Claims

1. A use of a long-acting glucagon-like peptide-1 (GLP-1)/glucagon receptor dual agonist conjugate in the manufacture of a medicament for the prevention and/or treatment of a non-alcoholic liver disease, wherein the conjugate comprises:

a GLP-1/glucagon receptor dual agonist comprising the amino acid sequence of SEQ ID NO: 2-34,

an immunoglobulin Fc region, and

a non-peptidyl polymer, wherein the non-peptidyl polymer covalently links the GLP-1/glucagon receptor dual agonist and the immunoglobulin Fc region.

2. The use according to claim 1, wherein the conjugate has no side effect of weight gain or reduces the side effect of weight gain.

3. The use according to claim 1 or 2, wherein the conjugate reduces:

a) the expression or activity of collagen-la, which is a fibrosis marker;

b) the expression or activity of tumor necrosis factor-α (TNF- α), which is a pro-inflammatory marker;

c) the expression or activity of sterol regulatory element binding protein-lc (SREBP-lc), which is a lipogenesis marker;

d) liver triglycerides; or

e) blood cholesterol.

4. The use according to any one of the previous claims, wherein the non-alcoholic liver disease is non-alcoholic fatty liver, non-alcoholic steatohepatitis, cirrhosis, or liver cancer.

5. The use according to any one of the previous claims, wherein the conjugate simultaneously activates the GLP-1 receptor and the glucagon receptor.

6. The use according to any one of the previous claims, wherein the GLP-1/glucagon receptor dual agonist comprises the amino acid sequence of SEQ ID NO: 24.

7. The use according to any one of the previous claims, wherein the amino acids at positions 16 and 20 form a ring.

8. The use according to claim 7, wherein the GLP-1/glucagon receptor dual agonist comprises the amino acid sequence of SEQ ID NO: 25.

9. The use according to claim 7, wherein the GLP-1/glucagon receptor dual agonist comprises the amino acid sequence of SEQ ID NO: 26.

10. The use according to any one of the previous claims, wherein the non-peptidyl polymer comprises polyethylene glycol, polypropylene glycol, an ethylene glycol-propylene glycol copolymer, a polyoxyethylated polyol, polyvinyl alcohol, a polysaccharide, polyvinyl ethyl ether, a biodegradable polymer, a lipid polymer, hyaluronic acid, or a combination thereof.

11. The use according to claim 10, wherein the non-peptidyl polymer is polyethylene glycol.

12. The use according to claim 10, wherein the polysaccharide is dextran, a chitin, or a combination thereof.

13. The use according to any one of the previous claims, wherein the immunoglobulin Fc region is aglycosylated.

14. The use according to any one of the previous claims, wherein the immunoglobulin Fc region comprises one to four domains of CH1, CH2, CH3, or CH4 domains.

15. The use according to claim 14, wherein the immunoglobulin Fc region further comprises a hinge region.

16. The use according to any one of the previous claims, wherein the immunoglobulin Fc region is derived from IgG, IgA, IgD, IgE, or IgM.

17. The use according to any one of the previous claims, wherein the immunoglobulin Fc region is a hybrid of domains from IgG, IgA, IgD, IgE, or IgM.

18. The use according to any one of the previous claims, wherein the immunoglobulin Fc region is a dimer or polymer consisting of single chain immunoglobulins comprising domains having the same origin.

SEQUENCE LISTING

<110> HANMI PHARM. CO., LTD.

<120> USE OF A LONG ACTING GLP-1/GLUCAGON RECEPTOR DUAL AGONIST FOR THE TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE

<130> 106132.000206

<140> 11201701841W
<141> 2015-09-16

<150> PCT/KR2015/009753
<151> 2015-09-16

<150> KR 10-2014-0122862
<151> 2014-09-16

<160> 34

<170> PatentIn version 3.5

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<213> Homo sapiens

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Arg Asn Asn Ile Ala
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Glu Lys

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Arg Asn Asn Ile Ala
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20 25 30

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            20   25   30

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Arg Asn Asn Ile Ala
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20 25 30