knowle*, 12(3), 498 – 505.
- [7] Das, A., Raychaudhuri, U., & Chakraborty, R. (2012). Cereal based functional food of Indian sub continent: A review. *J Food Sci Technol*, 49 (6), 665 – 672.
- [8] Desikachar, H. S. R., Radhakrishnamurty, R., Rao, R., et al. (1960). Studies on idli fermentation Part 1. Some accompanying changes in the batter. *J Sci Ind Res*, 19, 168 - 172.
- [9] Hegde, S., Yenagi, N. B. & Kasturiba, B. (2013). Indigenous knowledge of the traditional and qualified ayurveda practitioners on the nutritional significance and use of red rice in medications. *Indian J Tradit Knowle*, 12(3), 506 – 511.
- [10] Nongkynrih, A. K. (2013). Food habits of Tribal Communities in Northeast India. *J of North East Indian Cultures*, 1(1), 76 – 91.
- [11] Passah, S.(2012). *Ka Jer Ka Thoh Lane ka Jer Khun* (pp.39-42). Meghalaya: Khasi Jaintia Welfare Association, Coral Jubilee Celebration.
- [12] Paul, A.K. (2014). *Meghalaya, The Abode of Clouds, Current Affairs Special* (pp. 9,163). Guwahati: J & C Newspaper Group (Regd).
- [13] Roy, A., Mohtan, B., & Sarkar, P. K. (2007). Traditional technology in preparing legume-based fermented foods of Orissa. *Indian J Tradit Knowle*, 6(1), 12 – 16.
- [14] Roy, et al. (2004). Indigenous fermented food and beverages. A potential for economic development of the high altitude societies in Uttaranchal. *J Human Ecology*, 15(1), 45 – 49.
- [15] Savitri, & Bhalla, T. C. (2007). Traditional foods and beverages of Himachal Pradesh. *Indian J Tradit Knowle*, 6 (1), 17 - 24.
- [16] Singh, K. S. (1994). *People of India Meghalaya Vol XXXII* (pp. 1). Calcutta: Seagull Books.
- [17] Sohliya, I., Joshi, S. R., Bhagobaty, R.K., & Kumar, R. (2009). *Tungrymbai – Traditional fermented soybean food of the ethnic tribes of Meghalaya. Indian J Tradit Knowle*, 8(4), 559 – 561.
- [18] Steinkraus, K. H. (1994). Nutritional significance of indigenous fermented foods, *Food Res Int*, (27), 259 – 267.
- [19] Yonzan, H., & Tamang, J. P. (2009). Traditional processing of selroti – a cereal based ethnic fermentation foods of the Nepalis. *Indian J Tradit Knowle*, 8 (1), 100 - 114.