

## ASSESSMENT OF THE SENSORY PROPERTIES OF YOGHURT OBTAINED FROM BLENDS OF POWDERED MILK AND TIGERNUT JUICE

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### Introduction

Yoghurt is a fermented milk product which is obtained by fermentation of milk using a mixed culture of *Streptococcus thermophilus* and *Lactobacillus bulgaricus*. Consumption of products such as yoghurt containing viable probiotic organisms helps to lower blood pressure, bad cholesterol and risk of colon cancer [1]. Yoghurt does not only supply good quality proteins, it is also an excellent source of calcium, phosphorus, potassium and contains significant quantities of vitamins. Tigernut juice (*Cyperus esculentus*) is a nutritious and refreshing natural drink, for the young and old alike. It is produced by wet milling of tigernut and subsequently filtering the resultant slurry to obtain the filtrate which is the juice [2]. Consumption of tigernut products, especially its juice, helps in preventing heart disease, activates blood circulation and assists in reducing the risk of colon cancer [3,4]. Tiger-nut juice, with its inherent nutritional and therapeutic properties, could serve as an additional source of nutrients if used as a replacement for water in yoghurt production. Therefore the objective of this study was to assess the sensory properties of yoghurt produced by replacing water with tigernut juice.

### Materials and Method

Tigernut and powdered milk were purchased from Kure Market in Minna, Niger State. Tigernut juice was prepared using the method described by Ocheme *et al.* [5]. Tiger-nuts seeds were sorted, and rinsed with distilled water then soaked overnight. They were crushed and the crushed nut was sieved using muslin cloth. The filtrate was used as a replacement for water in reconstituting powdered cow milk. The reconstitution ratios were: 300g of milk+700ml Tiger-nut juice; 300g of milk+400ml of water+300ml Tiger-nut juice; 300g of milk+300ml of water+400ml Tiger-nut juice and 300g of milk+200ml of water+500ml Tiger-nut juice respectively. After reconstitution, the mixtures were pasteurized at 75°C for 15 minutes and then allowed to cool to 45°C. A commercial yoghurt was used to inoculate the samples (3% w/w) after which they were incubated at 37°C for 12h. At the end of fermentation, the samples were subjected to sensory evaluation by a panel of 20 judges who were familiar with and overall acceptability. The attributes evaluated were colour, aroma, taste, mouthfeel and separated by Duncan's Multiple Range Test using SPSS version 20.

### Results and Discussion

The mean sensory scores of the samples are shown in Table 1. Commercial yoghurt had a significantly ( $p < 0.05$ ) higher score for aroma and overall acceptability than the other samples. The scores for taste and colour increased with increasing quantity of tigernut juice although the commercial sample and the sample without tigernut juice were ranked higher. Generally, all the samples were acceptable.

**Table 1:** Mean Sensory Scores of Cow milk-Tigernut Juice Yoghurt.

Attribute	A	B	C	D	E	F	G
Colour	8.30 <sup>c</sup>	7.70 <sup>bc</sup>	6.60 <sup>a</sup>	7.30 <sup>ab</sup>	6.75 <sup>a</sup>	7.30 <sup>b</sup>	7.30 <sup>ab</sup>
Aroma	8.15 <sup>b</sup>	7.10 <sup>a</sup>	6.65 <sup>a</sup>	6.10 <sup>a</sup>	6.20 <sup>a</sup>	6.55 <sup>a</sup>	6.90 <sup>a</sup>
Taste	7.80 <sup>b</sup>	6.80 <sup>ab</sup>	6.75 <sup>ab</sup>	6.20 <sup>a</sup>	5.85 <sup>a</sup>	5.85 <sup>a</sup>	6.85 <sup>ab</sup>
Mouthfeel	7.95 <sup>c</sup>	6.60 <sup>ab</sup>	6.90 <sup>ab</sup>	6.50 <sup>ab</sup>	6.25 <sup>ab</sup>	5.90 <sup>a</sup>	7.20 <sup>bc</sup>
Overall acceptability	8.20 <sup>b</sup>	7.10 <sup>a</sup>	7.20 <sup>a</sup>	6.80 <sup>a</sup>	6.40 <sup>a</sup>	6.50 <sup>a</sup>	7.15 <sup>a</sup>

Mean in the same row with different superscripts are significantly ( $p < 0.05$ ) different.

#### Keys

Sample A= Commercial Yoghurt (Control 1)

Sample B= 300g of Milk+700ml of Water (Control 2)

Sample C=300g of Milk +700ml Tiger-nut juice

Sample D= 300g of Milk+500ml of Water+200ml Tiger-nut juice

Sample E= 300g of Milk+400ml of Water+300ml Tiger-nut juice

Sample F= 300g of Milk+300ml of Water+400ml Tiger-nut juice

Sample G= 300g of Milk+200ml of Water+500ml Tiger-nut juice

#### References

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