CLAIMS

What is claimed is:

1. Use of a nutritional composition in the preparation of a composition for enhancing cognitive development in a pediatric subject, the nutritional composition comprising:

up to 7 g/100 Kcal of a fat or lipid;

up to 5 g/100 Kcal of a protein source;

0.25 g/100 Kcal to 16 g/100 Kcal of buttermilk, wherein the buttermilk is present at a level such that the buttermilk comprises 6 mg/100 Kcal to 300 mg/100 Kcal of phospholipids, 1 mg/100 Kcal to 60 mg/100 Kcal of sphingomyelin, and 0.25 mg/100 Kcal to 7.5 mg/100 Kcal of gangliosides;

5 mg/100 Kcal to 90 mg/100 Kcal of a source of long chain polyunsaturated fatty acid, wherein the source of long chain polyunsaturated fatty acid includes at least one of docosahexaenoic acid, arachidonic acid, and combinations thereof;

0.015 g/100 Kcal to 1.5 g/100 Kcal of a prebiotic; and

5 mg/100 Kcal to 300 mg/100 Kcal of lactoferrin.

2. The use of claim 1, wherein the buttermilk is present at a level of 0.6 g/100 Kcal to 15 g/100 Kcal.

3. The use of claim 1, wherein the lactoferrin is lactoferrin from a non-human source.

4. The use of claim 1, wherein the lactoferrin has at least 48% homology with human lactoferrin.

5. The use of claim 1, wherein the source of long chain polyunsaturated fatty acids is present from 5 mg/100 Kcal to 75 mg/100 Kcal.

6. The use of claim 5, wherein the source of long chain polyunsaturated fatty acids includes docosahexaenoic acid and arachidonic acid, at a ratio of arachidonic acid to docosahexaenoic acid of 1:3 to 9:1.

7. The use of claim 1, wherein the prebiotic composition comprises polydextrose and galactooligosaccharides wherein polydextrose and galactooligosaccharides comprise at least 20% of the prebiotic composition.

8. The use of claim 7, wherein each of polydextrose is present at a level of 0.015 g/100 Kcal to 1.5 g/100 Kcal and galactooligosaccharides are present at a level of 0.015 g/100 Kcal to 1.5 g/100 Kcal.

9. The use of claim 1, wherein the nutritional composition further comprises sialic acid, short chain fatty acids, Vitamin B12, or combinations thereof.

10. The use of claim 9, wherein the short chain fatty acids are selected from the group consisting of butyric acid, caproic acid, and combinations thereof.

11. The use of claim 1, wherein the nutritional composition is an infant formula or a growing up milk.