vomiting (CINV). The need for new therapies to prevent and treat nausea and emesis in patients is of high priority, especially in patients receiving therapies for Type 2 diabetes mellitus, obesity, and cancer. In the various aspects and embodiments of this disclosure compositions and methods for preventing and treating nausea and emesis are provided.

SUMMARY

[6] The present disclosure provides a method for treating or preventing nausea or emesis in a patient, the method comprising administering a therapeutically effective amount of a GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof.

[6a] In an aspect, there is provided use of a GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating or preventing nausea or emesis in a patient.

[7] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is about 0.3 mg to 30 mg.

[8] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is about 5 mg to 30 mg.

[9] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is 7.5 mg.

[10] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is 20 mg.

[11] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is 25 mg.

[12] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is formulated into a medicament.

[13] In some examples, the treatment of nausea or emesis is in the patient taking a medicament to treat a metabolic syndrome disorder.

[14] In some examples, the metabolic syndrome disorder is Type 2 diabetes mellitus or obesity.

[15] In some examples, the medicament to treat the metabolic syndrome disorder is selected from the group consisting of a GLP-1 receptor agonist peptide, a dual agonist peptide of the GLP-1 and glucagon (GCG) receptors, a long-acting-agonist peptide of the amylin receptor, a dual amylin and calcitonin receptor agonist peptide, a monoclonal antibody directed to the leptin receptor, a urocortin peptide, or a peptide tyrosine-tyrosine (PYY) analog to the patient.

[16] In some examples, the medicament to treat the metabolic syndrome disorder is selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, and SEQ ID NO:9, or a pharmaceutically acceptable salt thereof.

[17] In some examples, the patient's tolerance to nausea or emesis-inducing treatment of the metabolic syndrome disorder is improved.

[18] In some examples, the medicament to treat the metabolic syndrome disorder is administered without titration.

[19] In some examples, the treatment of nausea or emesis is in the patient taking a chemotherapeutic agent.

[20] In some examples, the chemotherapeutic agent is selected from the group consisting of anthracycline, cyclophosphamide, carboplatin, carmustine, cisplatin, cyclophosphamide, dacarbazine, doxorubicin, epirubicin, fam-trastuzumab deruxtecan-nxki, ifosfamide, mechlorethamine, melphalan, sacituzumab govitecan-hzly, and streptozocin.

[21] In some examples, the chemotherapeutic agent is a selected from the group consisting of aldesleukin, amifostine, bendamustine, busulfan, carboplatin, carmustine, clofarabine, cyclophosphamide, cytarabine, dactinomycin, daunorubicin, dinutuximab, doxorubicin, dual-drug liposomal encapsulation of cytarabine and daunorubicin, epirubicin, idarubicin, ifosfamide, irinotecan, irinotecan (liposomal), lurbinectedin, melphalan, methotrexate, mirvetuximab soratansine-gynx, naxitamab-gqgk, oxaliplatin, romidepsin, temozolomide, and trabectedin.

[22] In some examples, the chemotherapeutic agent is cisplatin.

[23] In some examples, the chemotherapeutic agent is a combination of cyclophosphamide and an anthracycline.

[24] In some examples, the anthracycline is selected from the group consisting of doxorubicin, daunorubicin, and idarubicin.

[25] In some examples, the patient's tolerance to the nausea or emesis inducing treatment with the chemotherapeutic agent is improved.

[26] In some examples, the chemotherapeutic agent is administered without titration.

[27] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is administered subcutaneously, intravenously, intramuscularly, intraperitoneally, orally, or via inhalation.

[28] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is administered to the patient one time, once weekly, twice monthly, once every three weeks, once monthly, or once yearly.

[29] In some examples, the therapeutically effective amount of the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is administered subcutaneously to the patient once weekly.

[30] In some examples, use of a pharmaceutical composition comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, for treating or preventing nausea or emesis in a patient.

[31] In some examples, use of the compound of comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the treatment or prevention of nausea or emesis in a patient.

[32] In some examples, a pharmaceutical composition comprising the compound of SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, for use in treating or preventing nausea or emesis in a patient.

