

Quality Evaluation of a Non-Alcoholic Beverage Produced from Pear Millet (*Pennisetum Typhoides*) for Use in Hospitality Food Service

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Abstract

The study was conducted to assess the quality evaluation of non-alcoholic beverage produced from pear millet. The ingredients were purchase from a local market in Idah town, Kogi State Nigeria, West Africa. This beverage was subjected to evaluation for their protein, moisture, ash contents, some vitamins, some minerals. The results revealed that moisture and fat content ranges from 81.45 (0.007) and 0.13 (0.005) respectively. Protein and ash content ranges from 1.47(0.002) and 0.494(0.003) respectively. Whereas the vitamin content of the beverage with the mean and standard deviation (STD) values of 5.895(0.12vit.A), 0.76(0.004vit.E), 0.49(0.004vitD), 0.227(0.003vit. K), 0.87(0.001 vit.B1), 0.75(0.008 vit. B12),and 0.074(0.004vitB3) respectively. Whereas magnesium,calcium,potassium and sodium ranges from 127.22(0.005),60.89(0.003),55.94(0.005) and 29.13(0.39) respectively. Iron, Zinc and Copper ranges from 1.66(0.004), 1.48(0.005) and 0.25(0.005) respectively. The range values of antinutrient of the beverage on the other hand are Tannin: 10.68(0.004), phytate: 2.77(0.004); oxalate: 0.124(0.003); Hemagglutination: 0.38(0.006); Trypsin: 0.67(0.159); and Hydrogen cyanic 0.53(0.004).The result of the microbial analysis of the beverage revealed that is microbial free. The baseline data recorded in this research concludes that the local beverage is suitable for Hospitality Food Service patronage both from the economic view and nutritional view.

Keywords: Hospitality, pear millet, non-alcoholic, beverage, patronage nutrients.

INTRODUCTION

In the Hospitality Industry in Nigeria, most of the non-alcoholic beverage are imported and sold at prohibitive prices. Which has led patronage of hospitality products and services to desire traditional beverage. Apart from this, more Nigerian care about their good health and realise they can do something positive about it. The realization of most Nigerians of recognising that there is a link between what they consumed and the quality of their health which has become important for those in the Food Service Industry to understand the concerns of their clients and to be able to provide healthy, nutritious and enjoyable products and services. To satisfy this group of patronage it is necessary to upgrade their processing and presentation techniques of these beverage to an acceptable hospitality standard. Examples of such traditional beverages includes “kunu-Zaki”, “Kunu-Gyada”, “Soy-Kunu Zaki”, “Soy-beverage”, and “Soy-Coconut beverage”. All of these are common across the Nigeria but Obiolo is only peculiar to the Igala’s of idah, Igalamela/Odolu and Ofu Local government of Kogi State.

Kunu-Zaki is millet or Sorghum based while Kunu-Gyada is produced from groundnut mainly (Sopade & Kassum 1992; Adeyemi & Umar, 1994). Soy-kunu-zaki is produced from millet flour fortified with soybeans (Badifu et al, 1998). These beverage are popular throughout the federation but obiolo due to its technical method of preparation is only know among the Igala tribes of Kogi State. Just like toasted melon seeds beverage (Akubor 2000).

These traditional beverages mentioned earlier such as kunu-zaki have served wider acceptance because of the extensive studies conducted on them. The author is on aware of nutritional composition, standard recipe, hygienic preparation and presentation in any hospitality outlet. The objective of the study were to make it know to non Igala tribe and show case the nutritional composition(that is determination of proximate analysis, some vitamins, minerals, anti-nutrient, standard recipe and hygienic method of preparation of obiolo beverage using pearl millet grain in particular.

In Nigeria, two main types of millets are cultivated. These are known as the “Gero” and “Maiwa” millets. The “Gero” millets are photo insensitive and early maturing while the “maiwa” are photo sensitive and late Maturing (Okoh 1998). The “Gero” millet is the most popular and it grows at an estimate of 90% of the land it occupied by the millet, resulting in high yield (Central Bank of Nigeria report, 1992).

MATERIALS AND METHODS.

Preparation of obiolo from millet.

Pear millet (*Pennisetum typhoides*) grain was purchased from a local market in Idah town, Kogi State Nigeria. The grains were cleaned to remove extraneous material

Recipe: Obiolo yield 9 litres.

