

Development of New Value-Added Products from Yam (*Dioscorea rotundata*), Consumer Data Collection and Analysis for Commercial Viability



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ABSTRACT

Yam (*Dioscorea spp.*) is a popular staple tropical root crop in West Africa. Its postharvest losses are between 30 - 40%. Developing value-added products would help address postharvest losses of yam. Three new yam products namely; Precooked Vacuum Packaged Yam, Yam Crisps and Yam-Legume Flour, were developed. Sensory evaluation was conducted on these products at the Test-Kitchen, CSIR-FRI and the products further subjected to a consumer acceptability test in three selected locations in Accra, viz. Irish Kitchen, Tasty Treats, and the Central Business District of Accra Metropolis. The developed products were compared to competing products evaluated for preference, while the packaging was assessed based on attractiveness, size and user-friendliness. The developed products were generally rated as "same as" competing products with puna, shrimp flavoured crisps and flour composed of 8:1:1 yam flour, soybean flour and cowpea flour, being the most preferred precooked vacuum packaged yam, yam crisps and pudding from yam-legume flour, respectively. Packaging was also largely attractive and user-friendly and the size was adequate. The three products have the prospects of performing greatly on the local and export market.

INTRODUCTION

- Postharvest losses of yam are between 30 - 40% as a result of sprouting, respiration, transpiration, rot caused by molds and bacteria, insects, nematodes, rodents and mammals (FAO, 1985; Dumont, 1995).

- High water content of yam makes storage, transportation and marketing more difficult, accounting for price discounting of 35-80% per unit of yams which is an obstacle for further increases in the production of yams (Bancroft, 2000).

- As urban population prefer convenient foods there is the need to process yam into convenient forms to meet urban demand.

OBJECTIVE: To diversify the use of yams by developing new value-added products namely; Precooked Vacuum Packaged Yam (frozen yam), Yam Crisps and Yam-Legume Flour and conduct consumer acceptability tests on these products and their packages for commercial viability.

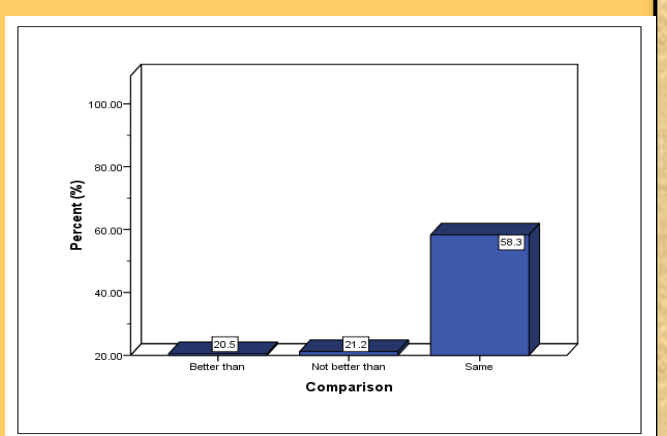
RESULTS AND DISCUSSION

Precooked Vacuum Packaged Yam

- Demography of respondents
 - Aged 18-35 (79.6%), Tertiary education (78.4%), either Employed or Students (97.3%), who eat yams at least once a week (80.5%).
- Consumer Acceptability
 - Most Preferred Sample
 - ✓ **Sample 405 (Puna)**
- Packaging and Package Size
 - Packaging is attractive (95.2%), Package Size adequate (74.6%)
 - Package is user-friendly; because it is easy to open and portable.
- Target Market
 - Students, Workers (including working mothers), House wives etc.