DETAILED DESCRIPTION

[33] In various aspects and embodiments, the present disclosure provides compositions and methods for treating or preventing nausea or emesis. In accordance with aspects of the disclosure, the compositions comprise long-acting GIP receptor agonist peptides that target GIP-R. In some embodiments, the long-acting GIP receptor agonist peptides comprise SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutical acceptable salt thereof. In some embodiments, the long-acting GIP receptor agonist peptides comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutical acceptable salt thereof, are effective in treating nausea or emesis.

CLAIMS

1. Use of a GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating or preventing nausea or emesis in a patient.

2. The use of claim 1, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is in an amount of about 0.3 to 30 mg.

3. The use of claim 1, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is in an amount of about 5.0 to 30 mg.

4. The use of any one of claims 1-3, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is in an amount of 7.5 mg.

5. The use of any one of claims 1-3, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is in an amount of 20 mg.

6. The use of any one of claims 1-3, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is in an amount of 25 mg.

7. The use of any one of claims 1 to 3, wherein the patient is taking a medicament to treat a metabolic syndrome disorder.

8. The use of claim 7, wherein the metabolic syndrome disorder is Type 2 diabetes mellitus or obesity.

9. The use of claim 7, wherein the medicament to treat the metabolic syndrome disorder is selected from the group consisting of a GLP-1 receptor agonist peptide, a dual agonist peptide of the GLP-1 and glucagon (GCG) receptors, a long-acting-agonist peptide of the amylin receptor, a dual amylin and calcitonin receptor agonist peptide, a monoclonal antibody directed to the leptin receptor, a urocortin peptide, or a peptide tyrosine-tyrosine (PYY) analog.

10. The use of claim 9, wherein the medicament to treat the metabolic syndrome disorder is selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, and SEQ ID NO:9, or a pharmaceutically acceptable salt thereof.

11. The use of claim 9, wherein the patient's tolerance to nausea or emesis-inducing treatment of the metabolic syndrome disorder is to be improved.

12. The use of claim 9, wherein the medicament to treat the metabolic syndrome disorder is administered without titration.

13. The use of any one of claims 1 to 3, wherein the patient is taking a chemotherapeutic agent.

14. The use of claim 13, wherein the chemotherapeutic agent is selected from the group consisting of anthracycline, cyclophosphamide, carboplatin, carmustine, cisplatin, cyclophosphamide, dacarbazine, doxorubicin, epirubicin, fam-trastuzumab deruxtecan-nxki, ifosfamide, mechlorethamine, melphalan, sacituzumab govitecan-hzly, and streptozocin.

15. The use of claim 13, wherein the chemotherapeutic agent is selected from the group consisting of aldesleukin, amifostine, bendamustine, busulfan, carboplatin, carmustine, clofarabine, cyclophosphamide, cytarabine, dactinomycin, daunorubicin, dinutuximab, doxorubicin, dual-drug liposomal encapsulation of cytarabine and daunorubicin, epirubicin, idarubicin, ifosfamide, irinotecan, irinotecan (liposomal), lurbinectedin, melphalan, methotrexate, mirvetuximab soratansine-gynx, naxitamab-gqgk, oxaliplatin, romidepsin, temozolomide, and trabectedin.

16. The use of claim 14, wherein the chemotherapeutic agent is cisplatin.

17. The use of claim 14, wherein in the chemotherapeutic agent is a combination of cyclophosphamide and an anthracycline.

18. The use of claim 17, wherein the anthracycline is selected from the group consisting of doxorubicin, daunorubicin, and idarubicin.

19. The use of claim 13, wherein the patient's tolerance to the nausea or emesis inducing treatment with the chemotherapeutic agent is to be improved.

20. The use of claim 13, wherein the chemotherapeutic agent is administered without titration.

21. The use of any one of claims 1 to 3, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt

thereof, is to be administered subcutaneously, intravenously, intramuscularly, intraperitoneally, orally, or via inhalation.

22. The use of any one of claims 1 to 3, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is to be administered to the patient one time, once weekly, twice monthly, once every three weeks, once monthly, or once yearly.

23. The use of claim 22, wherein the GIP receptor agonist peptide comprising SEQ ID NO:1 or SEQ ID NO:2, or a pharmaceutically acceptable salt thereof, is to be administered subcutaneously to the patient once weekly.