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Production and Sensory Evaluation of Pito, Burukutu, Kunuzaki as Beverage Drinks

Nathaniel I. Adebayo
Department of Hospitality Management, Federal Polytechnic, Auchi,Edo State. Nigeria

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Abstract
This study examined the use of guinea corn and millet locally for producing Pito, Burukutu and Kunuzaki as contemporary beverage drinks in the modern day Nigeria where foreign beverages dominate the food and beverage" Many of the foreign beverages are highly flavoured with heavy contents of additives and artificial colorings. Thus raising many questions on their health implications and a constant worry to National Agency for Food and Drug Administration and Control (NA FDA C) organization In Nigeria. The raw materials were processed adopting the local methods of preparation and were served to 20 panelists for sensory evaluations. The evaluations were based on ranking 1-10 for odour, colour, taste aroma and overall acceptability. The results of the rating indicated the following: Kunu Zaki, on odour 5.5, colour 6.0, taste 5.4, aroma 6.6. Burukutu on odour 4.3, colour 3.9, taste 3.7, aroma 4.4. Pito, odour 4.5, colour 6.0, taste 4.3, aroma 2.7. The ratings and scores showed that Kuruzaki was most favoured by the panelists followed by Pito and Burukutu was the last favoured in terms of odour colour, taste and aroma.
Keywords: Production, sensory Evolution, Pito, Burukutu and kunuzaki.

1. Introduction

Guinea Corn and Millet are the World's third important food grain being utilized for food as well as beverages. The cereals are very rich in carbohydrate, proteins, and fat. The hull from guinea corn and millet are used for animal feed while the leaves are also consumed by domesticated animal like goats, sheep and cattles (Ekwueme, 2007). See Table I

Table I

100% gm	Energy	Protein	Carbohydrate	Fat
Millet	329	17.4	77.7	1.3
Guinea corn	347	11.1	74.1	3.2

Source: Ekwueme (2007)
Nutrient composition of millet and guinea corn.

Nutritionally, guinea corn protein as other cereal protein is limited in amino acids, lysine, threonine, tryptophan and methionine, while millet grain appears to be higher in protein than most cereal, it is a good source of thiamine and niacin. Millet, however, has a high percentage of indigestible fibre because the seeds are closed in hulls which are not remove by ordinary processing methods
(lhekoronye 2001)

This study is designed to explore the use of local cereals in making beverages. The raw materials, majorly guinea corn and millets are available in large quantity in the Northern part of Nigeria.

Kunu Zaki and Pito are non alcoholic, while burukutu has very low level of alcohol. Ekwueme (2007), concluded that people erroneously think that energy are gotten from soft drinks such as Fanta, Coke and Malt, etc, without realizing that more energy and other essential nutrients could be obtained from these local beverages".

1.1 Materials And Methods

The materials used for the preparation of Burukutu, Kunuzaki and Pito were all purchase locally at, Jettu market in Auchi Edo state Nigeria.

As for the mean sensory scores of the three drinks, the methods used were in the scoring test where coded samples were evaluated for some specific characteristics by penalists who recorded their answers on a descriptive graduated scale. The attributes to be scored are divided into five categories. Twenty penalists were briefed on characteristics attributes to be measured and the difference in intensity recognized. The scoring being effected on the drinks were analyzed on Table II.

(a) BURUKUTU

Recipe
Guinea corn or millet 1 kg
Ginger -200g
Sugar - 300g (to taste)
Processing Method

Stage 1: Picking: The grains were spread on flat trays, foreign particles and sands were removed.
Stage 2: Washing: Grains were washed with cold water to remove dirt's.
Stage 3: Soaking: This stage involved soaking the grains with water for six hours.
Stage 4: Germination: Grains were germinated between 3-4days.
Stage 5: Grinding: Germinated grains were wet milled to a smooth paste.
Stage 6: Diluting: The slurry paste was diluted with cold water and stirred to running texture.
Stage 7: Fermentation: The slurry was inoculated with yeast for fermentation. Osmophilic yeast (saccharomyces rouxii) was used to obtain effective fermentation. This process lasted for 24 hrs.
Stage 8: 1st Steaming: The fermented slurry was put into a pot and steamed for 1 ½ hours.
Stage 9: Seasoning: A combination of crushed ginger and sugar was added and steamed solution was left to rest for 6 — 8 hours. This was to harmonise the seasoning and the sweetner.
Stage 10: 2nd Steaming: The following day, a second steaming was done for 30 minutes.
Stage 11: Allow to cool or chill at 4°C temperature.
Stage 12: Serve: Burukutu drink is served chilled at 4°C with cocktail glasses. Ideally, it could serve as appetizer before meals or taken for relaxation.

