

## CLAIMS

[Claim 1] A GIP receptor agonist peptide represented by formula (I):

P<sup>1</sup>-Tyr-A2-Glu-Gly-Thr-Phe-Ile-Ser-A9-Tyr-Ser-Ile-A13-A14-Asp-A16-A17-A18-Gln-A20-A21-Phe-Val-A24-Trp-Leu-Leu-Ala-Gln-A30-A31-A32-A33-A34-A35-A36-A37-A38-A39-A40-A41-A42-P<sup>2</sup>, or a pharmaceutically acceptable salt thereof;

wherein

P<sup>1</sup> represents a group represented by formula

-R<sup>A1</sup>,

-CO-R<sup>A1</sup>,

-CO-OR<sup>A1</sup>,

-CO-COR<sup>A1</sup>,

-SO-R<sup>A1</sup>,

-SO<sub>2</sub>-R<sup>A1</sup>,

-SO<sub>2</sub>-OR<sup>A1</sup>,

-CO-NR<sup>A2</sup>R<sup>A3</sup>,

-SO<sub>2</sub>-NR<sup>A2</sup>R<sup>A3</sup>,

-C(=NR<sup>A1</sup>)-NR<sup>A2</sup>R<sup>A3</sup>, or

is absent,

wherein R<sup>A1</sup>, R<sup>A2</sup>, and R<sup>A3</sup> each independently represent a hydrogen atom, an optionally substituted hydrocarbon group, or an optionally substituted heterocyclic group;

P<sup>2</sup> represents -NH<sub>2</sub> or -OH;

A2: represents Aib, D-Ala, Ala, Gly, or Pro;

A9: represents Asp or Leu;

A13: represents Aib, or Ala;

A14: represents Leu, Aib, Ile, or Nle;

A16: represents Arg, Ser, or Lys;

A17: represents Aib, Ala, or Ile;

A18: represents Ala, His, or Lys;

A19: represents Gln, or Ala;  
A20: represents Aib, Gln, or Ala;  
A21: represents Asp, Asn, or Lys;  
A24: represents Asn, Gln, or Glu;  
A30: represents Arg, Ser, Gln, or Lys;  
A31: represents Gly, Pro, or a deletion;  
A32: represents Ser, Lys, Pro, Gly, or a deletion;  
A33: represents Ser, Lys, Gly, or a deletion;  
A34: represents Gly, Asn, or a deletion;  
A35: represents Ala, Asp, Ser, Asn, or a deletion;  
A36: represents Pro, Trp, or a deletion;  
A37: represents Pro, Lys, or a deletion;  
A38: represents Pro, His, or a deletion;  
A39: represents Ser, Asn, or a deletion;  
A40: represents Ile, or a deletion;  
A41: represents Thr, or a deletion; and  
A42: represents Gln, or a deletion.

[Claim 2] The GIP receptor agonist peptide according to claim 1 or the pharmaceutically acceptable salt thereof, wherein A31 is Gly, A32-A42 are deletion; or A32 is Gly, A 33-A42 are deletion.

[Claim 3] The GIP receptor agonist peptide according to claim1 or the pharmaceutically acceptable salt thereof, wherein A31 is Pro and A32 is Gly, and A33-A42 are deletion.

[Claim 4] The GIP receptor agonist peptide according to any one of claims 1-3 or the pharmaceutically acceptable salt thereof, wherein P<sup>2</sup> is OH.

[Claim 5] A GIP receptor agonist peptide represented by formula (II):

P<sup>1</sup>-Tyr-A2-Glu-Gly-Thr-Phe-Ile-Ser-Asp-Tyr-Ser-Ile-A13-A14-Asp-A16-A17-A18-A19-A20-A21-Phe-Val-A24-Trp-Leu-Leu-Ala-A29-A30-A31-A32-A33-A34-A35-A36-A37-A38-A39-A40-A41-A42-P<sup>2</sup>, or a pharmaceutically acceptable salt thereof, wherein:

