



Production and Evaluation of Reconstitutable *Kunun-Zaki*

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ABSTRACT

Powdered *kunun-zaki* (a beverage) was produced with 500 g of fermented sorghum residue and 200 g flavoured sweet potato paste. Blends were mixed with water, 10 g of granulated sugar and stuffed in a folded aluminum foil, steamed for 35 min. It was dried at $60 \pm 1^{\circ}\text{C}$ for 12 h, milled and sieved. The reconstitution time in warm water (45°C) and cold water (room temperature) were determined. The reconstituted sample was compared with freshly prepared *kunun-zaki* in terms of chemical and sensory properties. The pH values of the fresh *kunun-zaki* sample 2.03 was significantly different ($p < 0.5$) from that of the reconstituted *kunun-zaki* sample (3.61) indicating a higher hydrogen ion concentration in the freshly prepared *kunun-zaki*. There were no significant differences ($p > 0.05$) between the samples in their protein, ash, fibre and carbohydrate contents. The result of the sensory evaluation revealed significant difference ($p < 0.05$) in terms of taste of the sample, but there were no significant differences ($p > 0.05$) in other parameters tested.

Keywords: Kunun-zaki, sorghum, potatoes, reconstitution and evaluation.

Introduction

Kunun-zaki is a cereal based non-alcoholic fermented beverage mostly consumed in the Northern part of Nigeria. It can be produced either from millet (*Pennisetum typoidum*), Sorghum (*Sorghum bicolor*), or maize (*Zea mays*) Akoma *et al.* (2006). *Kunun-zaki* is an Hausa word meaning sweet beverage (Sengev *et al.*, 2010). It is consumed anytime of the day by both adults and children as a breakfast food drink. It is a refreshing drink usually used to entertain visitors; it also serves as an appetizer and is commonly served at social gathering (Amusa and Ashaye, 2009). Onuorah *et al.* (1987) reported kunun as being regarded as after meal drinks or refreshing drinks in rural and urban centres, it is sometimes used as a weaning drink for infants (Adebayo *et al.*, 2009).

Kunun-zaki is of low viscosity and has sweet sour taste with milky appearance (Adeyemi and Umar, 1994). Preparation methods vary amongst people's taste and cultural preferences. Production of *kunun-zaki* is still on small scale and the beverage is widely found in the local market and at resorts (Innocent *et al.*, 2011). This non-alcoholic beverage is however becoming more widely accepted in several other parts of Nigeria, owing to its refreshing qualities (Amusa and Ashaye, 2009).

Generally, *kunun-zaki* production involves steeping of sorghum, millet or maize, wet milling, sieving and partial gelatinization of the slurry. Qualitatively it is obtained after 5 days and could only be stored for another 3 days when refrigerated. Reduction in processing time and an alternative technology to produce safer and shelf stable powdered *kunun* drink that would be reconstituted when needed will help to improve the availability of this indigenous

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food drink and more convenient, especially for people, who may not have time to go through the long process involved in *kunun-zaki* production. Hence the study of production of reconstitutable *kunun-zaki*, and its comparison with freshly prepared *kunun-zaki*.

Materials and Methods

The materials used were Sorghum (*Sorghum bicolor*), sweet potato (*Ipomoea batatas*), ginger (*Zingiber officinale*), black pepper (*Piper-niger*), red pepper (*Piper-annum*), cloves (*Syzgium aromaticum*), garlic (*Allium sativa*) and granulated sugar (sucrose).

Preparation of flavoured sweet potato paste

Two hundred grammes (200 g) of fresh sweet potatoes was peeled, washed and cut into slices of $5 \pm \text{mm}$ thickness. The slices were milled together with 3.25 g of ginger, 0.2 g of cloves, 0.25 g of red pepper, 0.25 g of black pepper and 25 g of garlic using locally fabricated miller. The paste was mixed with 100 ml of potable water to prevent browning and was stored in a refrigerator at a temperature of 4°C for further use (Fig. 1).

Preparation of Fermented sorghum sediment

The method described by Sengev *et al.* (2010) was used with slight modifications for the production of fermented sorghum sediment. Five hundred (500 g) of dehulled sorghum grains were cleaned, sorted, weighed and steeped in 1000 ml of potable water for 16 h. The grains were drained and spread on a tray, covered with moistened cleaned jute bag and was allowed to sprout for 24 h. The sprouted grains were washed with potable water to remove the vegetative parts. It was milled, sieved using clean muslin cloth and was allowed to stay for 36 h at room temperature in a covered plastic container, during which the slurry was allowed to sediment. The supernatant was decanted and the sediment was used for the production of *kunun-zaki* (Fig. 2).

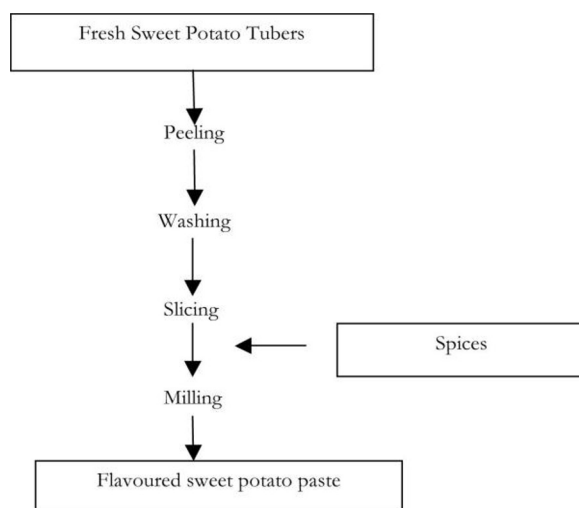


Fig. 1: Flowchart showing the production of flavoured sweet potato paste

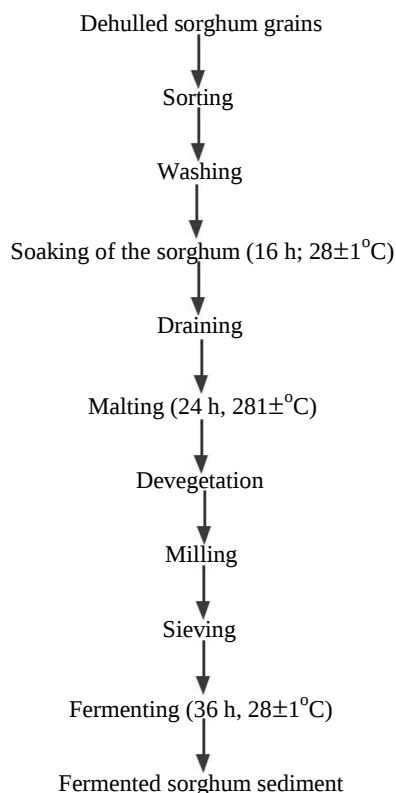


Fig. 2: Flowchart showing the preparation of fermented sorghum sediment

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