[0004] Barrier formation and maintenance has been found to be affected by the diet. Breast milk contains components that not only act as pathogen receptor analogues, but also activate immune factors by infant intestinal epithelial cells and/or associated immune cell populations to enhance development and maturation of the infant's gastrointestinal and immune systems.

[0005] Not all infants, however, are in a position to receive human breast milk. It would therefore be desirable to provide nutritional compositions, and synthetic infant formulas in particular, that can produce nutritional benefits including improved gastrointestinal growth, development, and maturation. It would additionally be beneficial
if the nutritional compositions could enhance immunity against microbial infections and other gastrointestinal diseases, conditions, and disorders.

SUMMARY OF THE DISCLOSURE

[0006] The present disclosure is directed to nutritional compositions, including synthetic infant formulas, synthetic pediatric formulas, and synthetic child formulas including at least one HMO alone or in combination with other components such as prebiotic oligosaccharides and/or probiotics, for improving gut function and immunity in an infant, toddler, child, or adult, along with related methods of use. More particularly, the nutritional compositions can improve growth and maturation of the gut barrier, thereby treating and/or preventing formula intolerance or other gastrointestinal diseases and/or disorders resulting from a loss of dysfunction of the gut barrier.

[0006a] In one aspect, there is provided a use of a nutritional composition comprising a human milk oligosaccharide in the manufacture of a medicament for stimulating healing of the gastrointestinal tract of an individual identified as having an injured gastrointestinal tract.

[0006b] In one aspect, there is provided a use of a nutritional composition comprising a human milk oligosaccharide in the manufacture of a medicament for reducing the incidence of intestinal mucosa injury in an individual identified as susceptible to an intestinal mucosa injury.

[0007] One embodiment is directed to a method of reducing the incidence of necrotizing enterocolitis in an infant, toddler, or child in need thereof. The method comprises administering to the infant, toddler, or child a composition comprising human milk oligosaccharides in a total amount of from about 0.001 mg/mL to about 20 mg/mL.

[0008] Another embodiment is directed to a method of reducing the incidence of necrotizing enterocolitis in an infant, toddler, or child in need thereof. The method comprises administering to the infant, toddler, or child a nutritional composition comprising 6'-sialyllactose, 2'-fucosyllactose, and lacto-N-neotetraose.

WHAT IS CLAIMED IS:

1. Use of a nutritional composition comprising a human milk oligosaccharide in the manufacture of a medicament for stimulating healing of the gastrointestinal tract of an individual identified as having an injured gastrointestinal tract.

2. The use of claim 1 wherein the gastrointestinal tract is injured as the result of at least one of enteric infection, inflammatory bowel disease, colitis and bowel obstruction.

3. The use of claim 1 wherein the human milk oligosaccharide comprises at least one of 3'-Sialyllactose, 6'-Sialyllactose, 2'-Fucosyllactose, 3'-Fucosyllactose, Lacto-N-neotetraose, and Disialyllacto-N-tetraose.

4. The use of claim 3 wherein the human milk oligosaccharide comprises 2'-Fucosyllactose.

5. The use of claim 1 wherein the nutritional composition further comprises at least one probiotic.

6. Use of a nutritional composition comprising a human milk oligosaccharide in the manufacture of a medicament for reducing the incidence of intestinal mucosa injury in an individual identified as susceptible to an intestinal mucosa injury.

7. The use of claim 6 wherein the human milk oligosaccharide comprises at least one of 3'-Sialyllactose, 6'-Sialyllactose, 2'-Fucosyllactose, 3'-Fucosyllactose, Lacto-N-neotetraose, and Disialyllacto-N-tetraose.

8. The use of claim 7 wherein the human milk oligosaccharide comprises 2'-Fucosyllactose.

9. The use of claim 6 wherein the nutritional composition further comprises at least one probiotic.

10. The use of claim 6 wherein the nutritional composition is selected from the group consisting of a human milk fortifier, an infant formula, a pediatric formula, a follow on formula, and an adult nutritional composition.