


Evaluation of sensory Quality characteristics of Muffins developed from sweet potato flours

By
Williams Martha S. E.
Anthony Nyahabeh. M.
Sawi Memuna . K.
Sowe Sulaiman

SLARI – NARC/Njala University, Sierra Leone



ORDER OF PRESENTATION

- ▶ Background
 - ▶ Justification
 - ▶ Objectives
 - ▶ Methodology
 - ▶ Results
 - ▶ Conclusions and Recommendations
 - ▶ Acknowledgements
 - ▶ References
- 

BACKGROUND

Sweetpotato (*Ipomoea batatas*. L) is one of the most important root and tuber crop in Sierra Leone, second only to cassava (*Manihot esculenta*).

Sweetpotato is highly nutritious vegetable containing high energy, dietary fiber, vitamins and minerals.


It a food security crop that is usually grown throughout the year for food and cash .

In Sierra Leone, both the young leaves and vine tips serve as vegetables and are consumed by most households.


Sweetpotato also has the potential to be processed into gari, confectionery (biscuits, candies) and food colour additives.



JUSTIFICATION

- ▶ The need for alternatives to wheat flour is gradually increasing in sub-Saharan Africa
 - ▶ In Sierra Leone, **wheat import substitution** which also **promotes diversification** of food products on local and national markets driven by the local content policy, amongst other factors, as being developed
 - ▶ After harvest, sweetpotato roots undergo rapid undesirable physiological changes if not properly cured.
 - ▶ Elaborate processing into variety of products depending on local customs and preferences will reduce high postharvest losses.
 - ▶ The high **nutrient content** of sweetpotato also call for an **alternative utilization** of sweetpotato.
- 


Justification.....

- ▶ Flour is one of the forms into which sweetpotato roots can be processed to add value and increase its shelf life.
 - ▶ Sensory evaluation is a major determinant in the acceptability, subsequent adoption and use of food product (Otoo and Asiedu, 2009).
 - ▶ Therefore, there is need to evaluate the sensory properties of processed products that includes sweetpotato flour muffins sensory attributes (taste, texture flavour etc.) regardless of their nutrients content.
- 

OBJECTIVES OF THE STUDY

This study was carried out with the aim of evaluating the sensory quality characteristics of muffins prepared from sweetpotato flours.

The specific objectives were to :

1. **Develop muffin from sweetpotato flours**
 2. **Determine the effect of processing on the sensory characteristics of the muffins.**
- 

METHODOLOGY

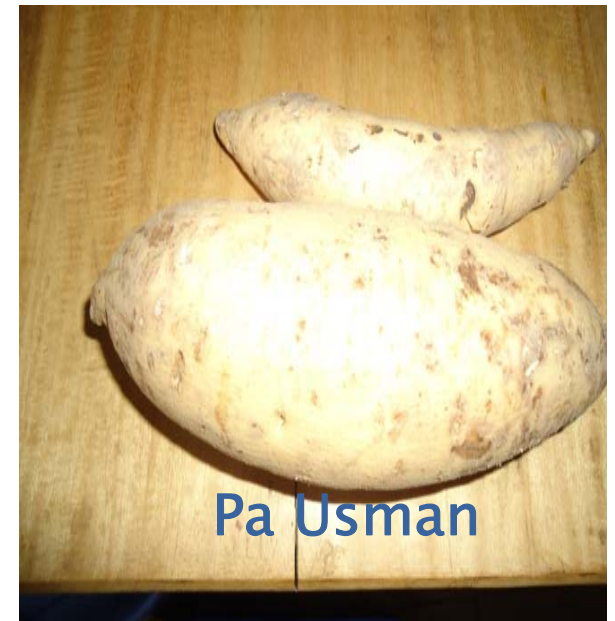
Two sweetpotato varieties were obtained from Njala Agricultural Research centre.

These includes:

1. Slipot III: one of the improved varieties realized by the centre
- 2 . Pa – Usman: A local Variety that is highly consumed and accepted by most people in Sierra Leone



Slipot III

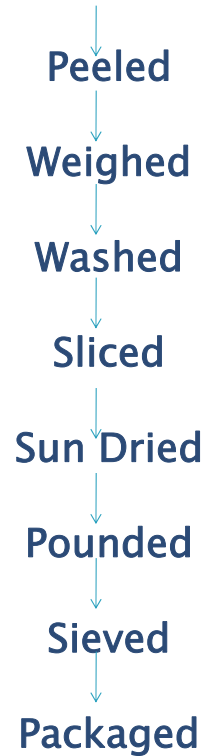


Pa Usman

METHODOLOGY...

Processing of sweetpotato into flour

Freshly harvested pre washed- tubers



Flow chart of untreated sweetpotato flour

Freshly harvested pre - washed tubers



Flow chart of lime treated sweetpotato flour

Methodology.....

Development of muffins




Sensory Evaluation

The samples were served to 15 trained panelists in batches of three to evaluate for colour, taste, flavour, texture and overall rating.

A five point hedonic scale was used to determine the degree of likeness ranging from 1 – 5 with 1 indicating dislike very much and 5 indicating like very much (BM. Watts et. al 1989)

Methodology.....

Experimental design and Data Analysis

- 3 x 2 factorial design with 3 replicates were used
 - Data was subjected to analysis of Variance and Duncan's multiple range test was used to compare treatment means $p < 0.05$
 - SAS version 6.12 was used to analyze the data
- 

Results

Table 1: Mean scores of composite sweetpotato/wheat flour muffins in respect to variety and processing methods

Variety	Processing method	Colour	Taste	Flavour	Texture	Overall rating
Slipot III	SFLCs	4.32 ^b	4.35 ^a	4.15 ^c	3.86 ^b	4.23 ^b
	SFNLCs	3.87 ^b	4.40 ^a	4.28 ^b	4.20 ^b	4.41 ^a
Pa -	SFLCs	4.53 ^a	4.38 ^a	4.14 ^c	4.24 ^b	4.51 ^a
Usman	SFNLCs	4.22 ^b	4.35 ^a	4.14 ^c	4.26 ^b	4.43 ^a
Wheat flour		4.57 ^a	4.44 ^a	4.67 ^a	4.87 ^a	4.54 ^a

Mean in column with the same letter are not significantly different at $p > 0.05$ (Duncan)

CONCLUSIONS AND RECOMMENDATIONS


Conclusion

- The sensory attributes of the muffins developed from various sources have shown that; the same processing methods, sweetpotato partially substituted with a portion of wheat flour can make virtually un – noticeable difference with regards to sensory quality of the muffins.
- ▶ Lime juice improved the colour, of flour and hence the baked muffins.

Recommendations

- The use of hammer mills and appropriate drying facility will improve the quality of the flour
- Promotion of recipe developed has the potential to enable, improve and sustain livelihoods of farmers in Sierra Leone

Acknowledgements.

- ▶ German Cooperation for providing funds to participate in this Conference
 - ▶ Reviewers for their meaningful contributions to this work
 - ▶ APA committee for organizing such an educative and wonderful conference
- 

‘we are what we eat’



Thank you