P<sup>1</sup> represents a group represented by formula

-R<sup>A1</sup>,  
-CO-R<sup>A1</sup>,  
-CO-OR<sup>A1</sup>,  
-CO-COR<sup>A1</sup>,  
-SO-R<sup>A1</sup>,  
-SO<sub>2</sub>-R<sup>A1</sup>,  
-SO<sub>2</sub>-OR<sup>A1</sup>,  
-CO-NR<sup>A2</sup>R<sup>A3</sup>,  
-SO<sub>2</sub>-NR<sup>A2</sup>R<sup>A3</sup>, or  
-C(=NR<sup>A1</sup>)-NR<sup>A2</sup>R<sup>A3</sup>

wherein R<sup>A1</sup>, R<sup>A2</sup>, and R<sup>A3</sup> each independently represent a hydrogen atom, an optionally substituted hydrocarbon group, or an optionally substituted heterocyclic group;

P<sup>2</sup> represents -NH<sub>2</sub> or -OH;

A2: represents Aib, D-Ala, or Gly;

A13: represents Aib, or Ala;

A14: represents Leu, Aib, Ile, Nle, or Lys(R);

A16: represents Arg, Ser, or Lys;

A17: represents Aib, Ala, Ile, or Lys(R);

A18: represents Ala, His, or Lys(R);

A19: represents Gln or Ala;

A20: represents Aib, Gln, Arg, or Ala;

A21: represents Asp, Asn, or Lys(R);

A24: represents Asn, Gln, or Glu;

A29: represents Gln, or Lys(R)

A30: represents Arg, Lys, Ser, Gln, or Lys(R);

A31: represents Gly, Pro, or a deletion;  
A32: represents Ser, Lys, Pro, Gly, or a deletion;  
A33: represents Ser, Lys, Gly, or a deletion;  
A34: represents Gly, Asn, or a deletion;  
A35: represents Ala, Asp, Ser, Asn, or a deletion;  
A36: represents Pro, Trp, or a deletion;  
A37: represents Pro, Lys, or a deletion;  
A38: represents Pro, His, or a deletion;  
A39: represents Ser, Asn, or a deletion;  
A40: represents Ile, or a deletion;  
A41: represents Thr, or a deletion;  
A42: represents Gln, or a deletion.

wherein in the residue Lys(R), the (R) portion represents X-L-, wherein L represents a linker, and is selected from the following group consisting of 2OEGgEgE, OEGgEgE, 2OEGgE, 3OEGgEgE, G5gEgE, 2OEGgEgEgE, 2OEG and G5gEgE; and X represents a lipid.

[Claim 6] A GIP receptor agonist peptide represented by formula (IV):

P<sup>1</sup>-Tyr-Aib-Glu-Gly-Thr-Phe-Ile-Ser-Asp-Tyr-Ser-Ile-A13-A14-Asp-A16-A17-A18-A19-A20-A21-Phe-Val-A24-Trp-Leu-Leu-Ala-A29-A30-A31-A32-A33-A34-A35-A36-A37-A38-A39-P<sup>2</sup>, or a pharmaceutically acceptable salt thereof, wherein:

P<sup>1</sup> represents H or C<sub>1-6</sub> alkyl;

P<sup>2</sup> represents -NH<sub>2</sub> or -OH;

A13: represents Aib, Ala, or Lys;

A14: represents Leu, Aib, Lys, or Lys(R);

A16: represents Arg, Ser, or Lys;

A17: represents Aib, Ala, Ile, Glu, Lys, or Lys(R);

A18: represents Ala, His, Glu, Lys, or Lys(R);

A19: represents Gln or Ala;

A20: represents Aib, Ala, Gln, Arg, or Lys;

A21: represents Asp, Asn, Lys, or Lys(R);

A24: represents Asn or Glu;

A29: represents Gln, Lys, or Lys(R);

A30: represents Arg, Ser, Gln, Lys, Lys(Ac), or Lys(R);

A31: represents Gly, Pro, or a deletion;

A32: represents Ser, Gly, or a deletion;

A33: represents Ser, Gly, or a deletion;

A34: represents Gly or a deletion;

A35: represents Ala, Ser, or a deletion;

A36: represents Pro or a deletion;

A37: represents Pro or a deletion;

A38: represents Pro or a deletion; and

A39: represents Ser or a deletion;

wherein in the residue Lys(R), the (R) portion represents X-L-, wherein L represents a linker and is selected from the group consisting of 2OEGgE, 2OEGgEgE, G4gE, GGGGG, G5gE, G5gEgE, G6, gEgEgE, OEGgEgE, OEGgEOEGgE, GGPAPAP, and GGPAPAPgE; and X represents C<sub>17</sub>-C<sub>22</sub> monoacid or C<sub>17</sub>-C<sub>22</sub> diacid.

