

## **Permeate as nutritional supplements for moderate malnutrition**

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### **Aim:**

- 1) to verify recovery from electrolyte fluctuations in response to re-feeding with permeate
- 3) to test intestinal function and integrity in response to re-feeding with permeate
- 4) to study growth velocity and body composition in response to re-feeding with permeate
- 5) to determine the effects of lactose and minerals from permeate separately and together

### **Description:**

Moderate malnutrition affects approximately 33 mio children, and many die from comorbidities as a result of their malnutrition. We are currently limited in our understanding of the pathogenesis and restitution from moderate malnutrition, in part due to ethical and practical difficulties associated with performing randomized controlled clinical trials in this vulnerable group. Nutrition to support recovery of such individuals requires special attention as malnutrition induces fundamental skin, digestive, hepatic, renal, cardiac and metabolic dysfunctions. It is known that milk products are important in the prevention and therapy against severe malnutrition but its role in recovery from moderate malnutrition is less well understood. As an alternative to studies in undernourished children, we have recently developed a pig model of malnutrition (Lykke et al., 2013, Hother et al., 2014). This model can be used to identify milk diets for undernourished individuals that have both high biological efficacy, but also low cost for widespread use in low income countries.

'Permeate', which is the milk fraction left after protein and fat have been used for other dairy products, is an excellent nutritional source of lactose and essential minerals. We hypothesize that macro- and micro-minerals in permeate will help to stabilize the electrolyte disturbances in the acute re-feeding phase, and that lactose supports gut function via restoration effects on the mucosa and on gut microbiota. In perspective, re-feeding diets with permeate may apply not only to malnourished children but also to malnourished elderly citizens and hospitalized patients.