EVIDENCE SUPPORTING THE USE OF ENOV'NUTRIBUTTER®

Adu-Afarwuah S et al. "Randomized comparison of 3 types of micronutrient supplements for home fortification of complementary foods in Ghana: effects on growth and motor development." Am J Clin Nutr. (2007); 86: 412-20.

OBJECTIVES: The low micronutrient content of complementary foods is associated with growth faltering in many populations. A potential low-cost solution is the home fortification of complementary foods with Sprinkles (SP) powder, crushable Nutritabs (NT) tablets, or energy-dense (108 kcal/d), fat-based Nutributter (NB). The objective was to test the hypothesis that multiple micronutrients added to home-prepared complementary foods would increase growth and that the effect would be greatest in the presence of added energy from fat.

CONCLUSION: MN supplements had positive effects on motor milestone acquisition by 12 mo compared with no intervention and Nutributter also affected growth.

Adu-Afarwuah S et al. Home fortification of complementary foods with micronutrient supplements is well accepted and has positive effects on infant iron status in Ghana. Am J Clin Nutr. (2008); 87: 929-38.

OBJECTIVES: Micronutrient deficiencies are common during infancy, and optimal approaches for their prevention need to be identified. The objective was to compare the efficacy and acceptability of Sprinkles (SP), crushable Nutritabs (NT), and fat-based Nutributter (NB; 108 kcal/d), which provide 6, 16, and 19 vitamins and minerals, respectively, when used for home fortification of complementary foods.

CONCLUSION: All supplements were well accepted, and the mean percentage of days that supplements were consumed (87%) did not differ between groups. At 12 mo, all 3 intervention groups had significantly higher ferritin and lower TfR concentrations than did the NI control group. All 3 options for home fortification of complementary foods are effective for reducing the prevalence of iron deficiency in such populations.

Chaparro CM and Dewey KG. "Use of lipid-based nutrient supplements (LNS) to improve the nutrient adequacy of general food distribution rations for vulnerable sub-groups in emergency settings." Matern Child Nutr. (2010); 6 Suppl 1:1-69.

OBJECTIVES: Currently, the main food and nutrition interventions in emergency settings include general food distribution (GFD) rations, which are provided to the affected population as a whole, and selective (or supplementary) feeding programs (SFP), which are to be provided to nutritionally vulnerable or malnourished individuals. In addition to logistical and operational challenges that may limit the intended effect of these programs, the nutritional quality of the food commodities provided may be insufficient to meet the needs of infants and young children and PLW. The focus of this document is the potential role of LNS in meeting the nutritional needs of these vulnerable subgroups, with the goal of preventing malnutrition in emergency-affected populations.

CONCLUSION: The results indicate that the typical GFD ration currently provided in emergency settings--based on cereals, pulse, an FBF such as corn-soy blend (CSB), oil, salt and sugar-does not meet the nutritional needs of infants and young children and PLW. The hypothetical intake from a ration composed of food aid commodities (based on the current USAID/USDA specifications for exported food aid commodities used in emergency settings), and including breast milk for children 6-24 months of age, provided less than 75% of the recommended intake for several micronutrients for certain age/physiologic groups, including calcium, iron, zinc, B vitamins such as riboflavin, B6 and B12, and fat-soluble vitamins such as D, E and K. It also generally contained lower than recommended levels of fat and essential fatty acids. The initial LNS formulation for each target group was designed to provide 100% of the recommended amount (RDA or RNI) for most micronutrients per daily dose (20 g, approximately 118 kcal) of LNS. This would ensure consumption of the recommended levels of each nutrient even if the 'base' diet changed.

Hess SY et al. "Acceptability of zinc-fortified, lipid-based nutrient supplements (LNS) prepared for young children in Burkina Faso." Matern Child Nutr. (2011); 7:357-67.

OBJECTIVES: Micronutrient deficiencies are a public health concern among young children in low-income countries, and novel strategies are needed to improve the nutritional status of children at risk. One promising approach is the use of lipid-based nutrient supplements (LNS), which can be added to complementary food at the time of consumption. We conducted a series of acceptability studies of LNS containing either 0 or 10 mg of zinc per daily 20 g LNS dose among Burkinabe children 9-15 months old and their mothers. These acceptability studies included observations of children's consumption, maternal and child sensory reaction to the products using a 5-unit hedonic scale, a triangle test for detection of differences and a review of maternal reports of their child-feeding experiences during a 2-week home-feeding trial.

