glycans of mammalian milk become susceptible to hydrolysis by other bacteria. This releases Free Sugar Monomers (FSMs), which are capable of enabling the growth of opportunistic or highly destructive pathogens that would not have flourished otherwise. The term “dietary glycans”, as used herein, refers to those indigestible glycans, sometimes referred to as “dietary fiber”, or the carbohydrate polymers which are not hydrolyzed by the endogenous enzymes in the digestive tract (e.g., the small intestine) of the mammal.

[0009a] In one aspect, the present disclosure refers to a use of at least two non-pathogenic microbes in the manufacture of a composition for treating or preventing infection of an infant mammal by a pathogenic microbe, wherein one of the at least two non-pathogenic microbes is from a first species capable of internalizing and/or metabolizing dietary glycans, and wherein one of the at least two non-pathogenic microbes is from a second species capable of consuming and metabolizing free sugar monomers.

[0010] Some examples of the disclosure involve compositions and methods of delivering to the gut of a dysbiotic mammal, compositions that include components capable of consuming the dietary glycans. Such compositions can reduce the concentration of FSMs in the mammal. The reduction of FSMs and dietary glycans can minimize the likelihood of an overpopulation of pathogenic bacteria that can harm that mammal. In some examples the compositions comprise certain bacteria (alive or dead) or other orally provided compounds that bind and/or metabolize the FSMs, thereby preventing them from being used as an energy source by the pathogenic bacteria.

[0011] Some of the examples of the present disclosure provide diagnostics for the presence of substrates enabling growth of pathogenic bacteria within mammalian neonates. Specifically, some examples provide diagnostics to determine the presence of FSMs.

CLAIMS

1. Use of at least two non-pathogenic microbes in the manufacture of a composition for treating or preventing infection of an infant mammal by a pathogenic microbe, wherein one of the at least two non-pathogenic microbes is from a first species capable of internalizing and/or metabolizing dietary glycans, and wherein one of the at least two non-pathogenic microbes is from a second species capable of consuming and metabolizing free sugar monomers.

2. The use according to claim 1, wherein the first species of non-pathogenic microbe is a member of the genus *Bifidobacterium*.

3. The use according to claim 2, wherein the *Bifidobacterium* is *B. longum*, *B. breve*, or *B. pseudocatenulatum*.

4. The use according to claim 2, wherein the *Bifidobacterium* is *B. longum subsp. infantis*.

5. The use according to claim 2, wherein the *Bifidobacterium* is activated *B. longum* subspecies *infantis*.

6. The use according to claim 1, wherein the second species of non-pathogenic microbe is a member of the genus *Lactobacillus*.

7. The use according to claim 6, wherein the *Lactobacillus* is *L. plantarum*, *L. casei, L. rhamnosus*, *L. brevis*, *L. fermentum*, *L. crispatus*, *L. johnsonii, L. gasseri*, *L. mucosae*, or *L. salivarius*.

8. The use according to claim 6, wherein the *Lactobacillus* is *L. plantarum*.

9. The use according to claim 6, wherein the *Lactobacillus* is *L. johnsonii*.

10. The use according to any one of claims 1-9, wherein each non-pathogenic microbe is present from 10 million to 100 billion CFU per gram.

11. The use according to any one of claims 1-10, wherein the composition is to be administered to the infant mammal at a period within 96 hours of the birth of the infant mammal.

12. The use according to any one of claims 1-11, wherein the infant mammal is a human.

13. The use according to any one of claims 1-12, wherein the infant mammal is a nursing infant mammal.

14. The use according to any one of claims 1-13, wherein the infant mammal is receiving dietary glycans contemporaneously with the administration of the composition.

15. The use according to any one of claims 1-14, wherein the second species is selected based on the free sugar monomers that are preferred by the pathogen, and wherein the infant mammal has an increased likelihood of a pathogenic overpopulation of the pathogen.

16. The use according to claim 15, wherein the increased likelihood of a pathogenic overpopulation of the pathogen is due to an outbreak in the surroundings of the infant mammal.

17. The use according to any one of claims 1-16, wherein the free sugar monomers consumed by the second species are those present as a consequence of prior antibiotic administration.

18. The use according to any one of claims 1-17, wherein the free sugar monomers include fucose, sialic acid, N-acetylglucosamine, N-acetylgalactosamine, gluconate, glucose, galactose, lactose, sialyllactose, fucosyllactose, lacto-N-biose, or mixtures thereof.

19. The use according to any one of claims 1-18, wherein the pathogenic microbe preferentially consumes sialic acid.

20. The use according to any one of claims 1-19, wherein the pathogenic microbe is *Clostridium difficile* or *C. perfringens*.