[Claim 7] The GIP receptor agonist peptide according to claim 6 or the pharmaceutically acceptable salt thereof, wherein:

A17: represents Aib, Ala, Ile, Glu, or Lys(R);

A18: represents Ala, His, Glu, or Lys(R);

A21: represents Asp, Asn, or Lys(R); and

A29: represents Gln or Lys(R).

[Claim 8] The GIP receptor agonist peptide according to claim 6 or the pharmaceutically acceptable salt thereof, wherein:

A13: represents Aib or Ala;

A14: represents Leu, Lys, or Lys(R);

A16: represents Arg;

A17: represents Aib, Lys, or Lys(R);

A18: represents Ala, Lys, or Lys(R);

A20: represents Aib;

A29: represents Gln;

A30: represents Arg, Ser, or Lys;

A31: represents Gly or Pro;

A33: represents Ser or a deletion; and

A35: represents Ala or a deletion;

wherein L is selected from the group consisting of 2OEGgE, 2OEGgEgE, OEGgEgE, OEGgEOEGgE, G5, GGPAPAP, and GGPAPAPgE.

[Claim 9] The GIP receptor agonist peptide according to claim 8 or the pharmaceutically acceptable salt thereof, wherein:

A14: represents Leu or Lys(R);

A17: represents Aib or Lys(R);

A18: represents Ala or Lys(R); and

A21: represents Asp, Asn, or Lys(R).

[Claim 10] The GIPR agonist peptide of any one of claims 5-9 or the pharmaceutically acceptable salt thereof, wherein the lipid X is C<sub>17</sub>-C<sub>20</sub> monoacid or C<sub>17</sub>-C<sub>20</sub> diacid.

[Claim 11] The GIPR agonist peptide of claim 10 or the pharmaceutically acceptable salt thereof, wherein the lipid X is a C<sub>18</sub> diacid

[Claim 12] The GIPR agonist peptide of any one of claims 5-11 or the pharmaceutically acceptable salt thereof, wherein the linker L is 2OEGgEgE or GGGGG.

[Claim 13] The GIPR agonist peptide of any one of claims 5-12 or the pharmaceutically acceptable salt thereof, wherein (R) is 2OEGgEgE-C<sub>18</sub> diacid or GGGGG-C<sub>18</sub> diacid.

[Claim 14] The GIPR agonist peptide of any one of claims 5-13 or the pharmaceutically acceptable salt thereof, wherein the peptide has a Lys(R) amino acid residue at amino acid position A14 and (R) is GGGGG-C<sub>18</sub> diacid.

[Claim 15] The GIPR agonist peptide of any one of claims 5-13 or the pharmaceutically acceptable salt thereof, wherein the peptide has a Lys(R) amino acid residue at amino acid position A18 or A21 and (R) is 2OEGgEgE-C<sub>18</sub> diacid

[Claim 16] The GIPR agonist peptide of claim 5 or 6, represented by formula (V):  
Me-Tyr-Aib-Glu-Gly-Thr-Phe-Ile-Ser-Asp-Tyr-Ser-Ile-A13-A14-Asp-Arg-A17-Ala-Gln-Aib-A21-Phe-Val-Asn-Trp-Leu-Leu-Ala-Gln-A30-A31-A32-A33-A34-A35-A36-A37-A38-A39-P<sup>2</sup>, or a pharmaceutically acceptable salt thereof, wherein

P<sup>2</sup> represents -NH<sub>2</sub> or -OH;

A13: represents Aib or Ala;

A14: represents Leu, Lys, or Lys(R);

A17: represents Aib, Lys, or Lys(R);

A21: represents Asp, Asn, Lys, or Lys(R);

A30: represents Arg, Ser, Lys, or Lys(R);

A31: represents Gly or Pro;

A32: represents Ser, Gly, or a deletion;

A33: represents Ser or a deletion;

A34: represents Gly or a deletion;

A35: represents Ala or a deletion;

A36: represents Pro or a deletion;

A37: represents Pro or a deletion;

A38: represents Pro or a deletion; and

A39: represents Ser or a deletion,  
wherein L is 2OEGgEgE or GGGGG; and X represents C<sub>18</sub> diacid.

[Claim 17] The GIPR agonist peptide of claim 16 or the pharmaceutically acceptable salt thereof, wherein:

A14: represents Leu or Lys(R);

A17: represents Aib or Lys(R);

A21: represents Asp, Asn, or Lys(R); and

A30: represents Arg, Ser, Lys, or Lys(R).