Precooked Vacuum Packaged Yam



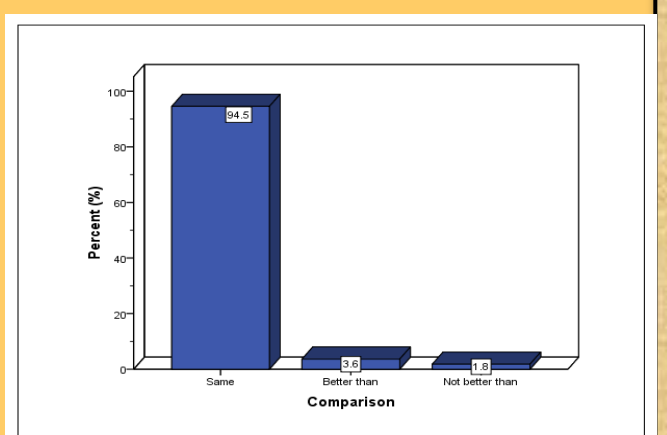
Comparison with cooked fresh yam

Yam Crisps

- Demography of respondents
 - Aged 18-35 (66.4%), Tertiary education (75.4%), Employed (55.5%) Students (43.9%) who consume yam at least once a week (92.4%).
- Consumer Acceptability
 - Most Preferred Sample
 - ✓ **Sample 788 (Shrimp flavour)**
- Packaging and Package Size
 - Packaging is attractive (97.3%), Package Size adequate (98.2%)
 - Package is user-friendly; because it is easy to open, portable and easily disposable
- Target Market
 - Children, Students, Workers (including working mothers), House wives etc.



Yam Crisps



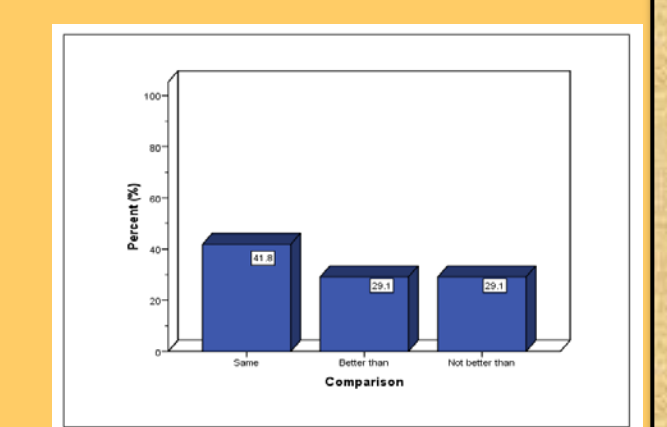
Comparison with potato chips

Fortified Yam Flour

- Demography of respondents
 - Aged 18-35 (62.0%), Tertiary education (35.5%)
 - Employed (40.5%) Students (55.1%) and frequent eaters of yam (85.5%)
- Consumer Acceptability
 - Most Preferred Sample
 - ✓ **Sample 126 (8:1:1 for Yam flour: Soybean flour: Cowpea flour)**
- Packaging and Package Size
 - Packaging is attractive (92.6%), Package Size adequate (85.1%)
 - Package is user-friendly; because it is easy to open and portable.
- Target Market
 - Students, Workers (including working mothers), House wives etc.



