Development of a stable vitamin-A Rich Nutrient Peanut Butter for School age Children

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Objectives of the study

The study is aimed at enhancing the nutritional quality and stabilization of peanut butter to contribute to reduction of malnutrition levels in school-age children in Uganda

Specific objectives are;

1. To develop a stable vitamin A rich peanut butter product
2. To determine the nutritional composition of the developed peanut butter

Material and methods

All the work involved is being carried out in Food Technology &Nutrition laboratory and pilot plant.

Pilot work

- Orange-fleshed sweet potato (OFSP) was sliced and blanched. The steamed slices were dried at 55^{0}C for 24 hours using electric dryer, and milled
- Peanuts were roasted in an oven at a temperature of 170^{0}C for a period of 30 minutes, cooled and grinded using semi-batch grinder.
- Mixing of paste, OFSP and fat was done to produce a homogenized fortified stable peanut butter(Table 1)

Table 1. Different formulations of peanut butter

Formulation	Formulation 1 (F1)	Formulation 2 (F2)
Peanuts	80%	75%
OFSP flour	5%	15%
Fat (margarine)	15%	10%

Lab analysis for β-carotene

Analysis for β-carotene was done in OFSP flour and fortified peanut butter using method by HarvestPlus (2004). OFSP flour had 8638.889µg/100g. Results for β-carotene content of fortified peanut butter are presented in Table 2.

Table 2. β-carotene content of peanut butter

formulation	1	2
Qty of β-carotene in µg/100g peanut butter	627	1581

Conclusion

Peanut butter fortified with OFSP has high values of pro vitamin-A, which can reduce vitamin –A deficiency in school age children for enhanced academic performance.

Discussion of preliminary results

Table 3. UN recommended dietary intakes of Vit A

Human age	Basal (µ retinol equivalent)	Safe (µ retinol equivalent)
1-6 years	200	400
6-15 years	250-350	400-600

- Thermal processing arrests enzymatic activity which leads to deterioration during preparations and analysis.
- Some percentage of β-carotene is contributed by fat used to stabilize peanut butter as it is fortified with vitamin A.
- Formulation 1 gives fortified peanut butter within acceptable daily intake as compared to UN guide.
- Further study is to be carried out to determine acceptability of fortified peanut. Formulation 1 to be used on panel as it has beta- carotene within range.
- Some mold growth was observed, due to high dextrose in sweet potatoes and possible contamination during flour preparations.
- Results of the product show no separation due to fat which acts as a stabilizer.

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