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Determination of Energy and Nutrients Composition of Potential Ready-to-Use Therapeutic Food Formulated from Locally Available Resources

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Abstract : Severe acute malnutrition (SAM) remains a major killer of children under five years of age. Nigeria has the second highest burden of stunted children in the world, with a national prevalence rate of 32 percent of children under five. An estimated 2 million children in Nigeria suffer from severe acute malnutrition (SAM), and 3.9% of children in northwest Nigeria suffer from SAM, which is significantly higher than the national average of 2.1%. Community-Based Management of Acute Malnutrition (CMAM) has proven to be an effective intervention in the treatment of SAM in children using Ready-to-Use Therapeutic Food (RUTF). Ready-to-use therapeutic food (RUTF) is a key component for the treatment of Severe Acute Malnutrition. It contains all the energy and nutrients required for rapid catch-up growth and used particularly in the treatment of children over 6 months of age with SAM without medical complications. However, almost all RUTFs are currently imported to Nigeria from other countries. Shortages of RUTF due to logistics (shipping costs, delays, donor fatigue etc) and funding issues present a threat to the achievement of the 2030 World Health Assembly (WHA) targets for reducing malnutrition in addition to 2030 SDGs 2 (Zero Hunger), 3 (Good Health and Wellbeing), 12 (Responsible Consumption and Production), and 17 (Partnerships for the Goals), thus undermining its effectiveness in combating malnutrition On the other hand, the availability of human and material resources that will aid local production of RUTF presents an opportunity to fill in the gap in regular RUTF supply. About one thousand Nigerian children die of malnutrition-related causes every day, reaching a total of 361,000 each year. Owing to the high burden of malnutrition in Nigeria, the local production of RUTF is a logical step, that will ensure increased availability, acceptability, access, and efficiency in supply, and at lower costs. Objective(s): The objectives of this study were therefore, to formulate RUTF from locally available resources and to determine its energy and nutrients composition, incommensurate with the standard/commercial RUTF. Methods: Three samples of RUTF were formulated using locally available resources (soya beans, wheat, rice, baobab, brown-sugar, date palm and soya oil); which were subjected to various analysis to determine their energy/proximate composition, vitamin and mineral contents and organoleptic properties were also determined using sensory evaluation. Results: The energy values of the three samples of locally produced RUTF were found to be in conformity with WHO recommendation of ≥ 500 kcal per 100g. The energy values of the three RUTF samples produced in the current study were found to be 563.08, 503.67 and 528.98 kcal respectively. Sample A, B and C had protein content of 13.56% 16.71% and 14.62% respectively, which were higher than that of commercial RUTF (10.9%). Conclusions/recommendations: The locally formulated RUTF samples had energy value of more than 500 kcal per 100g; with an appreciable amount of macro and micro nutrients. The appearance, taste, flavor and general acceptability of the formulated RUTF samples were also commendable.

Keywords : energy, malnutrition, nutrients, RUTF
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