Claims

[Claim 1]. A formulation for modulating a glycemic response comprising:

a. at least two different phenylpropanoids encapsulated in a first cyclodextrin;

b. an iminosugar;

c. a monosaccharide-based enzyme inhibitor and

e. a second cyclodextrin.

2. The formulation according to claim 1, wherein the first and second cyclodextrin are different.

3[Claim 2]. The formulation according to claim 1 or 2, wherein the first and second cyclodextrin are selected from the group consisting of alpha cyclodextrin, beta cyclodextrin and gamma cyclodextrin.

4. The formulation according to any one of claims 1 to 3 and/or,

wherein the first cyclodextrin comprises gamma cyclodextrin.

5[Claim 3]. The formulation according to any one of claims 1 or 2to 4, wherein the at least two different phenylpropanoids

a) are selected from the group consisting flavonoid, chalcone, and any combination thereof.

6. The formulation according to claim 5; and/or, wherein the flavonoid comprises: quercetin, myricetin, dihydromyricetin, luteolin, baicalein, apigenin, kaempferol, or any combination thereof.

7. The formulation according to claim 5; and/or, wherein the at least one chalcone comprises: dihydrochalcone glycoside, phlorizin or phloretin; .

8. The formulation according to any one of claims 1 to 4, wherein the at least two different phenylpropanoidsb) comprises quercetin, myricetin, dihydrochalcone glycoside-phlorizin and any combination thereof; or

c) comprise dihydromyricetin, and dihydrochalcone glycoside-phlorizin.

9[Claim 4]. The formulation according to any one of claims 1 to 4or 2, wherein the first cyclodextrin is gamma cyclodextrin; the at least two different phenylpropanoids are quercetin, myricetin, phlorizin; the iminosugar comprises 1-deoxynojirimycin; the monosaccharide-based enzyme inhibitor is arabinose; and the second cyclodextrin is alpha cyclodextrin.

10. The formulation according to claim 9 optionally, wherein the ratio of gamma cyclodextrin : quercetin : myricetin : phlorizin : 1-deoxynojirimycin : arabinose : alpha cyclodextrin is 40:9:9:5:5:10:22 or 35:9:9:4:5:37:1.

11. The formulation according to any one of claims 1 to 4, wherein the at least two different phenylpropanoids comprise dihydromyricetin, and dihydrochalcone glycoside-phlorizin.

12[Claim 5]. The formulation according to any one of claims 1 to 4or 2, wherein the first cyclodextrin is gamma cyclodextrin; the at least two different phenylpropanoids are dihydromyricetin, phlorizin; the iminosugar comprises 1-deoxynojirimycin; the monosaccharide-based enzyme inhibitor is arabinose; and the second cyclodextrin is alpha cyclodextrin.

13. The formulation according to claim 12 optionally, wherein the ratio of gamma cyclodextrin : dihydromyricetin: phlorizin : 1-deoxynojirimycin : arabinose : alpha cyclodextrin is 5:2:1:3:1:30 to 25:6:6:10:10:90**.**

14[Claim 6]. The formulation according to any one of claims 1 to 135, further comprising a flavour or colour varying additive**.**

15[Claim 7]. A composition for modulating a glycemic response comprising:

at least one phenylpropanoid encapsulated in a first cyclodextrin; and

a second cyclodextrin different from the first cyclodextrin., and

16. The composition according to claim 15, wherein the first and second cyclodextrin are different.

17. The composition according to claim 15 or 16 optionally, wherein the first and second cyclodextrin are selected from the group consisting of alpha cyclodextrin**,** beta cyclodextrin and gamma cyclodextrin; and/or.

18. The composition according to any one of claims 15 to 17, wherein the first cyclodextrin comprises gamma cyclodextrin.

19[Claim 8]. The composition according to any one of claims 15 to 187, wherein the at least one phenylpropanoid

a) is selected from the group consisting flavonoid, chalcone, and any combination thereof.

20. The composition according to claim 19 and/or, wherein the flavonoid comprises: quercetin, myricetin, dihydromyricetin, luteolin, baicalein, apigenin, kaempferol, or any combination thereof.