[Claim 18] The GIPR agonist peptide of claim 16 or 17 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-Km-D-R-Aib-A-Q-Aib-D-F-V-N-W-L-L-A-Q-S-P-G-OH;

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-Km-D-R-Aib-A-Q-Aib-N-F-V-N-W-L-L-A-Q-S-P-S-S-G-A-P-P-P-S-OH;

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-L-D-R-Km-A-Q-Aib-D-F-V-N-W-L-L-A-Q-S-P-S-S-G-A-P-P-P-S-NH<sub>2</sub>;

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-L-D-R-Aib-A-Q-Aib-Km-F-V-N-W-L-L-A-Q-K-G-OH;

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-Aib-L-D-R-Aib-A-Q-Aib-Km-F-V-N-W-L-L-A-Q-R-G-OH;

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-Aib-L-D-R-Aib-A-Q-Aib-N-F-V-N-W-L-L-A-Q-Km-P-S-S-G-A-P-P-P-S-NH<sub>2</sub>.

[Claim 19] The GIPR agonist peptide of claim 18 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-Km-D-R-Aib-A-Q-Aib-D-F-V-N-W-L-L-A-Q-S-P-G-OH;

wherein Km is Lys-GGGGG-C<sub>18</sub> diacid.

[Claim 20] The GIPR agonist peptide of claim 18 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-Km-D-R-Aib-A-Q-Aib-N-F-V-N-W-L-L-A-Q-S-P-S-S-G-A-P-P-P-S-OH; wherein Km is Lys-GGGGG-C<sub>18</sub> diacid.

[Claim 21] The GIPR agonist peptide of claim 18 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-L-D-R-Km-A-Q-Aib-D-F-V-N-W-L-L-A-Q-S-P-S-S-G-A-P-P-P-S-NH<sub>2</sub>; wherein Km is Lys-GGGGG-C<sub>18</sub> diacid.

[Claim 22] The GIPR agonist peptide of claim 18 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-A-L-D-R-Aib-A-Q-Aib-Km-F-V-N-W-L-L-A-Q-K-G-OH; wherein Km is Lys-2OEGgEgE-C<sub>18</sub> diacid.

[Claim 23] The GIPR agonist peptide of claim 18 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-Aib-L-D-R-Aib-A-Q-Aib-Km-F-V-N-W-L-L-A-Q-R-G-OH; wherein Km is Lys-2OEGgEgE-C<sub>18</sub> diacid.

[Claim 24] The GIPR agonist peptide of claim 18 or the pharmaceutically acceptable salt thereof, represented by the formula:

Me-Y-Aib-E-G-T-F-I-S-D-Y-S-I-Aib-L-D-R-Aib-A-Q-Aib-N-F-V-N-W-L-L-A-Q-Km-P-S-S-G-A-P-P-P-S-NH<sub>2</sub>; wherein Km is Lys-2OEGgEgE-C<sub>18</sub> diacid.

[Claim 25] The GIP receptor agonist peptide according to any one of claims 1 to 24 or the pharmaceutically acceptable salt thereof, wherein the GIP receptor agonist peptide has a selectivity ratio, expressed as a ratio of (GLP1R EC<sub>50</sub> / GIPR EC<sub>50</sub>) of greater than 10, or greater than 100, or greater than 1,000, or greater than 100,000.

[Claim 26] The GIP receptor agonist peptide according to any one of claims 1 to 24 or the pharmaceutically acceptable salt thereof, wherein the GIP receptor agonist peptide has a human IV T<sub>1/2</sub> life of elimination of greater than 50 hours.

[Claim 27] The GIP receptor agonist peptide according to any one of claims 7 and 9-15 or the pharmaceutically acceptable salt thereof, wherein the GIP receptor agonist peptide has a solubility of 15 mg/mL or greater.

[Claim 28] A medicament comprising the GIP receptor agonist peptide according to any one of claims 1-27, or a pharmaceutically acceptable salt thereof.

[Claim 29] A pharmaceutical composition comprising the GIP receptor agonist peptide according to any one of claims 1-27, or a pharmaceutically acceptable salt thereof.

[Claim 30] The GIP receptor agonist peptide according to any one of claims 1-27 or the pharmaceutically acceptable salt thereof, or the medicament according to claim 28, or the pharmaceutical composition according to claim 29, which is administered to treat emesis as a monotherapy.

