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Development, acceptability, and nutritional characteristics of a low-cost, shelf-stable supplementary food product for vulnerable groups in Kenya.

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Abstract

BACKGROUND: Food-based approaches have been advocated as the best strategies to curb hunger and malnutrition in developing countries. The use of low-cost, locally available, nutritious foods in the development of supplementary foods has been recommended.

OBJECTIVE: To develop low-cost food supplements using different traditionally processed local foods, consisting of cereals, legumes, nuts, fish, and vegetables, to meet the nutrient requirements for vulnerable groups in Kenya.

METHODS: Four food supplements were developed and evaluated by taste panel procedures. The product containing amaranth grain, pigeon pea, sweet potato, groundnuts, and **brown sugar** was found to be the most acceptable supplement. Evaluation of nutritional composition, shelf-life, and cost analysis of the acceptable supplement was carried out to assess if it could satisfactorily provide more than 50% of the Recommended Dietary Allowances (RDAs) of the basic nutrients for vulnerable groups.

RESULTS: The acceptable supplement contained 453.2 kcal energy, 12.7 g crude protein, 54.3 g soluble carbohydrates, 20.8 g crude fat, and 10.1 g crude fiber per 110 g. The micronutrient contents were 93.0 mg calcium, 172.4 mg magnesium, 2.7 mg zinc, 5.7 mg iron, 0.8 mg vitamin B₁, 0.2 mg vitamin B₂, 7.9 mg niacin, 100 microg folic acid, and 140 microg retinol equivalent per 110 g. The supplement also contained 21% total essential amino acid in addition to appreciable levels of palmitic, stearic, oleic, linoleic, and alpha-linolenic fatty acids. The shelf-life study showed that it could be stored in different packaging materials (polythene bags, gunny bags, and kraft paper) at 26 °C without deleterious effects on its chemical composition for up to 4 months. Cost analysis of the supplement indicated that the product could be competitively sold at US\$0.812/kg (KES 65.50/kg).

CONCLUSIONS: Locally available indigenous foods can be used in the formulation of acceptable, low-cost, shelf-stable, nutritious supplementary foods for vulnerable groups.

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Publication Types, MeSH Terms

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