Claims

1. An ingestible composition comprising sphingan oligosaccharide (SOS),

wherein the amount of the SOS is selected from 1 g to 10 g, 1 g to 9 g, 1 g to 8 g, 1 g to 7 g, 1 g to 6 g, 1 g to 5 g, 1 g to 4 g, 1 g to 3 g, or 2 g; and

wherein the SOS comprises a high acyl sphingan oligosaccharide, an intermediate acyl sphingan oligosaccharide, a low acyl sphingan oligosaccharide, or a combination thereof.

2. The ingestible composition of claim 1, wherein the SOS is obtainable by a process comprising:

preparing a first composition comprising a high/intermediate/low acyl sphingan or a high/intermediate/low acyl sphingan polysaccharide and a liquid medium;

hydrolyzing a glycosidic bond of the high/intermediate/low acyl sphingan or the high/intermediate/low acyl sphingan polysaccharide to obtain a second composition;

subjecting the second composition to ultrafiltration, size-exclusion chromatography, precipitation, centrifugation, or a combination thereof to obtain the SOS; and

optionally, isolating or recovering the SOS.

3. The ingestible composition of claim 2, wherein said hydrolyzing is mediated by an acid, an enzyme, sonication, high-pressure homogenization, radiation, or a combination thereof.

4. The ingestible composition of claim 3, wherein the enzyme is a gellanase, a rhamnogalacturonan endolyase (EC 4.2.2.23), a rhamnogalacturonan exolyase (EC 4.2.2.24), a gellan lyase (EC 4.2.2.25), or a combination thereof.

5. The ingestible composition of claim 2, wherein said subjecting comprises filtering the second composition through a membrane having a molecular weight cutoff of 5 kDa to 10kDa to obtain a filtrate comprising the SOS.

6. The ingestible composition of any one of claims 1 to 5, wherein the SOS comprises a high/intermediate/low sphingan oligosaccharide selected from:

(i) a composition comprising Glc,GlcA, Glc,GlcA,Glyc, Glc,GlcA,Rha, Glc,GlcA,Rha,Glyc, Glc,GlcA,Rha,-H2O, Glc,Rha, Glc,Rha+28 , Glc2,GlcA, Glc2,GlcA,Rha, Glc2,GlcA,Rha,+28, Glc2,GlcA,Rha,Ac, Glc2,GlcA,Rha,Glyc,

Glc2,GlcA,Rha,Glyc,+28, Glc2,GlcA,Rha,Glyc.-H2O, Glc2,GlcA,Rha,-H2O, Glc2,GlcA,Rha2,Glyc, Glc2,GlcA2,Rha, Glc2,GlcA2,Rha2,Ac2,Glyc2,-H2O, Glc2,Rha, Glc3,GlcA,Rha, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2,Glyc, Glc3,GlcA2,Rha, Glc3,GlcA2,Rha,Glyc, Glc3,GlcA2,Rha2,Glyc, Glc3,GlcA3,Rha2, Glc3,GlcA3,Rha2, Glc4,GlcA,Rha2,+43, Glc4,GlcA,Rha2,Ac, Glyc, Glc4,GlcA2,Rha, Glc4,GlcA2,Rha,Ac,Glyc,-H2O, Glc4,GlcA2,Rha,Ac,Glyc2, Glc4,GlcA2,Rha2,Ac,Glyc, Glc4,GlcA2,Rha2,Glyc, Glc4,GlcA3,Rha2, Glc4,GlcA2,Rha3,Ac, Glc4,GlcA3,Rha2/Glc4,GlcA2,Rha2,Glyc2, Glc5,GlcA2,Rha2, Glc5,GlcA2,Rha2, Glc5,GlcA2,Rha2,Ac, Glc5,GlcA4,Rha2, Glc6,GlcA3,Rha3, Glc(Ac/Glyc)x,GlcAx,Glcx,Rhax (where x is 4 to 25), Glcx,GlcAx,Glcx,Rhax (where x is 4 to 25), or a combination thereof;

(ii) a composition comprising a tetramer (Glc,GlcA,Glc,Rha), a tetramer (Glc,GlcA,Glc,Rha) with acetate and/or glycerate, an octamer (Glc,GlcA,Glc,Rha,Glc,GlcA,Glc,Rha), an octamer (Glc,GlcA,Glc,Rha,Glc,GlcA,Glc,Rha) with acetate and/or glycerate, Glc,GlcA,Glc, Rha,Glc,GlcA, Glc,Rha;

(iii) a composition comprising a tetramer (Glc,GlcA,Glc,Rha), an octamer (Glc,GlcA,Glc,Rha,Glc,GlcA,Glc,Rha), a pentamer (Glc,GlcA,Glc,Rha,Glc), GlcA,Glc,Rha, Glc,GlcA,Glc, Glc,GlcA;

(iv) a composition comprising Glc(Glc-Glc),GlcA, Glc(Glc-Glc), GlcA,Glc, Glc,Glc;

