



Title : Developing Indigenous Supplementary Nutritious Food Products to Treat Children with Moderate Acute Malnutrition

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Introduction:

Almost 40 million children under 5 years of age were reported as moderately malnourished in 2010 [1]. Moderate acute malnutrition (MAM) in children is defined as weight-for-height between -3 and -2 Z-scores on the WHO child growth standards without oedema [2]. Supplementary foods, in ready-to-eat or ready to cook form, which are modified in their energy density, protein, fat or micronutrient composition can be used in treatment for MAM children [3]. Under the ICDS programme supplementary nutrition in the form of Take Home Ration (THR) like upma premix, sheera premix and sukhadhi premix is provided to the children. The drawbacks of these THR formulations are its substandard quality, poor nutritional value and low on sensory qualities. This was the motivation to develop alternate nutritious food formulations for children with MAM. This work reports six different formulations and their shelf stability up to 30 days in controlled conditions i.e. 30°C and 70 % Relative Humidity (RH).

Methodology:

Six supplementary nutritious food formulations viz. Upma Premix (UP), Ladoo Premix (LP), Zhunka Premix (ZP), Nutritious Nankhatais (NN), Multigrain Flour Mix (MGFM) and Chatni (CH) were developed suiting the palates of the children in Maharashtra, India. The shelf life of these products was studied at controlled conditions 30°C and 70% RH. Product characterization such as moisture content, water activity, colour, total plate count and sensory analysis were studied up to one month storage in environmental chamber at 30°C and 70%RH. Nutrition profiling of the products was done for macro and micro nutrients and compared with the existing THR samples distributed in Maharashtra.

Results:

The shelf life studies indicated that the moisture content was observed to be $\leq 6\%$ while water activity (a_w) was below 0.6 at the end of 30 days for all the products. There was no major difference observed in colour of the products fresh and after 1 month of storage. The total plate count of all the products remained below 10^4 CFU/ml at the end of one month which is acceptable as infant formulations. The sensory scores were acceptable for all the formulations. Nutrients content with respect to energy, proteins, fats, Vit. A and Vit. E were measured and found to be higher in formulated products compared to the THR samples.

Conclusion:

Based on the nutrient analysis, shelf life stability and cost the products showed great potential for integrating in treating children with MAM using CMAM (Community Management of Acute Malnutrition) approach. About 50 % of the RDA for macro and micro-nutrients can be supplied through these products which will alleviate the status of malnutrition in children.

References:

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