New Generation Soy Maize and Sorghum (SMS) Ready-to-Use Therapeutic Food (RUTF)

Background

Acute malnutrition remains a major public health problem in developing countries. In 2016 globally, 52 million children under five years old suffered from acute malnutrition including more than 17 million from severe acute malnourishment according to UNICEF. The World Health Organisation recommended method of treating severe acute malnutrition is the Community-based Management of Acute Malnutrition (CMAM) model, which involves the provision of Ready to Use Therapeutic Food (RUTF) to patients for home consumption.

Globally, only about 20% of cases of severe acute malnutrition are being reached, leaving millions of children with a greatly increased risk of death. A significant contributing factor to the low coverage is the high cost of ready to use therapeutic food. In order to reduce cost and improve coverage, developing alternative lower cost recipes that are at least as efficacious in treating severe acute malnutrition as the existing standard RUTF formulation, is essential. Development of such recipes has therefore been a top priority in the Global Development sector for the past 10 years, especially with the treatment of severe acute malnutrition being a UN Sustainable Development Goal (SDG).

VALID Nutrition has been working to develop effective non-milk based recipes for over a decade and during this period has completed three large randomised controlled clinical trials involving an innovative soy maize and sorghum (SMS) based RUTF recipe. Producing therapeutic foods locally out of local grains and pulses has long been a goal of international research and development efforts. Non-milk formulations reduce dependency on imported milk, make better use of locally grown ingredients, decrease the risks of fungal (aflatoxin) contamination, reduce lactose intolerant reactions to the treatment and lower the carbon footprint, all for a lower cost.

In 2014, VALID Nutrition partnered with Ajinomoto Co. Inc., together with support from the Japanese International Cooperation Agency (JICA) and the Global Innovation Fund. A new generation version of the soy maize and sorghum based recipe was developed using innovative techniques and Ajinomoto's amino acid and food science technology, to optimise the formulation. Two new recipes were developed and successfully underwent an Acceptability Trial in 2015. The Clinical Efficacy Trial took place from late 2015 through to September 2016, in Malawi. A scientific Paper on the trial and outcome was published in August 2017 by the ***American Journal of Clinical Nutrition***

http://ajcn.nutrition.org/content/early/2017/08/16/ajcn.117.156653.abstract?sid=75747c75-8b14-4523-97c1-5b2950a463ad

Design of trial

The trial compared the efficacy of a Soya-Maize-Sorghum RUTF enriched with crystalline amino acids containing no animal milk powder (FSMS-RUTF) and a Soya-Maize-Sorghum RUTF enriched with the same crystalline amino acids but containing 9.3% skimmed cow milk powder (MSMS-RUTF), to that of the standard peanut and milk based RUTF containing 25% milk powder (PM-RUTF). This was a non-blinded, parallel group, simple randomised, controlled trial that enrolled two groups of children suffering from severe acute malnutrition (6-23 months and 24–59 months old) and used a day care approach.

Results

The results of the Trial in Malawi, as now published, clearly show that the new recipes are as efficacious as the standard milk peanut recipe RUTF in terms of recovery and mortality in both the older infants and the younger children. Furthermore, the non-milk recipe was superior to the standard milk peanut recipe RUTF in its ability to treat anaemia and to replenish body iron stores. Importantly, the trial showed that the restoration of haemoglobin is inversely proportional to the milk content.

Conclusion – benefits and impacts

This outcome represents a significant breakthrough. For the first time since the mid nineties when RUTF was developed, we now have a lower cost product that is as efficacious as the sole standard recipe – which has dominated the market in all that time.

We believe this can be a transformational development for the international RUTF market; and most importantly, for children affected by severe acute malnutrition. In summary, FSMS (non-milk based recipe) RUTF:

- Is as efficacious as the standard Milk-Peanut RUTF recipe in treating severe acute malnutrition.

- Is superior to the standard milk peanut RUTF in treating anaemia – which is a highly significant benefit, both in the treatment of severe acute malnutrition and for application in improved supplementary foods, especially for the critically important group of pregnant and lactating women.

- Will cost substantially less - with ingredient costs in developing countries expected to be 15~25% lower, depending on prevailing market prices.

- Is much easier to manufacture in developing countries, with most of the base ingredients grown locally, avoiding the need to import milk powder. This will make manufacturers in developing countries much more competitive.

- Avoids lactose intolerance or nut allergy in children.

- Contains 10% less sugar than standard RUTF.

- Has a greatly superior environmental profile with significant sustainability benefits from the use of cereals rather than animal source ingredients. Furthermore, manufacture in programmatic countries will reduce the carbon footprint associated with offshore supply.