(v) a composition comprising a tetramer (Glc,GlcA,Glc,Rha), GlcA,Glc,(Rha-Rha), Glc,(Rha-Rha),Rha, GlcA,Glc,Rha, Glc,GlcA,Glc, Rha,Glc, GlcA,Glc;

(vi) a composition comprising Glc,GlcA, Glc,GlcA,Glyc, Glc,GlcA,Rha, Glc,GlcA,Rha,Glyc, Glc,Rha, Glc,Rha+28 , Glc2,GlcA, Glc2,GlcA,Rha, Glc2,GlcA,Rha,+28, Glc2,GlcA,Rha,Ac, Glc2,GlcA,Rha,Glyc, Glc2,GlcA,Rha,Glyc,+28, Glc3,GlcA,Rha, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2,Glyc, Glc3,GlcA2,Rha,Glyc, Glc3,GlcA2,Rha2,Glyc, Glc3,GlcA3,Rha2, Glc4,GlcA,Rha2,Ac, Glyc, Glc4,GlcA2,Rha2,Ac,Glyc, Glc4,GlcA2,Rha2,Glyc, Glc4,GlcA2,Rha3,Ac,

Glc4,GlcA3,Rha2/Glc4,GlcA2,Rha2,Glyc2, Glc5,GlcA2,Rha2, Glc5,GlcA2,Rha2,Ac, Glc(Ac/Glyc)x,GlcAx,Glcx,Rhax (where x is 4 to 25), or a combination thereof;

(vii) a composition comprising Glc,GlcA, Glc,GlcA,Rha, Glc,Rha, Glc,Rha+28 , Glc2,GlcA,Rha, Glc2,GlcA,Rha,+28, Glc2,GlcA2,Rha, Glc3,GlcA,Rha, Glc3,GlcA,Rha2, Glc3,GlcA2,Rha, Glc3,GlcA3,Rha2, Glc3,GlcA3,Rha2, Glc4,GlcA,Rha2,+43, Glc4,GlcA2,Rha, Glc4,GlcA3,Rha2, Glc5,GlcA2,Rha2, Glc5,GlcA2,Rha2, Glc5,GlcA4,Rha2, Glc6,GlcA3,Rha3, Glc(Ac/Glyc)x,GlcAx,Glcx,Rhax (where x is 4 to 25), or a combination thereof;

(viii) a composition comprising Glc,GlcA,Rha,-H2O, Glc,Rha, Glc2,GlcA,Rha,-H2O, Glc2,Rha; and

(ix) a composition comprising Glc,GlcA, Glc,GlcA,Glyc, Glc,GlcA,Rha, Glc,GlcA,Rha,Glyc, Glc,Rha, Glc,Rha+28 , Glc2,GlcA, Glc2,GlcA,Rha, Glc2,GlcA,Rha,+28, Glc2,GlcA,Rha,Ac, Glc2,GlcA,Rha,Glyc, Glc2,GlcA,Rha,Glyc,+28, Glc2,GlcA,Rha,Glyc.-H2O, Glc2,GlcA,Rha2,Glyc, Glc2,GlcA2,Rha2,Ac2,Glyc2,-H2O, Glc3,GlcA,Rha, Glc3,GlcA,Rha2, Glc3,GlcA,Rha2,Glyc, Glc3,GlcA2,Rha,Glyc, Glc3,GlcA2,Rha2,Glyc, Glc3,GlcA3,Rha2, Glc4,GlcA,Rha2,+43, Glc4,GlcA,Rha2,Ac, Glyc, Glc4,GlcA2,Rha,Ac,Glyc,-H2O, Glc4,GlcA2,Rha,Ac,Glyc2, Glc4,GlcA2,Rha2,Ac,Glyc, Glc4,GlcA2,Rha2,Glyc, Glc4,GlcA3,Rha2, Glc4,GlcA2,Rha3,Ac, Glc4,GlcA3,Rha2/Glc4,GlcA2,Rha2,Glyc2, Glc5,GlcA2,Rha2, Glc5,GlcA2,Rha2,Ac, Glc(Ac/Glyc)x,GlcAx,Glcx,Rhax (where x is 4 to 25), or a combination thereof;

or a combination thereof.

7. Use of an effective schedule of the ingestible composition according to any one of claims 1 to 6 and an ingestible medium for promoting beneficial bacterial growth in the colon of a human.

8. The use of claim 7, wherein the amount of the SOS is selected from 10 mg/kg to 150 mg/kg, 10 mg/kg to 140 mg/kg, 10 mg/kg to 130 mg/kg, 10 mg/kg to 120 mg/kg, 10 mg/kg to 110 mg/kg, 10 mg/kg to 100 mg/kg, 10 mg/kg to 90 mg/kg, 10 mg/kg to 80 mg/kg, 10 mg/kg to 70 mg/kg, 10 mg/kg to 60 mg/kg, 10 mg/kg to 50 mg/kg, 10 mg/kg to 40 mg/kg, or 20 mg/kg to 30 mg/kg of the human ingesting the composition.

9. The use of claim 7, wherein the SOS comprises a gellan oligosaccharide obtained from a gellan gum.