(b) KUNU ZAKI

Recipe: Guinea corn -1kg, millet (1 kg), sweet potatoes-500g, sugar 300g, ginger 50g red pepper 5g or atale water 25 litres.
Processing
Stage 1: Picking: The grains were spread on a flat platform and cleaned, removing unwanted particles, dirt's and stone pebbles.
Stage 2: Washing: Millet and guinea corn were mixed together and washed with cold water.
Stage 3: Soaking; Washed grains were soaked for 2 days.
Stage 4: Wet Milling: The grains were drained from the soaked water. Potatoes were peeled, after which they were added to the grains and wet milled together, and sieved with filter to remove the hulls.
Stage 5: Division: The paste was divided into two equal parts using 2 plastic bowls.
Stage 6: Cold and Hot Preparation: Boiled water (100°C) was added to one part and stirred with a wooden spoon. This slurry turned into homogenous liquid form cold water (4°C) was added to the second part. The prepared spices i.e.ginger and red peppers were added to the cold slurry with sugar and 25 litres of water.
Stage 7: Mixing together: The hot prepared slurry and cold prepared slurry were mixed together thoroughly to a smooth watery texture.
Stage 8: Chilling: Put in a cool place or refrigerator to chill at 4°C.
Stage 9: Sieving Serve chilled with snacks or as sweet after a meat

(c) PITO

Recipe: Guinea corn 1 kg, sugar 400g, and ginger.
Processing
Stage 1: Picking: The grains are spread on flat tray to remove sand and dirt's.
Stage 2: Washing: Grains were washed twice with clean cold water to tree the grains from dirt's.
Stage 3: Germination: This stage involves covering the wet grains in a sac and kept in a warm environment to aid quick germination of the grains. Germination process lasted for 3-4 days and at temperature of 20°C.
Stage 4: Drying: Grains were dried in the sun for 2 days.
Stage 5: Grinding: Grains were grounded dried with milling machine to fine powdery form.
Stage 6: Dilute: The powder mixture was diluted with 2 litres of cold water to watery form.
Stage 7: First Steaming was carried out for 1 ½ hours and allowed to cool for between 4 6 hours.
Stage 8: Sieve: Here the slurry was sieved twice with native basket or plastic sieve to remove the shafts. Sugar and grinded ginger were later added to sweeten the solution.
Stage 9: Second Steaming: The solution is steamed the second time for 30 minutes. This is to give the characteristic aroma and flavour of pito drinks.
Stage 10: Chilling: The pito drink is chilled at a temperature of 4°C or put in a cool environment for 1 hour.
Stage 11: Sieve: Pito is served with cocktail glasses or native gourds,
Uses Served with snacks as sweet after meals relaxation at work or for festivals and ceremonies. The drink is non alcoholic.

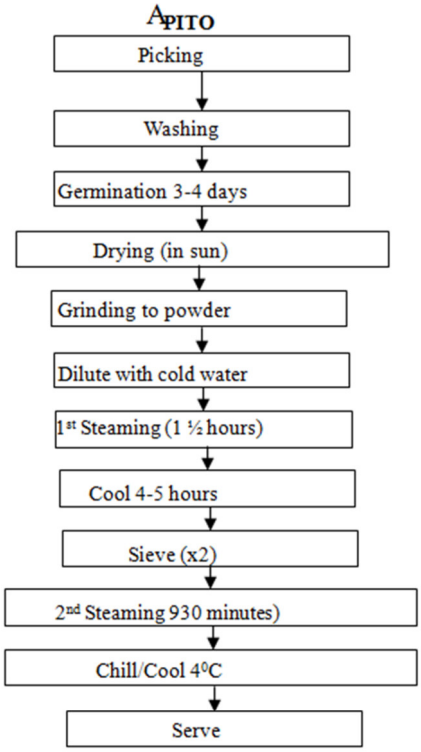


Figure 3: Flow line Diagram of Pito Processing

Source: Laboratory preparation (2015)