CONCLUSION: The LNS products were well appreciated by the mothers and children during the sensory trials and the 2-week home-feeding trial. The addition of 10 mg zinc to LNS did not affect the consumed proportion of the offered porridge-LNS-mixture (P = 0.43). Results of the triangle test with mothers confirmed that there was no detectable difference between products containing 0 or 10 mg zinc per 20 g LNS dose. Most importantly, interviews and focus groups following the 2-week home-feeding trial indicated good acceptability of the products by mothers and their children.

Phuka J et al. "Acceptability of three novel lipid-based nutrient supplements among Malawian infants and their caregivers." Matern Child Nutr. (2011); 7:368-77.

OBJCTIVES: We tested the acceptability of three new lipid-based nutrient supplements (LNSs) in two independent phases among 18 8-12-month-old healthy rural Malawians and their caregivers. In phase 1, acceptability was assessed by offering three new LNSs in random order, and an LNS already determined to be acceptable, Nutributter®, each added to 30 g of warm maize porridge over three consecutive days. In phase 2, infants from each village were provided one of the new supplements for a 2-week home-use trial.

CONCLUSION: During both phases, almost all caregivers rated all study foods very likeable for themselves and their children, with mean scores slightly lower among the caregivers than among the infants. In the home-use phase, the test foods were almost exclusively used by the study participants with minimal sharing with siblings and other household members. Some infants were reported to prefer the new investigational products over traditional complementary food.

Cercamondi CI et al. "Iron bioavailability from a lipid-based complementary food fortificant mixed with millet porridge can be optimized by adding phytase and ascorbic acid but not by using a mixture of ferrous sulfate and sodium iron EDTA." J Nutr. (2013); 143:1233-9.

OBJECTIVES: Home fortification with lipid-based nutrient supplements (LNSs) is a promising approach to improve bioavailable iron and energy intake of young children in developing countries. To optimize iron bioavailability from an LNS named complementary food fortificant (CFF), 3 stable isotope studies were conducted in 52 young Beninese children. Test meals consisted of millet porridge mixed with CFF and ascorbic acid (AA). Study 1 compared iron absorption from FeSO4-fortifed meals with meals fortified with a mixture of FeSO4 and NaFeEDTA. Study 2 compared iron absorption from FeSO4-fortifed meals without or with extra AA. Study 3 compared iron absorption from FeSO4-fortified meals with meals containing phytase added prior to consumption, once without or once with extra AA.

CONCLUSION: These findings suggest that phytase and AA, and especially a combination of the two, but not a mixture of FeSO4 and NaFeEDTA would be useful strategies to increase iron bioavailability from a CFF mixed with cereal porridge.

Iannotti LL et al. "Linear growth increased in young children in an urban slum of Haiti: a randomized controlled trial of a lipid-based nutrient supplement." Am J Clin Nutr. (2014); 99:198-208.

OBJECTIVES: Haiti has experienced rapid urbanization that has exacerbated poverty and undernutrition in large slum areas. Stunting affects 1 in 5 young children. We aimed to test the efficacy of a daily lipid-based nutrient supplement (LNS) for increased linear growth in young children.

CONCLUSION: GLS modeling showed LNS supplementation for 6 mo significantly increased the length-for-age z score (±SE) by 0.13 ± 0.05 and the weight-for-age z score by 0.12 ± 0.02 compared with in the control group (P ← 0.001). A low-energy, fortified product improved the linear growth of young children in this urban setting.

Lesorogol C et al. "Preventative lipid-based nutrient supplements (LNS) and young child feeding practices: findings from qualitative research in Haiti." Matern Child Nutr. (2014).

OBJECTIVES: To prevent undernutrition in an urban slum in Haiti, a lipid-based nutrient supplement (LNS) was introduced through a randomised control trial. Food supplementation for young child nutrition has a long history in Haiti, but there is little empirical information regarding the effects of supplementation on young child feeding practices. One of the concerns raised by supplementation is that it may disrupt other positive feeding practices such as breastfeeding and use of other complementary foods, with negative consequences for child nutrition. We conducted 29 in-depth interviews with mother-baby pairs from the three comparison groups: control, 3-month LNS supplementation and 6-month LNS supplementation.

CONCLUSION: Findings from those in the LNS groups indicated high acceptance and satisfaction with LNS and perceptions that it positively affects child health and development. LNSwas integrated into and enhanced ongoing complementary feeding practices. The effects of LNS use on duration and perceived quantity of breast-feeding were variable, but generally, breastfeeding was maintained during and after the intervention.

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