CLAIMS

What is claimed is:

1. A method for reducing the risk of visceral pain hypersensitivity and reducing the functional abdominal pain and infantile colic in a pediatric subject comprising providing to the pediatric subject a nutritional composition comprising, a carbohydrate source, a protein source, a fat source, from about $1x10^4$ CFU/100 kcal to about 1.5×10^{10} CFU/100 kcal of *Lactobacillus rhamnosus* GG, from about 0.1 g/100 kcal to about 0.5 g/100 kcal of polydextrose, and from about 0.1 g/100 kcal to about 1.0 g/100 kcal of galacto-oligosaccharides.

2. The method of claim 1, wherein the nutritional composition further comprises lactoferrin.

3. The method of claim 1, wherein the nutritional composition further comprises docosahexaenoic acid.

4. The method of claim 3, wherein the nutritional composition further comprise arachidonic acid.

5. The method of claim 4, the weight ratio of docosahexaenoic acid to arachidonic acid is from about 1:3 to about 9:1.

6. The method of claim 1, wherein the nutritional composition comprises from about $1x10^5$ cfu/100 kcals to about 1.5×10^9 cfu/100 kcals of *Lactobacillus rhamnosus* GG.

7. The method of claim 1, wherein the nutritional composition further comprises β-glucan.

8. The method of claim 1, wherein the nutritional composition further comprises a source of iron.

9. The method of claim 1, wherein the nutritional composition is an infant formula.

10. A method for modifying the gut-brain axis in a pediatric subject by providing a nutritional composition comprising per 100 kcal:

(i) between about 6 g and about 22 g of a carbohydrate source;

(ii) between about 1 g and about 7 g of a protein source;

(iii) between about 1 g and about 10.3 g of a fat source;

(iv) between about $1x10^4$ CFU and $1.5x10^{10}$ CFU of *Lactobacillus rhamnosus* GG;

(v) between about 0.1 g and 1.0 g of galacto-oligosaccharides; and

(vi) between about 0.1 g and 0.5 g of polydextrose;

to the pediatric subject.

11. The method of claim 10, wherein the pediatric subject is an infant.

12. The method of claim 10, wherein the nutritional composition is an infant formula.

13. The method of claim 10, wherein the nutritional composition further comprises a culture supernatant.

14. The method of claim 10, wherein the nutritional composition further comprises β-glucan.

15. The method of claim 10, wherein the nutritional composition further comprises a source of iron.

16. A method of reducing the functional abdominal pain in a pediatric subject by providing a nutritional composition comprising a carbohydrate source, a protein source, a fat source, from about $1x10^4$ CFU/100 kcal to about $1.5 x 10^{10}$ CFU/100 kcal of *Lactobacillus rhamnosus* GG, from about 0.1 g/100 kcal to about 0.5 g/100 kcal of polydextrose, and from about 0.015 g/100 kcal to about 1.5 g/100 kcal of galacto-oligosaccharides.

17. The method of claim 16, wherein the nutritional composition further comprises cholesterol.

18. The method of claim 16, wherein the nutritional composition further comprise DHA.

19. The method of claim 16, wherein the nutritional composition further comprises ARA.

20. The method of claim 16, wherein the nutritional composition is an infant formula.

CLAIMS

What is claimed is:

1. Use of *Lactobacillus rhamnosus* GG, polydextrose and galacto-oligosaccharides in the manufacture of a nutritional composition for reducing the risk of visceral pain hypersensitivity and reducing the functional abdominal pain and infantile colic in a pediatric subject, wherein the nutritional composition comprises a carbohydrate source, a protein source, a fat source, from about $1x10^4$ CFU/100 kcal to about 1.5×10^{10} CFU/100 kcal of *Lactobacillus rhamnosus* GG, from about 0.1 g/100 kcal to about 0.5 g/100 kcal of polydextrose, and from about 0.1 g/100 kcal to about 1.0 g/100 kcal of galacto-oligosaccharides.

2. The use of claim 1, wherein the nutritional composition further comprises lactoferrin.

3. The use of claim 1, wherein the nutritional composition further comprises docosahexaenoic acid.

4. The use of claim 3, wherein the nutritional composition further comprise arachidonic acid.

5. The use of claim 4, the weight ratio of docosahexaenoic acid to arachidonic acid is from about 1:3 to about 9:1.

6. The use of claim 1, wherein the nutritional composition comprises from about $1x10^5$ cfu/100 kcals to about 1.5×10^9 cfu/100 kcals of *Lactobacillus rhamnosus* GG.

7. The use of claim 1, wherein the nutritional composition further comprises β-glucan.

8. The use of claim 1, wherein the nutritional composition further comprises a source of iron.

9. The use of claim 1, wherein the nutritional composition is an infant formula.

10. A method for modifying the gut-brain axis in a pediatric subject by providing a nutritional composition comprising per 100 kcal:

(i) between about 6 g and about 22 g of a carbohydrate source;

(ii) between about 1 g and about 7 g of a protein source;

(iii) between about 1 g and about 10.3 g of a fat source;

(iv) between about $1x10^4$ CFU and $1.5x10^{10}$ CFU of *Lactobacillus rhamnosus* GG;

(v) between about 0.1 g and 1.0 g of galacto-oligosaccharides; and

(vi) between about 0.1 g and 0.5 g of polydextrose;

to the pediatric subject.

11. The method of claim 10, wherein the pediatric subject is an infant.

12. The method of claim 10, wherein the nutritional composition is an infant formula.

13. The method of claim 10, wherein the nutritional composition further comprises a culture supernatant.

14. The method of claim 10, wherein the nutritional composition further comprises β-glucan.

15. The method of claim 10, wherein the nutritional composition further comprises a source of iron.

16. Use of *Lactobacillus rhamnosus* GG, polydextrose and galacto-oligosaccharides in the manufacture of a nutritional composition for reducing the functional abdominal pain in a pediatric subject, wherein the nutritional composition comprises a carbohydrate source, a protein source, a fat source, from about $1x10^4$ CFU/100 kcal to about 1.5×10^{10} CFU/100 kcal of *Lactobacillus rhamnosus* GG, from about 0.1 g/100 kcal to about 0.5 g/100 kcal of polydextrose, and from about 0.015 g/100 kcal to about 1.5 g/100 kcal of galacto-oligosaccharides.

17. The use of claim 16, wherein the nutritional composition further comprises cholesterol.

18. The use of claim 16, wherein the nutritional composition further comprise DHA.

19. The use of claim 16, wherein the nutritional composition further comprises ARA.

20. The use of claim 16, wherein the nutritional composition is an infant formula.