21. The composition according to claim 19 and/or, wherein the at least one chalcone comprises: dihydrochalcone glycoside, phlorizin or phloretin.

22. The composition according to any one of claims 15 to 18, wherein the at least one phenylpropanoidsb) comprises quercetin, myricetin, dihydromyricetin, dihydrochalcone glycoside, and any combination thereof; or.

23. The composition according to any one of claims 15 to 18, wherein the at least one phenylpropanoids c) comprises quercetin, myricetin and phlorizin.

24[Claim 9]. The composition according to any one of claims 15 to 237 or 8, further comprising iminosugar.

25. The composition according to any one of claims 15 to 24, further comprising; and/or a monosaccharide-based enzyme inhibitor.

~~26~~[Claim 10]. A foodstuff additive including the formulation according to any one of claims 1 to ~~14~~ 6 or the composition according to any one of claims ~~15~~ 7 to ~~25~~9.

~~27~~[Claim 11]. The formulation according to any one of claims 1 to 6~~14~~ or the composition according to any one of claims ~~15~~7 to 9~~25~~, or the foodstuff additive of claim 10~~26~~, for use in the treatment or prevention of diabetes or obesity.

~~28. A method of manufacturing a formulation according to any one of claims 1 to 14 or a composition according to any one of claims 15 to 25, or a foodstuff additive of claim 26, for use in the treatment or prevention of diabetes or obesity.~~

~~29~~[Claim 12]. A process for manufacturing a formulation for modulating a glycemic response comprising**:**

a. mixing at least two different phenylpropanoids and a first cyclodextrin;

b. adding water to the mix of at least two different phenylpropanoids and the first cyclodextrin to form a paste;

c. kneading the paste with shear force;

d. drying the paste;

e. grinding the dried paste to a powder; and

f. adding an iminosugar, a monosaccharide-based enzyme inhibitor and a second cyclodextrin to the powder to constitute the formulation,

wherein the powder comprises the phenylpropanoids encapsulated in the first cyclodextrin~~.~~

~~30. The process according to claim 29~~, and wherein the first and second cyclodextrin are different~~.~~

~~31. The process according to claim 29 or 30~~ optionally, wherein the first and second cyclodextrin are selected from the group consisting of alpha cyclodextrin**,** beta cyclodextrin and gamma cyclodextrin~~.~~

~~32. The process according to claim 29 or 30~~ and/or, wherein the first cyclodextrin comprises gamma cyclodextrin

~~33~~[Claim 13]. The process according to ~~any one of~~ claim~~s~~ ~~29 to 32~~12, wherein the at least two different phenylpropanoids

a) comprises a flavonoid, a chalcone, or any combination thereof~~.~~;

~~34. The process according to any one of claims 29 to 32, wherein the at least two different phenylpropanoids~~b) are selected from the group consisting of one or more flavonoid, at least chalcone, and any combination thereof~~.~~

~~35. The process according to claim 33 or 34~~ optionally, wherein the flavonoid comprises: quercetin, myricetin, dihydromyricetin, luteolin, baicalein, apigenin, kaempferol, or any combination thereof~~.~~

~~36. The process according to claim 33 or 34~~ and/or, wherein the at least one chalcone comprises: dihydrochalcone glycoside, phlorizin or phloretin~~.~~;or

c) comprise dihydromyricetin, and dihydrochalcone glycoside-phlorizin**.**

~~37~~[Claim 14]. The process according to ~~any one of~~ claim~~s 29 to 36~~12 or 13, wherein the first cyclodextrin is gamma cyclodextrin; the at least twodifferent phenylpropanoids are quercetin, myricetin, and phlorizin; the iminosugar comprises 1-deoxynojirimycin; the monosaccharide-based enzyme inhibitor is arabinose; and the second cyclodextrin is alpha cyclodextrin~~.~~

~~38. The process according to claim 37~~ optionally, wherein the gamma cyclodextrin:quercetin:myricetin:phlorizin:1-deoxynojirimycin:arabinose: alpha cyclodextrin is manufactured in a ratio of 40:9:9:5:5:10:22 or a ratio of 35:9:9:4:5:37:1.

