NUTRITIONAL AND SENSORY EVALUATION OF WEANING FOOD FORMULATED WITH LOW GRADE BROKEN RICE FRACTIONS *(ORYZA SATIVA)*, SOYBEANS *(GLYCINE MAX)* AND KENT MANGOES *(MANGIFERA INDICA)*

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ABSTRACT

This study sought to provide a nutritionally adequate and culturally acceptable weaning food for infants, as well as untapped the potential of broken rice fraction as an alternative use for weaning formulation in Ghana. Flour from broken rice fractions in combination with soybeans and mangoes were used to develop three different weaning foods. The products were evaluated for their nutritional composition, sensory characteristics and pasting properties. Instrumental Colour evaluation was also determined for the flour and porridge samples. All the three newly formulated rice-mango weaners met the RDAs for energy (393.71-403.25) kCal/100g, protein (10.7-15.24)g/100g, carbohydrates (68.44-73.87)g/100g, calcium (87.2-111.7)mg/100g, zinc (8.67-10.84)mg/d and vitamin C(13.96-17.79)mg/100g levels. The beta-carotene levels ranges from 2.5-11.6% of the RDA. RSM-10 had a somewhat higher value (167.37ugug/100g) of beta-carotene than RSM-5 (55.67ug/100g). All other nutrients of interest did not show significant differences. The sensory quality of RSM-5 was the most preferred however there was no significant difference observed between the sensory quality of all the three newly formulated products The pasting profile for the blends with low amounts of mango (RSM-5 and RSM-10) had a similar profile as the control (RSM-0), while RSM-15 had a lower profile. The addition of mangoes gave the Rice-mango weaners a sweet taste and pleasant aroma. RSM-10 may be recommended and adopted for promotion within Ghanaian household based on its high nutritional and good sensory qualities.

INTRODUCTION

❖The weaning period is the most crucial and vulnerable period for developing under nutrition.

❖ It is important to improve upon the nutrient content of traditional weaning foods in order to get the best nutrient content of weaning food that will prevent protein-energy malnutrition, micronutrient deficiencies and other health related problems,

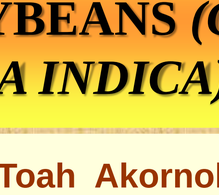
❖Food base approach is a more viable and sustainable method to address micronutrient deficiencies especially vitamin A and iron deficiency.

OBJECTIVE:T he objective of this project was to develop a high quality weaning food from broken rice fractions, soybeans and mangoes to improve upon the iron and vitamin A content of weaning foods as well as untapped the potential of broken rice fractions as a nutritionally and culturally acceptable weaning food for infants in Ghana.

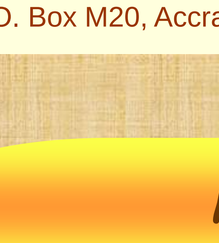
MATERIALS AND METHODS

FLOW CHART FOR RICE –MANGO WEANER

Mangoes



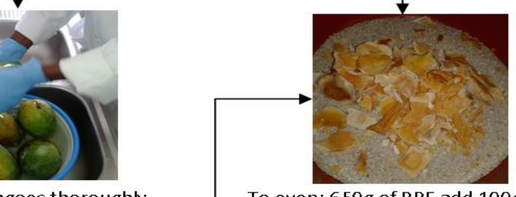
Wash mangoes thoroughly



Peel, slice mangoes 2mm thick and arrange on a tray

Place in oven to dry

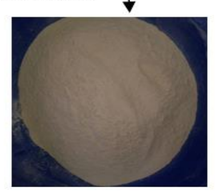
Seal dried mangoes in Polyethylene bags



Clean and Sort broken rice fractions (BRF) to remove all foreign materials

To every 650g of BRF add 100g of dried mangoes and mix thoroughly

Mill into fine powder in a Hammer mill to obtain Rice-mango mix



Allow Rice-mango flour to cool

Add 250g of soy-flour to 650g of rice-mango flour. Mix thoroughly in a mixer to obtain Rice-mango weaner

RICE-MANGO WEANER

Rice-mango Porridge

Clean and Sort soybean to remove all foreign materials

Soak 500g of soybean In 100ml water overnight

Blanch at 100°C for 30 minutes

Drain hot water and refresh With cold water

Spread thinly on a tray and dry in oven at 60°C for 8 hours

Dehull and winnow

Mill into soy-flour

RESULTS

Fig. 1: Nutrients Composition of the Newly formulated Rice-mango Flour as Compared to one-third of the RDA