[Claim 31] The GIP receptor agonist peptide according to any one of claims 1-27 or the pharmaceutically acceptable salt thereof, or the medicament according to claim 28, or the pharmaceutical composition according to claim 29, which is administered Q1W, or once per four to seven days, or once per four to five days, or once every four days, or once every five days, or once every six days, or once every seven days, or once every eight days, or once every nine days, or once every ten days.

[Claim 32] The medicament according to claim 28, which is an activator of a GIP receptor.

[Claim 33] The medicament according to claim 32, which is a suppressant for vomiting or nausea.

[Claim 34] Use of the GIP receptor agonist peptide of any one of claims 1-27, or a salt thereof, or the medicament according to claim 28, or the pharmaceutical composition according to claim 29, for the manufacture of a suppressant for vomiting or nausea.

[Claim 35] The GIP receptor agonist peptide of any one of claims 1-27, or a salt thereof, or the medicament according to claim 28, or the pharmaceutical composition according to claim 29, for use in suppressing vomiting or nausea.

[Claim 36] A method for preventing or treating emesis in a subject, comprising administering an effective amount of the peptide of any one of claims 1-27, or a salt thereof, or the medicament according to claim 28, or the pharmaceutical composition according to claim 29, to the subject.

[Claim 37] The method according to claim 36, wherein the emesis is nausea and/or vomiting.

[Claim 38] The medicament according to claim 33, the use according to claim 34, the peptide, medicament, or pharmaceutical composition according to claim 35, or the method according to claim 37, where the emesis, vomiting or the nausea is caused by one or more conditions or causes selected from the following (1) to (10):

(1) Diseases accompanied by vomiting or nausea such as gastroparesis, gastrointestinal hypomotility, peritonitis, abdominal tumor, constipation, gastrointestinal obstruction, chronic intestinal pseudo-obstruction, functional dyspepsia, chemotherapy-induced nausea and vomiting (CINV), chronic unexplained nausea and/or vomiting, Cyclic vomiting syndrome (CVS), nausea and/or vomiting associated with gastroparesis, acute pancreatitis, chronic pancreatitis, hepatitis, hyperkalemia, cerebral edema, intracranial lesion, metabolic

- disorder, gastritis caused by an infection, postoperative disease, myocardial infarction, migraine, intracranial hypertension, and intracranial hypotension (e.g., altitude sickness);
- (2) Vomiting and/or nausea induced by chemotherapeutic drugs such as (i) alkylating agents (e.g., cyclophosphamide, carmustine, lomustine, chlorambucil, streptozocin, dacarbazine, ifosfamide, temozolomide, busulfan, bendamustine, and melphalan), cytotoxic antibiotics (e.g., dactinomycin, doxorubicin, mitomycin-C, bleomycin, epirubicin, actinomycin D, amrubicin, idarubicin, daunorubicin, and pirarubicin), antimetabolic agents (e.g., cytarabine, methotrexate, 5-fluorouracil, enocitabine, and clofarabine), vinca alkaloids (e.g., etoposide, vinblastine, and vincristine), other chemotherapeutic agents such as cisplatin, procarbazine, hydroxyurea, azacytidine, irinotecan, interferon  $\alpha$ , interleukin-2, oxaliplatin, carboplatin, nedaplatin, and miriplatin; (ii) opioid analgesics (e.g., morphine); (iii) dopamine receptor D1/D2 agonists (e.g., apomorphine); (iv) cannabis and cannabinoid products including cannabis hyperemesis syndrome;
- (3) Vomiting or nausea caused by radiation sickness or radiation therapy for the chest, the abdomen, or the like used to treat cancers;
- (4) Vomiting or nausea caused by a poisonous substance or a toxin;
- (5) Vomiting and nausea caused by pregnancy including hyperemesis gravidarum; and
- (6) Vomiting and nausea caused by a vestibular disorder such as motion sickness or dizziness
- (7) Opioid withdrawal;
- (8) Pregnancy including hyperemesis gravidarum;
- (9) A vestibular disorder such as motion sickness or dizziness; or
- (10) A physical injury causing local, systemic, acute or chronic pain.

[Claim 39] The method according to claim 36, wherein the emesis is a result of chemotherapy-induced nausea and vomiting (CINV), chronic unexplained nausea and/or vomiting, Cyclic vomiting syndrome (CVS), and nausea and/or vomiting associated with gastroparesis.

