disclosure provide an infant with healthier body composition, *i.e.*, a more desirable muscle mass to fat mass ratio. The present formulas comprise beta-hydroxy-beta-methylbutyric acid (HMB), which Applicants have surprisingly found to promote protein synthesis in the term infant, without attenuating protein degradation in the infant's muscles and organs that may be required for healthy development. Applicants' findings are particularly surprising given that it is well established that HMB attenuates protein degradation in the muscles of adults.

Without wishing to be bound by theory, it is believed that the term infant formulas increase lean body mass by increasing protein synthesis without inhibiting protein degradation in the muscle and other organs of an infant. It is believed that term infant formulas comprising HMB will promote accretion of lean body mass and a healthier body composition without requiring higher protein intakes.

It has further been surprisingly discovered that the use of HMB in infant formulas instead of leucine to promote protein synthesis provides several advantages. First, HMB provides similar if not superior potency for stimulating protein synthesis than leucine. Second, HMB promotes protein synthesis without increasing blood urea nitrogen, which can be an issue for certain infants.

Thus, the present disclosure is directed to an infant formula comprising HMB at from about 60 μg to about 6,000 mg per liter of the composition and a macronutrient, wherein the formula has an energy density of from about 200 to about 650 kcal per liter. The formula may be administered in any suitable way, for example, orally or via naso-gastric and other modes of tube-feeding.

The present disclosure is also directed to a method for promoting protein synthesis, accretion of lean body mass, and development of a healthy body composition in a term infant, the method comprising the step of administering to the infant a composition comprising HMB at from about 60 μg to about 6,000 mg per liter of the composition, wherein the composition has an energy density of from about 200 to about 650 kcal per liter.

The present disclosure is also directed to a use of a liquid infant formula comprising beta-hydroxy-beta-methylbutyric acid at from about 60 μg to about 6000 mg per liter of the formula, the formula having an energy density of from about 200 kcal to about 650 kcal per liter, in the manufacture of a medicament for promoting protein synthesis in a term infant.

BRIEF DESCRIPTION OF THE FIGURES

Fig. 1 shows a plot of the blood plasma concentration of HMB vs. the amount of HMB infused in piglets.

10. ~~A method for promoting protein synthesis in a term infant, the method comprising the step of administering to the infant~~ Use of a liquid infant formula comprising beta-hydroxy-beta-methylbutyric acid at from about 60 μg to about 6000 mg per liter of the formula, the formula having an energy density of from about 200 kcal to about 650 kcal per liter, in the manufacture of a medicament for promoting protein synthesis in a term infant.

11. The ~~method~~ use of claim 10, further comprising the step of preparing the liquid infant formula by reconstituting a nutritional powder comprising beta-hydroxy-beta-methylbutyric acid.

12. The ~~method~~ use of claim 11, wherein the concentration of the beta-hydroxy-beta-methylbutyric acid in the nutritional powder is less than or equal to about 15% by weight of the powder.

13. The ~~method~~ use of claim 12, wherein the concentration of the beta-hydroxy-beta-methylbutyric acid in the powder is from about 0.0001 % to about 10% by weight of the powder.

14. The ~~method~~ use of any one of claims 10-13, wherein the liquid infant formula comprises at least one macronutrient selected from the group consisting of protein, carbohydrate, fat and combinations thereof.

15. The ~~method~~ use of claim 14, wherein the formula comprises protein in an amount of from about 0.5 grams to about 14 grams protein per liter of formula.

16. The ~~method~~ use of claim 14, wherein the formula comprises protein in an amount from about 5 grams to about 10 grams protein per liter of formula.

17. The ~~method~~ use of any one of claims 10-16, wherein the liquid infant formula is administered to the subject orally or parenterally.