

DEVELOPMENT AND QUALITY EVALUATION OF NUTRITIONALLY ENRICHED COMPLEMENTARY FOOD FOR INFANTS

By

M. R. Roshana

Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University, Sri Lanka

ABSTRACT

Protein-energy malnutrition and micronutrient deficiency among children are the major health challenges in developing countries. It affects the child at the most crucial period, *i.e.* stage of development, which can lead to permanent impairment in later life. Usually cereals based fortified foods are introduced initially as the first complementary foods at the six months of infancy. Although, a number of convenient cereal formulas are available, they are often too expensive for the poor and middle income people. To overcome this problem present study was designed to aim at the formulation of low cost complementary foods that provide sufficient protein, vitamin and minerals for children. The complementary food mixtures were prepared from unpolished parboiled red rice flour, germinated green gram flour and carrot flour in the ratios of 100:00:00, 80:10:10, 70:20:10, 60:30:10, 50:40:10 and 40:50:10 respectively. The mixtures were subjected to nutritional (moisture, ash, protein, fat, fiber and carotene), organoleptic (colour, texture, taste, aroma and overall acceptability) and microbial analysis to evaluate the suitability of these complementary food mixtures for consumption and for long shelf life.

The nutritional analysis of the complementary food mixture revealed that the moisture, ash, protein and fiber content increased and fat and vitamin A decreased with the increasing of the germinated green gram flour from 10 to 50%. The sensory assessment showed that, there were significant differences ($p < 0.05$) among the treatments. Based on the quality characteristics, most preferred complementary food mixtures were selected and stored for 14 weeks at $30 \pm 1^\circ\text{C}$ and 75-80% RH. The results of storage studies showed the declining trends in ash, protein, fiber, fat and vitamin A and an increasing trend in moisture of the complementary food mixture. The results of nutritional analysis showed that, there were significant differences ($p < 0.05$) among the treatments. From the overall acceptability rating, the complementary food mixture with 60% unpolished parboiled red rice flour, 30% germinated green gram flour and 10% carrot flour had the highest mean value compared with other tested treatments. There were no total

plate counts observed in the formulated complementary food mixture during the entire storage period. The results indicated that the complementary food mixture with 60% unpolished parboiled red rice flour, 30% germinated green gram flour and 10% carrot flour contained 14.2% protein, 1.6% fiber, 2.06% ash, 1.91% fat, 6.28% moisture and 30.23 mg kg⁻¹ vitamin A, and which could be stored for 14 weeks without any significant changes in the quality characteristics.

Keywords: Carrot flour, Complementary food, Germinated green gram, Parboiled red rice, Enrichment

Supervisor: Prof. (Mrs.). T. Mahendran
Department of Agricultural Chemistry
Faculty of Agriculture
Eastern University, Sri Lanka