

# Ready-to-use Therapeutic Food and Ready-to-use Supplementary Food

## New approaches in formulation and sourcing

**Paul GJ Murphy**

Valid Nutrition, Bantry, Co Cork, Ireland

### Dear Editor,

The article published in *Sight and Life* vol. 32 (1) 2018, page 40, by Mark Manary and Meghan Callaghan-Gillespie: *Ready-to-use Therapeutic Food and Ready-to-use Supplementary Food: New approaches in formulation and sourcing*,<sup>1</sup> states:

*“The standard formulation for RUTF has been used for over a decade and although several alternative formulations have been developed and tested by leading researchers, most of these products have not been successful in achieving comparable effectiveness to the current milk- and peanut-based formula.”*

This statement references an article published in *Maternal and Child Nutrition* in 2015 describing the results of a cluster-randomized controlled equivalence trial that we undertook in Zambia between June 2009 and August 2010.<sup>2</sup> This trial indeed shows that a non-milk-containing RUTF based on soya-maize and sorghum was not equivalent to the standard milk-peanut recipe in children aged 6–24 months. However the Manary et al. article does not mention a more recent article we published in *The American Journal of Clinical Nutrition* that reports the results of

a large RCT looking at a refined version of that soya-maize-sorghum RUTF recipe that included some crystalline amino acids.<sup>3</sup> This article demonstrates that the new soya-maize-sorghum RUTF recipe is not inferior to the standard milk-peanut recipe in terms of recovery from SAM, mortality, or default. The paper also demonstrates that the recipe is superior to the milk-containing product for the restoration of body iron stores and the treatment of anemia.<sup>3</sup> Critically, the recipe will cost approximately 20% less than the current milk-peanut formula, potentially allowing for the treatment of almost 1 million more cases of SAM within existing budgets.

**“In addition to the increased clinical effectiveness and reduced costs, the new recipe has other important advantages”**

In addition to the increased clinical effectiveness and reduced costs, the new recipe has other important advantages.<sup>4</sup> The base ingredients can all be grown in developing countries, thereby facilitating manufacture in those countries and avoiding the need to import expensive milk powder. The exclusion of peanuts also reduces the risks of aflatoxin contamination, making the new recipe easier and safer to manufacture.<sup>5</sup> The elimina-

tion of animal-source ingredients and the use of locally grown pulses and grains also dramatically reduces the carbon footprint and increases the potential for sustainable production.<sup>4</sup> The new recipe also contains 10% less sugar than the standard RUTF recipe and avoids problems associated with lactose intolerance or nut allergies.<sup>6,7,8,9</sup>

The superior efficacy in the restoration of body iron stores and the treatment of anemia proffers the potential for a new range of plant-based RUFs to supplement pregnant and lactating women and treat or prevent moderate acute malnutrition (MAM). In conclusion, this successful trial demonstrates that a non-milk product has clinical advantages over the standard, milk-based product, at much lower cost and reduced environmental impact. We therefore believe that this represents an important breakthrough that should have been described in the original article.

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**Correspondence: Paul GJ Murphy,**

*Chief Executive, Valid Nutrition, Cuibin Farm,  
 Derry Duff, Bantry, Co Cork, P75 PD60, Ireland*  
**Email:** [office@validnutrition.org](mailto:office@validnutrition.org)

