CLAIMS

1. A pegylated GLP-1/GIP coagonist peptide for use in reducing weight gain, inducing weight loss, treating hyperglycemia, reducing blood glucose levels, or normalizing blood glucose levels in an adult human, wherein the use is characterized by a weekly dosage of about 1 mg to about 40 mg.

2. The peptide of claim 1, wherein the weekly dosage is about 2 mg to about 10 mg.

3. The peptide of claim 1 or 2, wherein the adult human has obesity, excess body weight, diabetes mellitus type II, insulin resistance, alcoholic liver disease, non-alcoholic fatty liver disease (NAFLD), or metabolic syndrome.

4. The peptide of claim 1 or 2, wherein the adult human has diabetes mellitus type I, diabetes mellitus type II, or gestational diabetes.

5. The peptide of any one of claims 1-4, wherein the peptide is for administering once per week.

6. The peptide of any one of claims 1-6, wherein the peptide is for administering twice per week.

7. The peptide of any one of the preceding claims, wherein (i) the extended half-life GLP-1/GIP coagonist peptide exhibits a GLP-1 percentage potency within about 10-fold of the GIP percentage potency, (ii) the extended half-life GLP-1/GIP coagonist peptide has an EC_{50} at the GLP-1 receptor within about 10-fold of the EC_{50} at the GIP receptor, (iii) the extended half-life GLP-1/GIP coagonist peptide exhibits a GIP percentage potency of at least 1% or a GLP-1 percentage potency of at least 1%.

8. The peptide of any one of the preceding claims, wherein the peptide comprises a polyethylene glycol moiety that has a molecular weight of about 30,000 Daltons to about 60,000 Daltons, optionally, wherein the polyethylene glycol moiety has a molecular weight of about 40,000 Daltons.

~~9. The peptide of any one of the preceding claims, wherein the peptide comprises SEQ ID NO: 153.~~

~~10. The peptide of any one of the preceding claims, wherein the peptide is for administering with a second therapeutic agent, optionally, wherein the second therapeutic agent is an anti-diabetic agent or an anti-obesity agent.~~

~~11. The peptide of any one of the preceding claims, wherein the administration is via subcutaneousinjection.~~

~~12. The peptide of any one of the preceding claims, wherein in the use is for producing an increase in insulin level, a decrease in glucose level, an increase in C-peptide level, a decrease in HbA_{1c} level, or a decrease in fructosamine level, or any combination thereof.~~

CLAIMS

~~13~~1. Use of a pegylated GLP-1/GIP coagonist peptide in the manufacture of a medicament for therapeutically reducing weight gain, therapeutically inducing weight loss, treating hyperglycemia, therapeutically reducing blood glucose levels, or therapeutically normalizing blood glucose levels in an adult human, wherein the use is characterized by a weekly dosage of ~~about~~ 1 mg to ~~about~~ 40 mg.

~~14~~2. The use of claim ~~13~~1, wherein the weekly dosage is ~~about~~ 2 mg to ~~about~~ 10 mg.

~~15~~3. The use of claim ~~13~~-1 or ~~14~~2, wherein the adult human has obesity, excess body weight, diabetes mellitus type II, insulin resistance, alcoholic liver disease, non-alcoholic fatty liver disease (NAFLD), or metabolic syndrome.

~~16~~4. The use of claim ~~13~~-1 or ~~14~~2, wherein the adult human has diabetes mellitus type I, diabetes mellitus type II, or gestational diabetes.

~~17~~5. The use of any one of claims ~~13-16~~1 to 4, wherein the peptide is to be administered once per week.

~~18~~6. The use of any one of claims ~~13-16~~1 to 4, wherein the peptide is to be administered twice per week.

~~19. The use of any one of claims 13-18, wherein (i) the extended half-life GLP-1/GIP coagonist peptide exhibits a GLP-1 percentage potency within about 10-fold of the GIP percentage potency, (ii) the extended half-life GLP-1/GIP coagonist peptide has an EC_{50} at the GLP-1 receptor within about 10-fold of the EC_{50} at the GIP receptor, (iii) the extended half-life GLP-1/GIP coagonist peptide exhibits a GIP percentage potency of at least 1% or a GLP-1 percentage potency of at least 1%.~~

~~20~~7. The use of any one of claims ~~13-19~~1 to 6, wherein the peptide comprises a polyethylene glycol moiety that has a molecular weight of ~~about~~ 30,000 Daltons to ~~about~~ 60,000 Daltons, optionally, wherein the polyethylene glycol moiety has a molecular weight of ~~about~~ 40,000 Daltons.

~~21~~8. The use of any one of claims ~~13-20~~1 to 7, wherein the peptide comprises or consists of any one of SEQ ID NOs: 109, 146, 153, 192 and 193.

~~22~~9. The use of any one of claims ~~13-21~~1 to 8, wherein the peptide is to be administered with a second therapeutic agent, optionally, wherein the second therapeutic agent is an anti-diabetic agent or an anti-obesity agent.

~~23~~10. The use of any one of claims ~~13-22~~1 to 9, wherein the administration is via subcutaneous injection.

~~24~~11. The use of any one of claims ~~13-23~~1 to 10, wherein the use is for therapeutically producing an increase in insulin level, a decrease in glucose level, an increase in C-peptide level, a decrease in HbA_{1c} level, or a decrease in fructosamine level, or any combination thereof.

12. Use of an extended half-life GLP-1/GIP coagonist peptide in the manufacture of a medicament for therapeutically reducing weight gain, therapeutically inducing weight loss, treating hyperglycemia, therapeutically reducing blood glucose levels, or therapeutically normalizing blood glucose levels in an adult human, wherein the peptide comprises the amino acid sequence of any one of SEQ ID NOs: 109, 146, 153, 192, or 193 and the use is characterized by a weekly dosage of 1 mg to 40 mg.

13. The use of claim 12, wherein the weekly dosage is 2 mg to 10 mg.

14. The use of claim 12 or 13, wherein the adult human has obesity, excess body weight, diabetes mellitus type II, insulin resistance, alcoholic liver disease, non-alcoholic fatty liver disease (NAFLD), or metabolic syndrome.

15. The use of claim 12 or 13, wherein the adult human has diabetes mellitus type I, diabetes mellitus type II, or gestational diabetes.

16. The use of any one of claims 12 to 15, wherein the peptide is to be administered once per week.

17. The use of any one of claims 12 to 15, wherein the peptide is to be administered twice per week.

18. The use of any one of claims 12 to 17, wherein the peptide comprises a polyethylene glycol moiety that has a molecular weight of about 30,000 Daltons to about 60,000 Daltons, optionally, wherein the polyethylene glycol moiety has a molecular weight of about 40,000 Daltons.

19. The use of any one of claims 12 to 18, wherein the peptide comprises or consists of any one of SEQ ID NOs: 146, 153, and 193.

20. The use of any one of claims 12 to 19, wherein the peptide is to be administered with a second therapeutic agent, optionally, wherein the second therapeutic agent is an anti-diabetic agent or an anti-obesity agent.

21. The use of any one of claims 12 to 20, wherein the administration is via subcutaneous injection.

22. The use of any one of claims 12 to 21, wherein the use is for therapeutically producing an increase in insulin level, a decrease in glucose level, an increase in C-peptide level, a decrease in HbA1c level, or a decrease in fructosamine level, or any combination thereof.