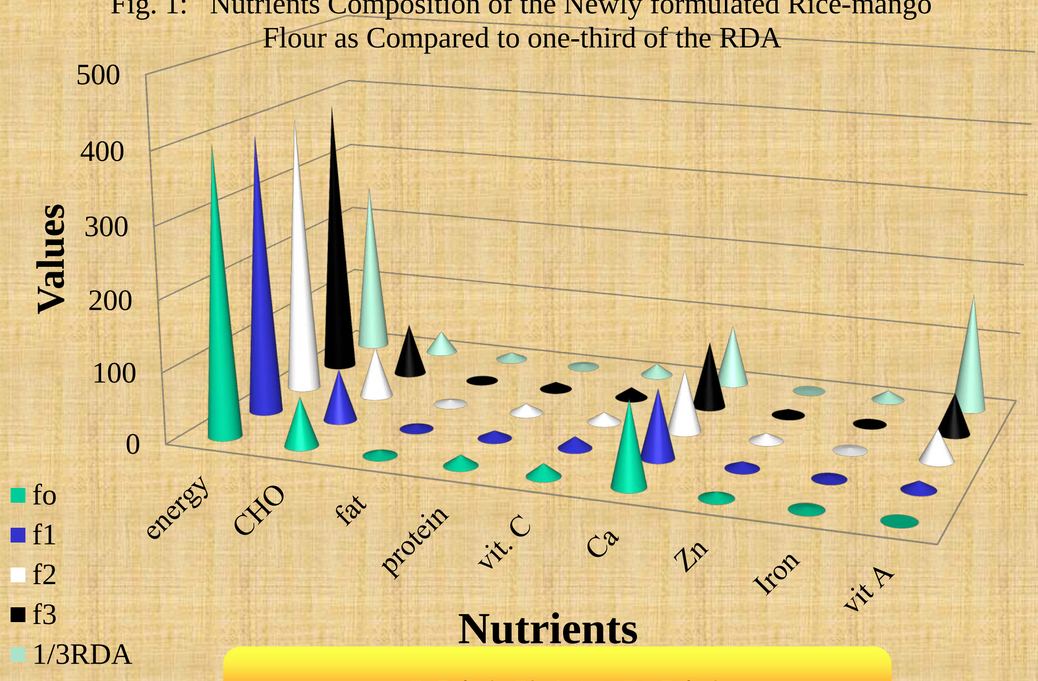
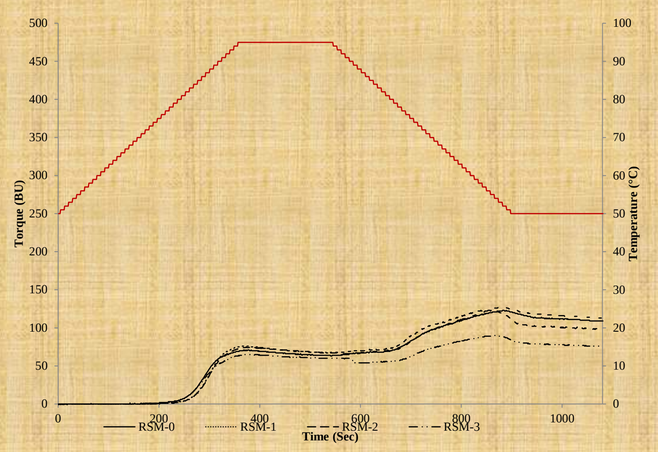


Table 1:Summary of Overall Acceptability Scores, Degree of Liking and Limiting Sensory Factors

Product	Blends	Acceptability mean score	Degree of liking	Limiting Sensory Factor (s)	Comments
RSM-0	Rice….. 70% Soybeans….25% Dried Mango..0%	7.52 ± 1.04	Liked moderately	Taste	Nice aroma but taste could be improved
RSM-5	Rice ……70% Soybeans….25% Dried Mango..5%	7.54 ± 1.23	Liked moderately	None	Perfect and excellent Porridge with milky after-taste. Nice taste and aroma
RSM-10	Rice …... 65% Soybeans…….25% Dried Mango...10%	7.50 ± 0.93	Liked moderately	After-taste	Even consistency with good mouth feel but slightly sour after-taste
RSM-15	Rice ….. 60% Soybeans...25% Dried Mango...15%	7.04 ± 1.32	Liked moderately	Taste and After-taste	Appealing appearance with sour after-taste

Fig 2:Pasting properties of Rice-mango weaner



CONCLUSION

❖The newly formulated products were found to be rich in energy, protein, carbohydrates, calcium, zinc and vitamin C levels with about 8.8-11.6% of beta-carotene.

❖Increasing the content of mango resulted in attractive yellow colour with sweet taste and pleasant aroma.

❖RSM was highly acceptable by mothers.

❖ RSM with 10% dried mangoes is recommended for promotion in Ghanaian households

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"ENHANCING FOOD SECURITY IN AFRICA THROUGH THE IMPROVEMENT OF RICE POST-HARVEST HANDLING, MARKETING AND THE DEVELOPMENT OF NEW RICE-BASED PRODUCTS"