SUMMARY

[0004] Disclosed herein are methods for enhancing mucosal innate immunity in an individual. Such immunity is enhanced by administering nutritional compositions including human milk oligosaccharides (HMOs) to the individual.

[0005] A method for enhancing an individual's mucosal innate immune response to pathogens is disclosed. The method includes a step of administering a nutritional composition to the individual. The nutritional composition includes about 0.05 to about 0.5 mg/mL 2'-fucosyllactose (2'-FL), about 0.05 to about 0.5 mg/mL lacto-N-neotetraose (LNnT), or a combination of both.

[0006] The present disclosure also provides a nutritional composition for use in enhancing an individual's mucosal innate immune response to pathogens wherein the nutritional composition comprises about 0.05 to about 0.5 mg/mL 2'-fucosyllactose (2'-FL), about 0.05 to about 0.5 mg/mL lacto-N-neotetraose (LNnT), or a combination of both.

[0007] The present disclosure also provides the use of a nutritional composition for the manufacture of a medicament for enhancing an individual's mucosal innate immune response to pathogens wherein the composition comprises about 0.05 to about 0.5 mg/mL 2'-FL, about 0.05 to about 0.5 mg/mL LNnT, or a combination of both.

[0008] In another example, a method for enhancing an individual's mucosal innate immune detection of pathogens is disclosed. The method includes a step of administering a nutritional composition to the individual. The nutritional composition includes a neutral human milk oligosaccharide.

[0009] The present disclosure also provides a nutritional composition for use in enhancing an individuals's mucosal innate immune detection of pathogens wherein the nutritional composition comprises a neutral human milk oligosaccharide.

[0010] The present disclosure also provides the use of a nutritional composition in the manufacture of a medicament for enhancing an individual's mucosal innate immune detection of pathogens wherein the composition comprises a neutral human milk oligosaccharide.

[0010a] The present disclosure also provides the use of a nutritional composition comprising 0.05 to 0.5 mg/mL 2'-fucosyllactose (2'-FL), 0.05 to 0.5 mg/mL lacto-N-neotetraose (LNnT), or a combination of both in the manufacture of a medicament for treating particular susceptibility to pathogenic infections in an individual.

[0010b] The present disclosure also provides the use of a nutritional composition comprising a neutral human milk oligosaccharide in the manufacture of a medicament for treating particular susceptibility to pathogenic infections in an individual.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 (A-D) provides graphs showing the change in RNA expression levels of genes encoding various mucosal innate immune receptor proteins, and the cytokine IL1B, in cells exposed to various treatments described in Example 1.

[0012] FIG. 2 is a graph showing the change in the RNA expression level of the gene encoding the mucosal innate immune defense protein, MUC2, in cells exposed to various treatments described in Example 2.

DETAILED DESCRIPTION

Listing of Claims

1. Use of a nutritional composition comprising 0.05 to 0.5 mg/mL 2'-fucosyllactose (2'-FL), 0.05 to 0.5 mg/mL lacto-N-neotetraose (LNnT), or a combination of both in the manufacture of a medicament for treating particular susceptibility to pathogenic infections in an individual.

2. The use of claim 1, wherein treating particular susceptibility to pathogenic infections comprises at least one of increased expression of innate immune receptors, increased expression of innate immune cytokines, and increased expression of innate immune defense proteins.

3. Use of a nutritional composition comprising a neutral human milk oligosaccharide in the manufacture of a medicament for treating particular susceptibility to pathogenic infections in an individual.

4. The use of claim 3, wherein treating particular susceptibility to pathogenic infections comprises increased expression of one or more of innate immune receptors and innate immune cytokines.

5. The use of any one of claims 1-4, wherein the nutritional composition is to be administered orally.

6. The use of claim 5, wherein the nutritional composition is a nutritional beverage, powder, bar, gel, or a sachet sprinkled on food or dissolved in water.

7. The use of any one of claims 1-6, wherein the nutritional composition comprises 2'-FL or LNnT, but not both.

8. The use of any one of claims 1-7, wherein the nutritional composition contains 0.05 to 0.25 mg/mL of 2'-FL.

9. The use of any one of claims 1-8, wherein the nutritional composition contains 0.25 mg/mL to 0.5 mg/mL of LNnT.

10. The use of any one of claims 1-9, wherein the nutritional composition is a nutritional composition selected from liquid and powdered dietary supplements, liquid and powdered human milk fortifiers, liquid and powdered preterm infant formulas, liquid and powdered infant formulas, liquid and powdered elemental and semi-elemental formulas, liquid and powdered pediatric formulas, liquid and powdered toddler formulas, liquid and powdered follow-on formulas, and liquid, powdered and solid adult nutritional formulas.

11. The use of any one of claims 1-10, wherein the individual wherein the individual is susceptible to pathogenic infections due has one or more of an enteric infection, inflammatory bowel disease, irritable bowel syndrome, necrotizing enterocolitis, colitis, bowel obstruction, chronic stress, other gastrointestinal diseases, antibiotic therapy, radiation therapy, chemotherapy, surgery, other treatments or therapies; and dehydration.

12. The use of claim 3, wherein the neutral human milk oligosaccharide is 2'-FL.

13. The use of claim 12, wherein the concentration of 2'-FL in the nutritional composition is less than 1 mg/mL.

14. The use of any one of claims 1-13, wherein the nutritional composition is free of any human milk oligosaccharide other than 2'-FL or LNnT.