~~39. The process according to any one of claims 33 to 34, wherein the at least two different phenylpropanoids comprise dihydromyricetin, and dihydrochalcone glycoside-phlorizin.~~

~~40~~[Claim 15]. The process according to ~~any one of~~ claim~~s 33 to 34~~12 or 13, wherein the first cyclodextrin is gamma cyclodextrin; the at least two different phenylpropanoids are dihydromyricetin, phlorizin; the iminosugar is 1-deoxynojirimycin; the monosaccharide-based enzyme inhibitor is arabinose; and the second cyclodextrin is alpha cyclodextrin~~.~~

~~41. The process according to claim 40~~ optionally, wherein the ratio of gamma cyclodextrin : dihydromyricetin: phlorizin : 1-deoxynojirimycin : arabinose : alpha cyclodextrin is 5:2:1:3:1:30 to 25:6:6:10:10:90**.**

~~42~~[Claim 16]. The process according to any one of claims ~~29~~ 12 to ~~41~~15, further comprising adding a flavour or colour varying additive**.**

~~43~~[Claim 17]. A method for forming a composition for modulating a glycemic response comprising**:**

a. mixing at least one phenylpropanoid and a first cyclodextrin;

b. adding water to the mix of at least one phenylpropanoid and the first cyclodextrin to form a paste;

c. kneading the paste with shear force;

d. drying the paste;

e. grinding the dried paste to a powder; and

f. adding a second cyclodextrin to the powder to form the composition,

wherein the powder comprises the at least one phenylpropanoid encapsulated in the first cyclodextrin, and~~.~~

~~44. The method according to claim 43,~~ wherein the first and second cyclodextrin are different~~.~~

~~45. The method according to claim 43 or 44~~ optionally, wherein the first and second cyclodextrin are selected from the group consisting of alpha cyclodextrin**,** beta cyclodextrin and gamma cyclodextrin~~.~~

~~46. The method according to claim 43 or 44~~ and/or, wherein the first cyclodextrin comprises gamma cyclodextrin

~~47~~[Claim 18]. The method according to ~~any one of~~ claim~~s 43 to 46~~17, wherein the at least one phenylpropanoid

a) comprises a flavonoid, a chalcone, or any combination thereof;~~.~~

~~48. The method according to any one of claims 43 to 46, wherein the at least one phenylpropanoid~~b) is selected from the group consisting of at least flavonoid, at least chalcone, and any combination thereof~~.~~

~~49. The method according to claim 47 or 48~~ optionally, wherein the at least one flavonoid comprises: quercetin, myricetin, dihydromyricetin, luteolin, baicalein, apigenin, kaempferol, or any combination thereof~~.~~

~~50. The method according to claim 47 or 48~~ and/or, wherein the at least one chalcone comprises: dihydrochalcone glycoside, phlorizin or phloretin;~~.~~

~~51. The method according to any one of claims 43 to 50, wherein the at least one phenylpropanoid~~c) is selected from quercetin, myricetin, dihydrochalcone glycoside, and any combination thereof.

~~52~~[Claim 19]. The method according to ~~any one of~~ claim~~s 43 to 51~~17 or 18, further comprises adding iminosugar ~~to the composition.~~

~~53. The method according to any one of claims 43 to 52, further comprises adding~~and/or a monosaccharide-based enzyme inhibitor ~~to the composition.~~

~~54. The method according to any one of claims 43 to 53, further comprises adding~~and/or at least one free phenylpropanoid not encapsulated in any cyclodextrin to the composition.

~~56. A method for treating or preventing diabetes comprising administering to an individual and amount of a formulation according to any one of claims 1 to 14 or a composition according to any one of claims 15 to 25, or the foodstuff additive of claim 26 to reduce the glycemic response of the individual.~~

~~57. A method for treating or preventing obesity comprising administering to an individual and amount of a formulation according to any one of claims 1 to 14 or a composition according to any one of claims 15 to 25, or the foodstuff additive of claim 26 to reduce the glycemic response, slow down digestion and/or maintain post-prandial satiety of the individual.~~