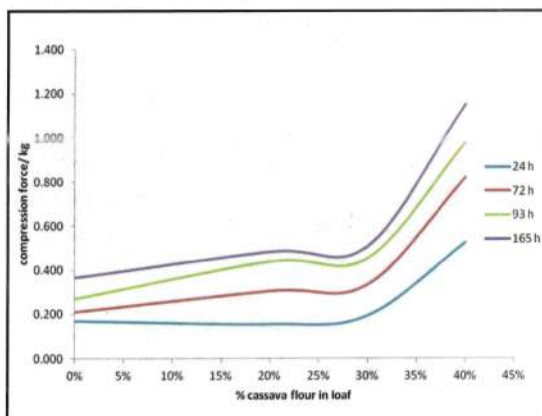


## RESULTS

Chart 1: Composition of 100% Cassava Flour and 100% Baking Flour (Proximate Analysis)

Component	PURE FLOUR	
	100% Cassava Flour	100 % Wheat Flour
% Ash (A)	0.85	0.45
% Fat (F)	0.48	2.66
% Moisture (M)	8.42	6.51
% Protein (P)	1.01	7.79
% Carbohydrate (C)	89.24	82.59
100-(A+F+M+P)		

Chart 2: Compression force on bread loaves at varying % cassava flour composition



## CONCLUSION

When assessed by sensory evaluation, the specially formulated Cassava wheat composite bread was not significantly different from the reference bread (100% wheat). The differences in texture could be measured instrumentally but could not be distinguished by sensory evaluation.

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## ACKNOWLEDGEMENTS

The authors wish to thank Mr. Winston Piper, 237 Old Hope Road, Kingston 6.

### Contact:

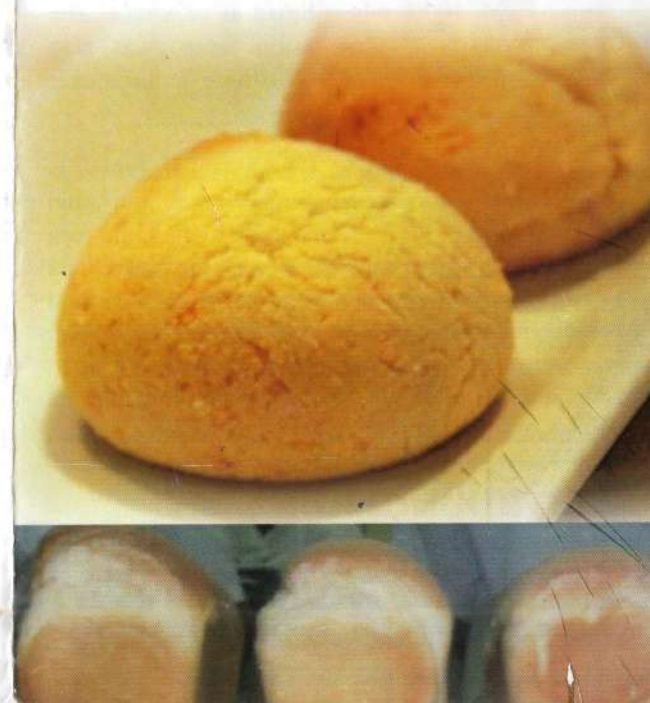
Ian L. Thompson and Kimone Phipps,  
Department of Chemistry,  
University of the West Indies,  
Mona Campus, Jamaica  
E-mail: [ian.thompson02@uwimona.edu.jm](mailto:ian.thompson02@uwimona.edu.jm)  
Website: [www.chem.uwimona.edu.jm](http://www.chem.uwimona.edu.jm)



The University of the West Indies,  
Mona, Jamaica  
Faculty of Science & Technology  
Department of Chemistry

## Initiatives in Agriculture

# Sensory Evaluation and Acceptability of Composite Cassava Wheat Bread by Jamaican Consumers



## ABSTRACT

This study was undertaken to determine the level of cassava flour substitution in wheat bread which would be acceptable to Jamaican consumers in terms of its appearance, taste and texture - over an aging period of 7 days. Selecting a substitute for imported wheat flour (e.g. cassava flour) is important in reducing the country's reliance on imported food, thereby improving food security. The high demand in Jamaica for imported wheat flour is mainly due to its use in the production of wheat bread.