[Claim 40] The method of claim 36, wherein the subject is a non-type 2 diabetes mellitus subject.

[Claim 41] The method according to claim 36, wherein the emesis is delayed emesis or anticipatory emesis.

[Claim 42] The method according to any one of claims 36-41, wherein emesis is treated in the subject without inducing anxiety or sedation in the subject.

[Claim 43] The method according to any one of claims 36-42, wherein emesis is treated in the subject without inducing suppression of glucagon secretion when plasma glucose levels are above fasting levels.

[Claim 44] The method according to any one of claims 36-43, wherein emesis is treated in the subject without substantially activating the GLP-1 receptor.

[Claim 45] The method according to claim 43 or 44, wherein emesis is treated in the subject without concomitant, subsequent, or prior administration of a GLP-1 receptor agonist.

[Claim 46] The method according to any one of claims 36-45, wherein emesis is treated in a subject not taking a medicament to control a metabolic syndrome disorder.

[Claim 47] The method according to any one of claims 36-45, wherein emesis is treated in a subject taking a medicament to control a metabolic syndrome disorder.

[Claim 48] The method according to claim 47, wherein the metabolic syndrome disorder is type 2 diabetes mellitus or obesity.

[Claim 49] The method according to any one of claims 36-48, wherein the emesis is caused by or causes cyclic vomiting syndrome, or nausea or vomiting associated with chemotherapy.

[Claim 50] The method according to claim 38 or 49, wherein where the chemotherapy or chemotherapeutic agent comprises: (i) alkylating agents (e.g., cyclophosphamide, carmustine, lomustine, chlorambucil, streptozocin, dacarbazine, ifosfamide, temozolomide, busulfan, bendamustine, and melphalan), cytotoxic antibiotics (e.g., dactinomycin, doxorubicin, mitomycin-C, bleomycin, epirubicin, actinomycin D, amrubicin, idarubicin, daunorubicin, and pirarubicin), antimetabolic agents (e.g., cytarabine, methotrexate, 5-fluorouracil, enocitabine, and clofarabine), vinca alkaloids (e.g., etoposide, vinblastine, and vincristine), other chemotherapeutic agents such as cisplatin, procarbazine, hydroxyurea, azacytidine, irinotecan, interferon  $\alpha$ , interleukin-2, oxaliplatin, carboplatin, nedaplatin, and miriplatin; (ii) opioid analgesics (e.g., morphine); (iii) dopamine receptor D1D2 agonists (e.g., apomorphine); (iv) cannabis and cannabinoid products including cannabis hyperemesis syndrome

[Claim 51] The method according to claim 36, wherein the subject has type 2 diabetes mellitus.

[Claim 52] The method according to any one of claims 36-51, wherein the GIP receptor agonist peptide or medicament is administered subcutaneously, intravenously, intramuscularly, intraperitoneally, orally or via inhalation.

[Claim 53] The method according to any one of claims 36-52, wherein the effective amount of the GIP receptor agonist peptide administered to the subject is about 0.01 to 0.5 mg/kg/day, 0.1 to 5 mg/kg/day, 5 to 10 mg/kg/day, 10 to 20 mg/kg/day, 20 to 50 mg/kg/day, 10 to 100 mg/kg/day, 10 to 120 mg/kg/day, 50 to 100 mg/kg/day, 100 to 200 mg/kg/day, 200 to 300 mg/kg/day, 300 to 400 mg/kg/day, 400 to 500 mg/kg/day, 500 to 600 mg/kg/day, 600 to 700 mg/kg/day, 700 to 800 mg/kg/day, 800 to 900 mg/kg/day or 900 to 1000 mg/kg/day.

[Claim 54] The method according to any one of claims 36-53, wherein the subject is human.

[Claim 55] The method according to any one of claims 36-54, wherein the GIP receptor agonist peptide or medicament is administered to the subject before, during, or after the subject develops the disease-state.

[Claim 56] The method according to any one of claims 36-55, wherein the GIP receptor agonist peptide or medicament is administered to the subject once per week, or once per 5-7 days, or four to six times per month.

[Claim 57] The method according to any one of claims 36-56, wherein the GIP receptor agonist peptide or medicament is administered to the subject for 1-5 weeks, 1-5 months, or 1-5 years.