

Milk Matters in Malnutrition

New study will examine the effect of dairy sugar and dairy protein on recovery from moderate acute malnutrition (MAM).

The Project Peanut Butter (PPB) team is treating severely and moderately malnourished children in Sierra Leone. PPB has conducted many studies in Sierra Leone, all focused on researching the best treatment for recovery of malnourished children. PPB has helped thousands of severely and moderately malnourished children in rural and urban districts of Sierra Leone recover from the effects of malnutrition through food aid treatment and education interventions. PPB also produces a ready-to-

use therapeutic food (RUTF) for treating severely malnourished children at their factory in Freetown, Sierra Leone.

It is clear that food aid products that contain milk powders restore malnourished children to a normal nutritional status more quickly than other foods that do not. Recently, PPB conducted a research study in Malawi that showed higher rates of recovery than usual for moderately malnourished children using two food aid products that contained different qualities of milk proteins showing that the quality of milk protein did not matter as much as the fact that the food contained the milk powder. The most common explanation for milk's superiority in treating malnourished children, is that it contains high quality protein. While this is true, milk powder is more than just a protein containing powder. The largest component of milk powder is whey permeate which is also known as milk sugar, lactose. The impact of milk sugar and recovery rates in malnourished children will be researched in this study.



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The Human Gut

All carbohydrates are chains of simple sugars. When carbohydrates reach the human gut, they are digested and broken down into simple sugars and then used for energy by the body. Proteins are also broken down in the gut into their component pieces and then absorbed into the body. Digestion and absorption of nutrients is one of three essential functions of the gut. The second essential function is to provide a barrier that does not allow disease causing microbes to enter the body, as there are many of these in the environment. The third function is to hold and cultivate the microbes that provide necessary nutrients and bioactive molecules for human health, collectively referred to as the microbiome. When children become malnour-



Projektinfo

Titel: Mælk betyder i underernæring, er det lactose eller protein?

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Formål: Dette interventionsstudie har til formål at bestemme effekten af laktose og mælkeproteiner på behandling af moderat, akut underernæring. Vi vil bestemme de optimale sukkertyper og proteiner, til brug i levnedsmidler, der gives som kosttilskud til børn med moderat, akut underernæring. Effekten af de forskellige kosttilskud vurderes ud fra bl.a. vægtøgning (shastighed) og omkreds af deres arme. Endelig vurderes formuleringernes evne til at genoprette tarmens funktion. 900 børn inkluderes i studiet, der udføres i Sierra Leone.

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ished, they often develop leaky, damaged gut surfaces, known as environmental enteric dysfunction (EED), leading to worsened malnutrition due to malabsorption of nutrients. In addition to recovery rates, this study will look if there is improvement in gut health.

Milk Sugar or Milk Protein?

This research project will compare the effectiveness of food aid products made with milk powder, milk protein and milk sugar on recovery from moderate acute malnutrition (MAM) in children aged 6 – 59 months by providing children with one of four different food aid products. The four food aid products are ready-to-use supplementary foods (RUSFs) that contain varying protein and sugar content to determine the best combination for treatment of MAM children. The different foods contain a milk protein and milk sugar combination, a milk protein and vegetable sugar combination, a vegetable protein and milk sugar combination, and a vegetable protein and vegetable sugar combination.

Benefits

This research project will be beneficial because we will understand how to best prepare and enhance food aid products with the addition of milk sugar and milk protein. We will understand what benefits milk protein and milk sugar have in food aid products for malnourished children. ●

How Can the Industry Benefit from This Research?

In prior studies, milk has been found to stimulate child growth. Milk protein contains all essential amino acids and has a very high protein quality. There is less known about the milk sugar's effect on growth as there is conflicting data on results of lactose in the recovery of malnourished children.

We expect that both milk protein and lactose will restore gut health more quickly than vegetable protein or vegetable sugar. The relative importance of these two restorative factors will be quantified and reflected in greater reductions in gut leakiness as measured by a lactulose permeability test. We hypothesize that milk protein and lactose will induce a healthier microbiome composition than in those treated with vegetable protein or vegetable sugar.

The industry will benefit from this research because we expect that milk protein and lactose will prove to be the best way to treat malnourished children. This will be a positive outcome for the dairy industry because it will showcase that dairy is a necessary part of a child's growth and development and is efficient in treating malnutrition. More milk equals healthier children around the world.