

Nutrient and Sensory Properties of Complementary Food formulated from Acha, African Yam Beans, Crayfish, and Carrot

K. M Akinde¹ & Gabriel, E².

^{1,2}Department of Nutrition & Dietetics, The Federal Polytechnic Ilaro, Nigeria.

Corresponding author email: kayode.akinde@federalpolyilaro.edu.ng

Introduction

Malnutrition remains a major public health issue in developing countries. The World Health Organization (WHO, 2023) reported 52 and 18.5% stunting and wasting, respectively among children under five.

The National Demographic Health Survey (2024) indicated that 40, 8, and 27% of under-five children are stunted, wasted, and underweight, respectively. Poor complementary feeding contributes significantly to these conditions. Many low- and middle-income countries provide nutritionally inadequate complementary foods, increasing the risk of malnutrition and morbidity in young children (Ortenzi & Beal, 2021). This study evaluated the nutrient and sensory properties of complementary food formulated from Acha, African yam beans, crayfish, and carrots.

Materials and methods

Acha, African yam beans, crayfish, and carrot were used in the study. A commercial complementary food (Sample A, Cerelac) was compared with three formulated samples, B (70, 15 and 10% Acha, African yam beans and carrot, respectively), C (60, 20 and 15% Acha, African yam beans and carrot, respectively), and D (50, 25 and 20%, Acha, African yam beans and carrot, respectively), each containing 5% crayfish. Proximate composition, micronutrients, and phytochemicals were analyzed using standard analytical methods.

Results and discussion

The moisture content was highest in Sample A (75.70%), while Sample D had the highest crude protein (13.63%), fat (3.34%), and ash (2.01%) contents. Sample C had the highest crude fiber (3.56%), and Sample B had the highest carbohydrate (61.62%). Sample D had the highest vitamin A (152.23mg/100g), while Sample A had the highest vitamin D (1.13mg/100g) and vitamin E (1.14mg/100g). Sample A had the highest calcium (112.50mg/100g), while Sample D had the highest iron (7.84mg/100g) and zinc (3.15mg/100g). Phytochemical analysis revealed that Sample D contained the highest levels of polyphenols (15.73 mg/100g), flavonoids (8.75 mg/100g), and carotenoids (1,400.51 mg/100g). The higher carbohydrate content in the formulated foods, compared to Cerelac, is due to the carbohydrate-rich nature of Acha and African yam beans. According to Laryea et al. (2018), most African complementary foods are cereal-based, with legumes added to enhance protein and fat content.

Conclusions

The formulated complementary food exhibited superior nutrient composition, particularly in protein, fat, fiber, vitamin A, iron, and zinc, compared to Cerelac. Sample D, with the highest nutrient and phytochemical content, is recommended for improving infant nutrition. Utilizing locally sourced ingredients offers a viable alternative to commercial complementary foods, contributing to food security and better child health outcomes.

Keywords

Vitamins, minerals, Acha, African yam beans, complementary foods.