Fortified Yam Flour

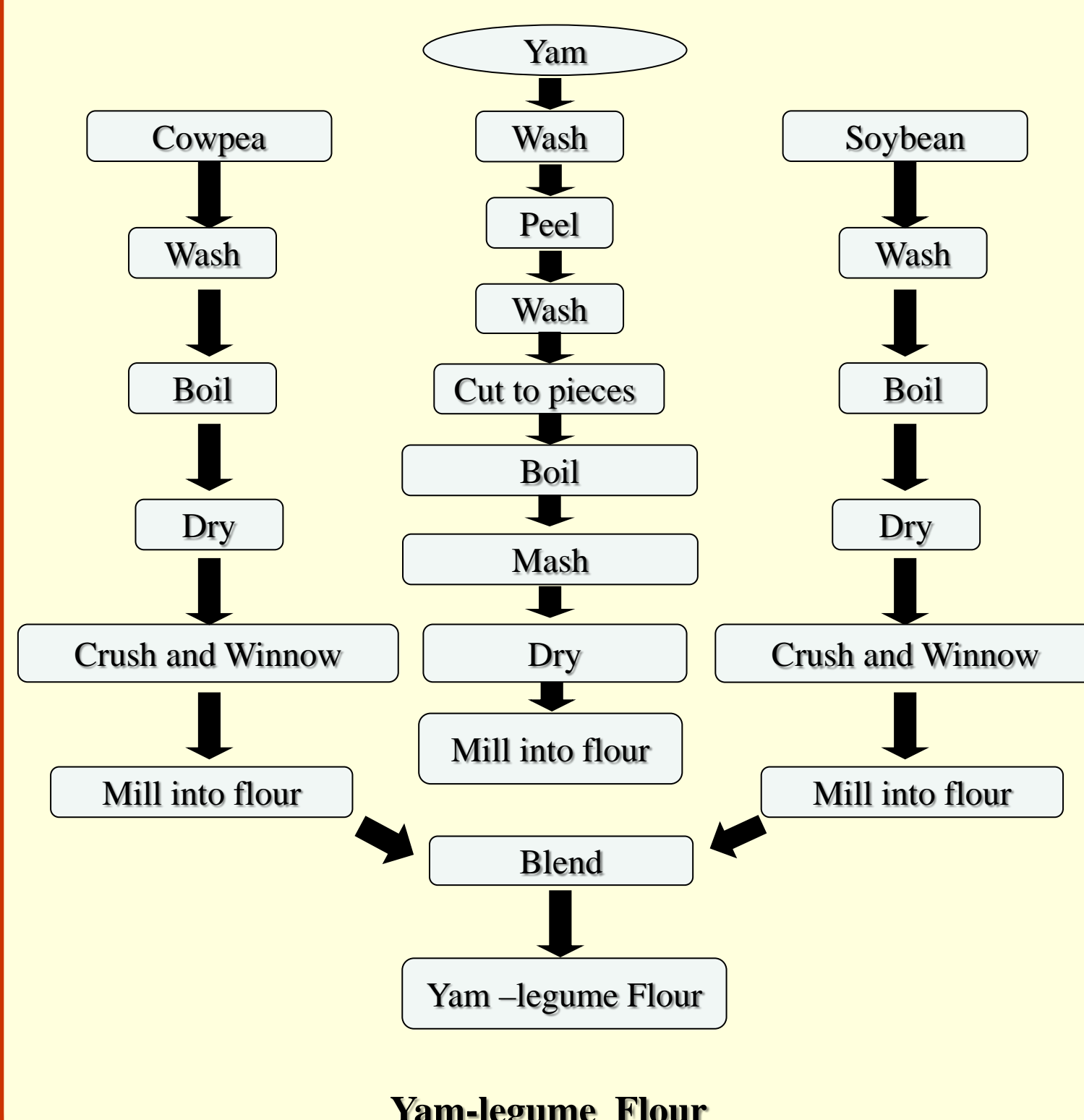
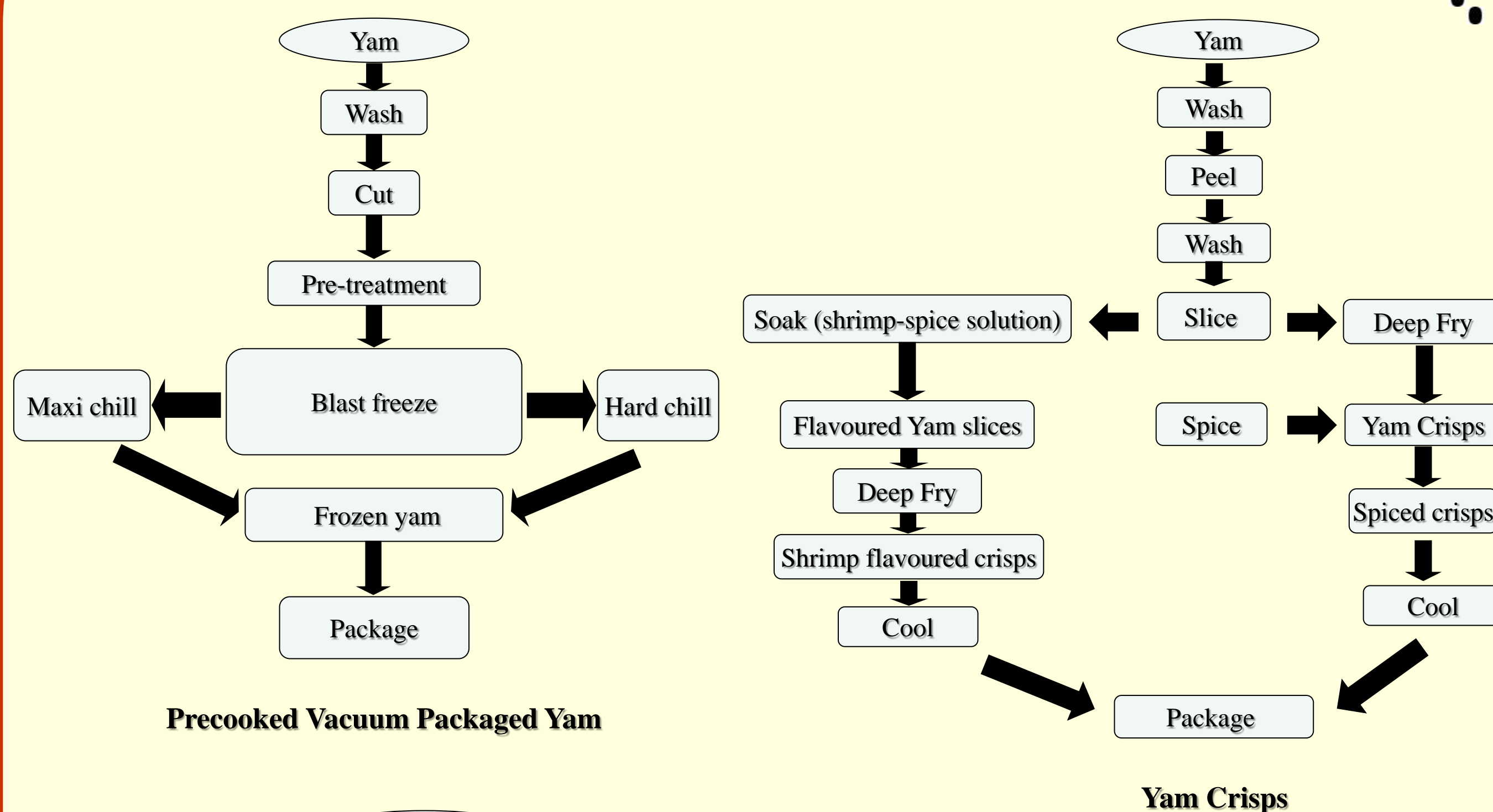


Comparison with pudding from wheat flour

MATERIALS AND METHODS

- Precooked vacuum packaged yam, yam crisps and yam-legume flour were developed from freshly harvested yam (*Dioscorea rotundata*)

Process Flow Diagrams



Consumer assessment testing

- Following product development and laboratory testing.
- Evaluation of developed products carried out at three strategic locations
 - Iris Kitchen, East Legon
 - Tasty Treats, University of Ghana, Legon Campus
 - Central Business District and other areas of Accra.
- Evaluate the sensory characteristics of pre-cooked vacuum packaged yam (ampesi), yam crisps and yam-legume flour
- Participant rated how developed products compare with freshly cooked yam, potato chips and pudding from wheat flour.
- Package was also assessed

CONCLUSION

Consumers rated products and its packaging very highly, an indication that these developed products have the prospect of performing greatly on the market.

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