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## References

01. Manary M, Callaghan-Gillespie M. Ready-to-Use Therapeutic Food and Ready-to-Use Supplementary Food: new approaches in formulation and sourcing. *Sight and Life*. 2018;32(1):40–5.
02. Irena AH, Bahwere P, Owino VO, Diop EI, Bachmann MO, Mbwili-Muleya C, et al. Comparison of the effectiveness of a milk-free soy-maize-sorghum-based ready-to-use therapeutic food to standard ready-to-use therapeutic food with 25% milk in nutrition management of severely acutely malnourished Zambian children: an equivalence non-blinded cluster randomised controlled trial. *Matern Child Nutr*. 2015;11 Suppl 4:105–19.
03. Bahwere P, Akomo P, Mwale M, Murakami H, Banda C, Kathumba S, et al. Soya, maize, and sorghum-based ready-to-use therapeutic food with amino acid is as efficacious as the standard milk and peanut paste-based formulation for the treatment of severe acute malnutrition in children: a noninferiority individually randomized controlled efficacy clinical trial in Malawi. *Am J Clin Nutr*. 2017;106(4):1100–12.
04. Joseph M, Alavi S, Johnson Q, Mohamedshah F, Walton S, Webb P. Improving the nutritional value of foods in the USAID food aid basket: optimisation of macro and micronutrients, food matrices, novel ingredients and food processing technologies. Report to USAID from the Food Aid Quality Review. Boston, MA: Tufts University; 2018.
05. Manary MJ. Local production and provision of ready-to-use therapeutic food (RUTF) spread for the treatment of severe childhood malnutrition. *Food Nutr Bull*. 2006;27(3 Suppl):S83–S89.
06. Paglia L. WHO: healthy diet to prevent chronic diseases and caries. *Eur J Paediatr Dent*. 2018;19(1):5.
07. Nyeko R, Kalyesubula I, Mworozzi E, Bachou H. Lactose intolerance among severely malnourished children with diarrhoea admitted to the nutrition unit, Mulago hospital, Uganda. *BMC Pediatr*. 2010;10:31.
08. Boye JI. Food allergies in developing and emerging economies: need for comprehensive data on prevalence rates. *Clin Transl Allergy*. 2012;2(1):25.
09. Yang Z. Are peanut allergies a concern for using peanut-based formulated foods in developing countries? *Food Nutr Bull*. 2010;31(2 Suppl):S147–S153.

# Response to Letter from Paul GJ Murphy

## Ready-to-use Therapeutic Food and Ready-to-use Supplementary Food: New approaches in formulation and sourcing

**Mark Manary**

Project Peanut Butter, MO, USA

**Meghan Callaghan-Gillespie**

Washington University School of Medicine, MO, USA

The letter from Paul Murphy highlights an interesting study of an alternative RUTF from 2017, and we thank him for bringing this to the attention of the readers.

Our piece for *Sight and Life* magazine was meant to highlight the possibilities and pitfalls of alternative RUTFs in treating children with severe acute malnutrition (SAM) rather than to provide a comprehensive review of the topic.

We chose not to discuss the study using milk-free RUTF from Malawi in our article, because of some limitations of this work.<sup>1</sup> Foremost, RUTF is used for home-based therapy, treating SAM children when they are given a 1–2 ration week of food to be consumed at home.<sup>2</sup> This study was facility-based, a setting where children came to a treatment center daily for feeding, thus we have no direct evidence how this product would perform in the setting for which it is intended. The rates of weight gain were significantly less among those children consuming a milk-free RUTF, suggesting there may be some nutritional inferiority of the product to rebuild wasted tissues.<sup>1</sup> The author raises a couple of ‘straw men’ in the letter – lactose intolerance and peanut allergy – and asserts these problems are averted by use of milk-free alternative RUTF. These are actually not relevant clinical problems: a trial among the most vulnerable SAM children in the initial phase of treatment receiving lactose-free feeding found no less diarrhea or feeding intolerance, and an eczematous rash from RUTF allergy in our experience occurred in about 1 out of 10,000 children treated. Finally, the cost considerations need to be more carefully evaluated, given the additional food safety risks of pathogen contamination from local grains which require more processing.

“Certainly the line of investigation suggested in the Malawi study holds promise”

Certainly the line of investigation suggested in the Malawi study – using less milk and realizing lower RUTF costs – holds promise, and we look forward to learning more about this in the future.

**Correspondence:** *Mark Manary,*

*Project Peanut Butter, 7435 Flora Avenue,  
Maplewood, MO 63243, USA*

**Email:** manary@kids.wustl.edu

**Correspondence:** *Meghan Callaghan-Gillespie,*

*Washington University School of Medicine,  
660 S Euclid Ave, St. Louis, MO 63110, USA*

**Email:** mcallaghan@wustl.edu

### References

01. Bahwere P, Akomo P, Mwale M, Murakami H, Banda C, Kathumba S, et al. Soya, maize, and sorghum-based ready-to-use therapeutic food with amino acid is as efficacious as the standard milk and peanut paste-based formulation for the treatment of severe acute malnutrition in children: a noninferiority individually randomized controlled efficacy clinical trial in Malawi. *Am J Clin Nutr.* 2017;106(4):1100–12. Epub 2017/08/18. doi: 10.3945/ajcn.117.156653. PubMed PMID: 28814393.
01. Trehan I, Manary MJ. Management of severe acute malnutrition in low-income and middle-income countries. *Arch Dis Child.* 2015;100(3):283–7. Epub 2014/11/26. doi: 10.1136/archdischild-2014-306026. PubMed PMID: 25421910.

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