Development and assessment of the physical and nutritional properties of a genomics-based ready-to-use therapeutic food

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ABSTRACT

Good and sufficient nutrition is critical for the sustenance of good health as well as the recovery of ill people. Even drugs therapies require sound nutrition, because their effectiveness depends on the patient’s nutritional status. The main objective of this study was to determine the mineral composition of three unique ready-to-use therapeutic foods (RUTF) based on groundnuts and locally available ingredients. The products should be easy to use, easily digestible and suitable to meet the DAI requirements. A variety of compositions of cowpea, groundnut and rice were used in preparing eight experimental ready-to-use therapeutic foods. The formulations were analyzed in triplicate in terms of four nutritional (mineral) values: Fe, Zn, Cu, and Mn. The results were significantly different (p<0.05) and show that the supplemented groundnut RUTF has higher mineral contents than the other formulations. The study shows that easy-to-use therapeutic foods based on groundnuts and locally available ingredients are a valuable nutritional intervention.

INTRODUCTION

Disruption and chronic illness among children and other vulnerable groups are widespread in many communities. For such people, improved diet is important in maintaining good health and lessening the effects of other opportunistic infections. Food nutritions also foster growth and development. Based on this overview, the World Health Organization recommends in a liquid, semi-solid food (known as RUTF) during the rehabilitation phase of the treatment of severe malnutrition (Bouju et al., 2014). Fonseca et al. (2004) in a comprehensive therapeutic feeding programs.

RESULTS

The ready-to-use therapeutic foods (RUTF) is a generic term referring to different types of food such as cowpea, groundnuts and rice pre-packaged useful for feeding children and adults who are acutely malnourished or chronically ill (FAO, 2008). Owing to the high energy density of RUTFs (~500kcal/100g), severe malnutrition and chronically ill individuals can consume just a few small meals 3–7 times a day and obtain sufficient nutrients for complete recovery of health at any time. Groundnuts are a good source of proteins as well as energy necessary in the recovery and growth of malnourished children. The protein quality of groundnuts is also known to contain a valuable quantity of a wide range of vitamins, minerals and dietary fiber, all of which help in promoting recovery and growth of both the sick and malnourished. They also have several benefits for human health and well being, such as anti-nutritional factors. Groundnuts are valued stable and have a high protein content, which is an important component in the development of a wide variety of nutritional products. It is not possible to make these available in any form in health promoting and recovery foods.

MATERIALS AND METHODS

Raw materials (groundnut, cowpea, rice, milk, and sugar) were purchased from local markets and were used in the formulation of a cowpea, groundnut and rice RUTF. The products with a high content of protein are expected to reduce the burden of flavor and lipids.

FORMULATIONS

The results of the proximate composition of the formulations are presented in Table 3. The results showed that the supplemented groundnut RUTF has higher mineral contents than the other formulations. The study shows that easy-to-use therapeutic foods based on groundnuts and locally available ingredients are a valuable nutritional intervention.

CONCLUSIONS

An RUTF formulation with high-energy enriched amino- and fat-protein mix, has been derived from systems of high RUTFs (31-32%), protein (53-34%) and rice (26-36%). The optimized protein aminoacidic index has led to enhanced acceptability of the product.

WATER WAY

* Additional vitamin-mineral mix (from Fortitech) to meet the RUTF target: complex grains is meet to two nutritional requirements is being explored through nutritional intervention studies.

* Pilot scale production of a vitamin-mineral fortified plant-based RUTF for malnutrition intervention studies for other target vulnerable groups including women of childbearing age as well as other people.

* Additional of probiotics will further enhance the potency of the RUTF and this need to be examined in nutritional intervention studies.

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