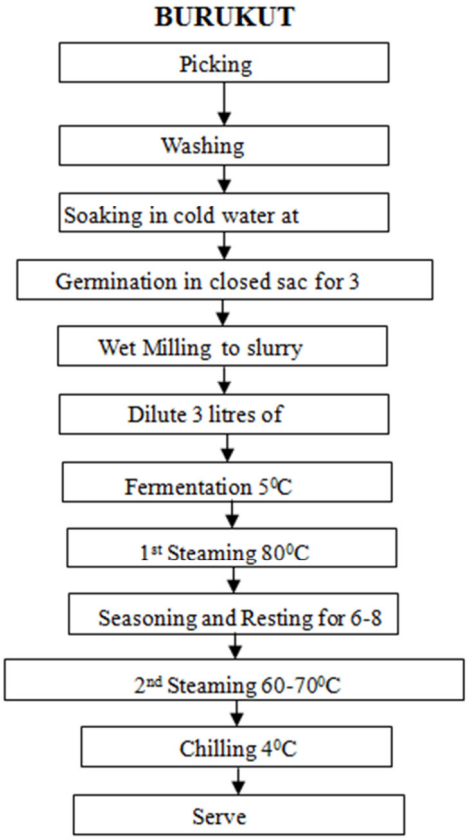
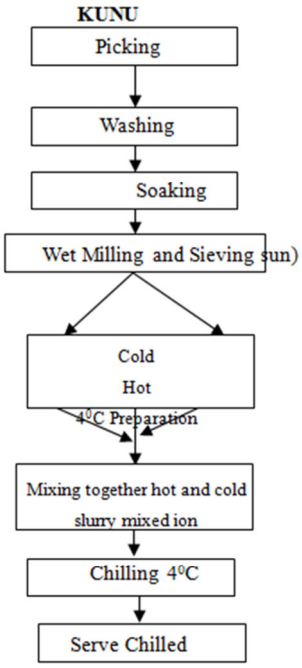


Figure 3: Flow Chart for preparing Burukutu

Source: (IWE 2002)



Source: Laboratory preparation (2015)

Figure 2: Flow Line Diagram of Kunu Zaki Processing

TABLE 2
Physical Examination of Kunu Zaki, Burukutu and Pito

Attributes	**Description of Drinks**		
	Kunu Zaki	**Burukutu**	**Pito**
Appearance	Whitish and lightly Cream	Deep brownish	Brownish
Colour	Brownish	Deep Brownish	Chocolate brown
Odour	Smell-like milk	Lightly alcoholic	Fruity
Taste or favour	Sweet and Creamy	Sweet with a bit pungent aroma	Sweet and sharp to taste

Source: Laboratory Examination Results (2015)

TABLE 3
Mean Sensory Scores of Kunu Zaki, Burukutu and Pita Prepared by the Local Methods.

Parameter	Kunu Zaki	Burukutu	Pito
Odour	5.5	4.3	4.5
Colour	6.0	3.9	6.0
Taste	5.9	3.7	4.3
Aroma	6.6	4.4	2.7
Overall acceptability	5.4	2.8	4.2

Scores were based on a 7 point hedonic scale where 7 = like very much, 1= dislike very much.
Source: Sensory Evaluation Results (2015)

1.1.1 Results and Discussions

Figure II showed the production processes of the raw materials used namely guinea corn and millets, In order to obtain the indigenous taste, colour and aroma, the local methods of preparations of Kunu zaki, Burukutu and Pito were followed and were reflected in the flow charts figures II, Ill, IV.

Table 2 showed the physical attributes of the drinks in terms of appearance, colour, aroma and taste.

Table 3 highlighted the mean sensory scores of the three drinks.

The sensory scores of the three beverages on Table3 showed that Kunu Zaki was most favoured by the panelist in terms of odour, colour, taste, aroma and overafl acceptability while Pita compared favourably well with KUnu Zaki, However, Burukutu overall ratings is lower especially in terms of overall acceptability. This is however not to say that Burukutu did not have its tavcurites. There were some members of the panel who indicated their preference for Burukutu from their school days till date.

Tuner et al, (2008) described a good beverage as that which is attractive to the eye by colour and clarity,

pleasing to the sense of smell by aroma and bougnet, intensively clean on the palate, accompanied by a mellowing smooth texture and subtle flavour but shows no sign of decaying at its approaching end. The beverages produced from the local guinea corn and millets i.e. Kunu Zaki.

Burukutu and Pito possess those attributes as described by and favourably compared to the modern day beverages.

1.1.2 Recommendations

This study therefore recommends that these local beverages be served in Nigerian hotels, restaurants, canteens, guest houses and all hospitality outlets: The benefits derived does not lie in their nutritional values alone but they were not prepared with additives and artificial colourings which may pose health hazards to consumers. Promoting these local beverages will project Nigerians' rich food culture, and will in turn trigger the growth and development of both local and international tourism in Nigeria.

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