identity with GLP-1, activates the GLP-1 receptor and likewise has been shown to reduce hyperglycemia in diabetics.

[0006] There is also evidence that GLP-1 and exendin-4 may reduce food intake and promote weight loss, an effect that would be beneficial not only for diabetics but also for patients suffering from obesity. Patients with obesity have a higher risk of diabetes, hypertension, hyperlipidemia, cardiovascular disease, and musculoskeletal diseases.

SUMMARY

[0007] In one aspect, the present invention refers to a peptide comprising the amino acid sequence of: SEQ ID NO: 17, or a pharmaceutically acceptable salt thereof. In another aspect, the present invention refers to a peptide consisting of the amino acid sequence of: SEQ ID NO: 17, or a pharmaceutically acceptable salt thereof. In still another aspect, the present invention refers to dimer or multimer comprising a peptide of the present invention, or a pharmaceutically acceptable salt thereof. In another aspect, the present invention refers to pharmaceutical composition comprising the peptide of the present invention, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier. In another aspect, the present invention refers to the use of the peptide of the present invention, or a pharmaceutically acceptable salt thereof; in the manufacture of a medicament for treating a disease or medical condition, wherein the disease or medical condition is selected from the group consisting of: metabolic syndrome, diabetes, obesity, liver steatosis, and a neurodegenerative disease. Furthermore, ~~T~~the present disclosures provide peptides and variant peptides that exhibit activity at the glucagon receptor, activity at the GLP-1 receptor, or activity at each of the glucagon receptor and the GLP-1 receptor. In ~~exemplary embodiments~~some examples, the presently disclosed peptides and variant peptides exhibit enhanced activity at the GLP-1 receptor, as compared to native glucagon. In ~~exemplary aspects~~some examples, the peptides and variant peptides exhibit at least 100-fold selectivity for the human GLP-1 receptor versus the GIP receptor.

[0008] The present disclosures further provide conjugates comprising any of the peptides and variant peptides described herein conjugated to a heterologous moiety. In some examples~~exemplary aspects~~, the heterologous moiety is a peptide or protein and the conjugate is a fusion peptide or chimeric peptide. In some examples~~exemplary aspects~~, the heterologous moiety is a polymer, e.g.,a polyethylene glycol. The present disclosures furthermore provide dimers and multimers comprising any of the peptides and variant peptides described herein.

[0009] The present disclosures moreover provides pharmaceutical compositions comprising any of the peptides and variant peptides described herein and a pharmaceutically acceptable carrier, as well as a method of treating or preventing a disease or medical condition (e.g., metabolic syndrome, diabetes, obesity, liver steatosis, a neurodegenerative disease, hypoglycemia) in a patient. The method comprises administering to the patient a presently disclosed peptide or peptide variant, optionally formulated into a pharmaceutical composition, in an amount effective to treat the disease or medical condition.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 represents a graph of the cumulative body weight change (grams) of DIO mice treated with a vehicle control or a dose of a peptide of SEQ ID NO: 12, 17, 18, or 19, as detailed in Example 7.

Claims:

1. A peptide comprising ~~or consisting of~~ the amino acid sequence of: SEQ ID NO: 17, or a pharmaceutically acceptable salt thereof.

2. A peptide consisting of the amino acid sequence of: SEQ ID NO: 17, or a pharmaceutically acceptable salt thereof.

~~2.~~3. A dimer or multimer comprising a peptide of claim 1 or 2, or a pharmaceutically acceptable salt thereof.

~~3.~~4. A pharmaceutical composition comprising the peptide of claim 1 or 2, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier.

~~4.~~5. The pharmaceutical composition of claim ~~3~~4, comprising an anti-diabetic or anti-obesity agent.

~~5.~~6. The pharmaceutical composition of Claim ~~3~~ 4 or ~~4~~ 5 for use in treating a disease or medical condition in a patient, wherein the disease or medical condition is selected from the group consisting of: metabolic syndrome, diabetes, obesity, liver steatosis, and a neurodegenerative disease.

~~6.~~7. The pharmaceutical composition of claim ~~5~~6, for use in combination with an anti-diabetic for treating diabetes.

~~7.~~8. The pharmaceutical composition of claim ~~5~~6, for use in combination with an anti-obesity agent for treating obesity.

~~8.~~9. Use of the peptide of claim 1 or 2, or a pharmaceutically acceptable salt thereof; in the manufacture of a medicament for treating a disease or medical condition, wherein the disease or medical condition is selected from the group consisting of: metabolic syndrome, diabetes, obesity, liver steatosis, and a neurodegenerative disease.