Pear millet (grain) 2.6kg
Sweet potatoes (fresh/dry) 200g
Spices:
Ginger (zingiber officinale Rose) 15g
Guinea pepper (xylopiia aethiopia (dunal) A.Rich) 10g

Method

- The pear millet was washed in water severally (at least six time) to remove dirt and sand.
- The pear millet was soak for (24-36) hours and drain into a colander for at least two hours.
- A locally waved basket with clean banana or plantain leaves lined.
- The drained millet was spread on the lined leaves in the basket and another cleaned leaves to cover it. (This aid the germination of the grain). Sprouting.
- The covered grain was kept on a working surface in the laboratory for 72 hour (three days)
- At the end of the 3 days the germinated grain is washed.
- If the sweat potatoes is fresh, peel and wash, if it is dry it is also washed along with the ginger and guinea pepper.
- The germinated washed grain is milled separately and the spice milled different.
- Ten litres of water was brought to boil
- The milled millet was shared into two equal halve
- The boiling water was added to one part of the millet past and stirred thoroughly.
- The rest half and the milled spices were later added
- The mixture was thoroughly stirred.
- The stirred mixture was later sieved with sieve that is not fine.
- The sieved mixture was place on cooker and allow to boil for 30 minutes.
- Remove from heat and allow to cool.
- Serve cool or preferable chilled.

Analytical methods

The nutrient compositions were determined using the standard procedure of official analytical chemists (AOAC, 1995). Moisture was determined by drying method, crude protein micro Kjeldahl procedure and fat by means of soxhlet extraction method. Crude fibre was determined by heating the samples with acid and alkali furnace at 600°C for two hours. Carbohydrate was determined by difference. The minerals and vitamins were determined using the atomic absorption spectrophotometer. The antinutrient was determined by High-performance liquid chromatography (HPLC). Two species of bacteria was used for the microbial analysis which was carried out on Zero day and at 4th week employing pour plate method using sauborand dextrose agar and colony count (colony counter). Incubation was conducted at 25°C for 48 hours. Analyses were carried out on triplicate samples.

Data analysis: The data from chemical analysis were analyzed using mean and standard deviation (mean ±SD of 3 determinations).

Result and discussion

The results revealed that the proximate analysis/properties of the beverage (table 1); shows the mean value and standard deviation. Proximate analysis showed the moisture, ash, protein, fat and carbohydrate (CHO) have the mean and standard deviation value of 81.4(0.007), 0.49(0.003), 1.47(0.002), 0.134(0.005), 16.46(0.005) while fibre shows Nil for every mg/100g.

Table 2 shows the mean and standard deviation of the vitamin content of the beverage are: 5.89(0.116vit.A), 0.76(0.004vitE), 0.496(0.003vitD), 0.227(0.003vit K), 0.87(0.001vitB1), 0.75(0.008vitB2), 1.14(0.004 vitB6), 0.98(0.004 vit B12), 0.074(0.004 vit B3).

Table 3: shows that magnesium, calcium, Zinc, iron, Copper, and potassium exhibited mean value and standard deviation of 127.22(0.005), 60.89(0.003), 1.48(0.005), 1.663(0.004), 0.25(0.005), 29.13(0.39), and 55.94(0.005) respectively.

Table 4: The results showed that antinutrients namely, Tannin, phytate, oxalate, Hemagglutinin, trypsin, and Hydrogen-cyanic in the beverage attained the peak with mean standard deviation of 10.65(0.004), 2.77(0.004), 0.12(0.003), 0.38(0.006) 0.67(0.16) and 0.53(0.004) respectively.

Table 5: shows the result of microbial analysis of two most common in food and water as coliform (e-coli) and mold as negative:

Conclusion

This study has shown that the beverage has good proximate composition and vitamin content. Which are within

tolerable level, for normal physiological function of the body. The mineral and antinutrients content of the beverage are also within the tolerable level. The beverage is free of most common microbial (coliform and mould). It is therefore, strongly recommended for consumers on a sustainable basis.

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Table 1 mean value and Standard of proximate composition of the beverage.

Moisture	Ash	Fibre	Protein	Carbohydrate	Fat	Mg
81.446(0.007)	0.494(0.003)		1.468(0.002)	16.456(0.005)	00.134(0.005)	100

Table 2 mean value and Standard some vitamin composition of the beverage.

Vit.A	Vit.E	Vit.D	Vit.K	Vit.B1	Vit.B2	Vit.B6	Vit.12	Vit.13	MG/G
5.895(0.116)	0.764(0.004)	0.496(0.004)	0.227(0.003)	0.865(0.001)	0.747(0.008)	1.144(0.004)	0.984(0.004)	0.074(0.004)	100g

Table 3 mean value and Standard of some mineral composition of the beverage.

Magnesium	Calcium	Zinc	Iron	Copper	Sodium	Potassium	Mg/g
127.216(0.005)	60.895(0.003)	1.484(0.005)	1.663(0.004)	0.252(0.005)	29.134(0.391)	55.942(0.005)	100g

Table 4 mean value and Standard antinutrient present in table.

Tannin	Phytate	Oxalate	Hemagglutinin	Trypsin	Hydrogen cyanic
10.646(0.004)	2.774(0.004)	0.124(0.003)	0.383(0.006)	00.674(0.159)	0.525(0.004)

Table 5 microbial analysis of the beverage.

S/N	D.F	Plate 1	Plate 2	Total	Average CFU/ml
A	10 ⁻³	284	284	568	2842.84x10 ⁵
Coliform	10 ⁻¹	0	0	0	0.0.0x10
A Mold	10 ⁻¹	0	0	0	0.0x10