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 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 $1x10^4$ CFU/100 kcal to 1.5 x 10^{10} CFU/100 kcal of *Lactobacillus rhamnosus* GG, from 0.1 g/100 kcal to 0.5 g/100 kcal of polydextrose, and from 0.1 g/100 kcal to 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 1:3 to 9:1.

6. The use of claim 1, wherein the nutritional composition comprises from $1x10^5$ cfu/100 kcals to 1.5 x 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 gut-brain axis in a pediatric subject by providing a nutritional composition comprising per 100 kcal:

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

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

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

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

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

(vi) between 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 functional abdominal pain in a pediatric subject, wherein the nutritional composition comprises a carbohydrate source, a protein source, a fat source, from $1x10^4$ CFU/100 kcal to 1.5×10^{10} CFU/100 kcal of *Lactobacillus rhamnosus* GG, from 0.1 g/100 kcal to 0.5 g/100 kcal of polydextrose, and from 0.015 g/100 kcal to 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.