Cassava flour was prepared with particle size distribution comparable to wheat flour. Sensory evaluation was then used to assess the acceptability of composite cassava-wheat bread by comparing the performance of cassava flour substituted breads with 100% wheat bread - as reference. Only consumers of white pan bread were selected as panelists. A 9-point category scale was used, with 100% wheat bread as reference. The crumb texture (compression force) was also determined instrumentally using a texturometer (TA-XT2) over the aging period.

The textural qualities (firmness) of bread is affected by the composition of the flour (and dough) used in its preparation, which in turn affects consumer acceptability. Comparative data from the proximate analysis of cassava and wheat flour revealed significantly lower fat (0.47% vs 2.66%) and protein (1.01% vs 7.79%) content, but higher ash (0.85% vs 0.45%) and carbohydrate (89.2% vs 82.6%) content.

## INTRODUCTION

In recent years, Jamaica's interest in the Cassava plant (*Manihot esculenta Crantz*) has increased. This interest is motivated by increasing

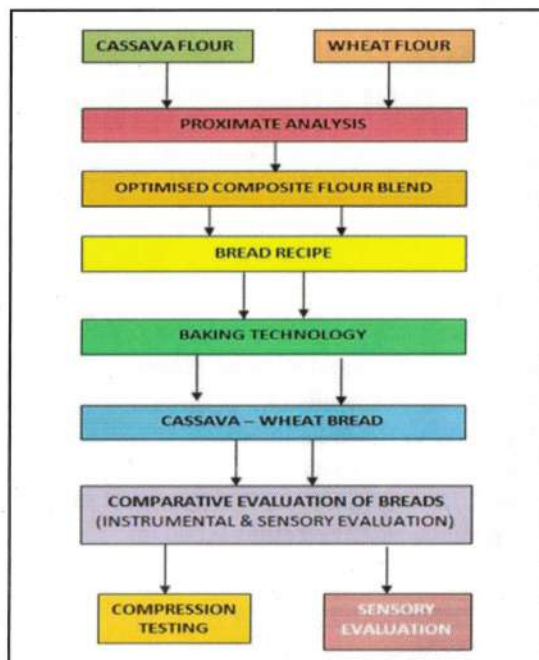
employment in rural communities by stimulating primary production of the root or tuber, achieving food self-sufficiency and food security objectives and developing new consumer products which incorporate cassava in its formulation.

The consumer product chosen for this study was pan bread, due primarily to its high level of consumption and to the fact that Jamaica imports 100% of its wheat flour requirements. By proposing the use of cassava flour to partially replace wheat flour in a high volume consumer product, several national imperatives could be achieved.

## METHODOLOGY

### Product Development of Cassava Bread:

Diagram 1: Flow Diagram for Development of Cassava Bread



### Proximate Analysis:

Standard Methodology

### Sensory Evaluation:

3-Digit coded composite Cassava bread samples and the reference bread sample (100% wheat flour) were evaluated over 7 days for - colour, pore size, aroma, flavor and textural characteristics (squeeze test, mouthfeel and hardness) - by 10 trained panelist comprised of students and staff of the University of the West Indies. A 9-point hedonic scale was used to record the panelist evaluation of each attribute relative to the reference, represented by the midpoint (score = 5). Additionally, panelists were asked to rank samples by preference and to identify unacceptable samples.

Samples were presented to panelists in identical containers and were prepared by removing the crust and cutting into uniform blocks of identical sizes. Where panelists were required to taste samples and swallow, water was provided to rinse in order to prevent carry-over flavor.

### Texture (Instrumental Compressibility):

The change in texture was measured instrumentally over the aging period of 7 days using a texturometer (TA-XT2).