

CLAIMS

1. An agent comprising:

a) a peptide or a peptide analog selected from the group consisting of:

- 5 i) a peptide or peptide analog comprising or consisting of an amino acid sequence selected from the group consisting of KPLAEIDSIELSYGIK (SEQ ID NO: 136), VDTYDGGISVVYGLR (SEQ ID NO: 138), KCLAECDIELSYGIK (SEQ ID NO: 141), KPLAEDISIELSYGIK (SEQ ID NO: 145), KPLAEIGDIELSYGIK (SEQ ID NO: 146), KPLAEIDSIELTYGIK (SEQ ID NO: 149), KPLAEIDGIELSYGIK (SEQ ID NO: 150), KPLAEIGSIELSYGIK (SEQ ID NO: 152), KGLAEIDSIELSYGIK (SEQ ID NO: 153), KPLAGIDSIGLSYGIK (SEQ ID NO: 154); CLAEIDSC (SEQ ID NO: 142), CFKPLAEIDSIECSYGIK (SEQ ID NO: 143), KPLAEGDIELSYGIK (SEQ ID NO: 147), KPLAEIELSYGIK (SEQ ID NO: 148), KCLAEIDSCELSYGIK (SEQ ID NO: 155), CFKPLAEIDSIEC (SEQ ID NO: 156), VDTYDGDGDSVVYGLR (SEQ ID NO: 139), VDVPEGDISLAYGLR (SEQ ID NO: 157), LDGLVRAYDNISPVG (SEQ ID NO: 158), GDPNGDISVVYGLR (SEQ ID NO: 159), VDVPNGDISLAYRLR (SEQ ID NO: 160), VDVPEGDISLAYRLR (SEQ ID NO: 161), V(beta-D)TYDGDISVVYGLR (SEQ ID NO: 167), VDTY(beta-D)GDISVVYGLR (SEQ ID NO: 168), and VDTYDG(beta-D)ISVVYGLR (SEQ ID NO: 169);
- 20 ii) a peptide or peptide analog consisting of the amino acid sequence GDPNDGRGDSVVYGLR (SEQ ID NO: 137); and
- 25 iii) a peptide or peptide analog comprising or consisting of the amino acid sequence KPLAEIDGIELTYGIK (SEQ ID NO: 151), wherein the peptide or peptide analog comprises no more than 25 amino acid residues;
- 30 b) a polynucleotide encoding upon expression, the peptide of a);
- c) a vector comprising the polynucleotide of b); or
- d) a cell comprising the polynucleotide of b), or the vector of c).

2. The agent according to any one of the preceding claims, wherein the agent is conjugated to a moiety, such as a moiety selected from the group consisting of polyethylene glycol (PEG), monosaccharides, fluorophores, chromophores, radioactive compounds, and cell-penetrating peptides.
- 5 3. The agent according to any one of the preceding claims, wherein the agent is further modified such as being glycosylated or by PEGylation, amidation, esterification, acylation, acetylation and/or alkylation.
- 10 4. The agent according to any one of the preceding claims, wherein the agent comprises or consists of tandem repeats.
5. The agent according to any of the preceding claims, wherein the agent is fused to another polypeptide, such as a polypeptide selected from the group consisting of glutathione-S-transferase (GST) and protein A, or to a tag.
- 15 6. The agent according to any of the preceding claims, wherein the agent is cyclic.
- 20 7. The agent according to any one of the preceding claims, wherein the agent comprises a second or further active ingredient, such as an active ingredient is selected from the group consisting of insulin, glucagon-like peptide-1 (GLP-1), sulfonylurea, a dipeptidyl peptidase-4 (DPP4) inhibitor, an alpha-glucosidase inhibitor, a thiazolidinedione, a meglitinide and a sodium-glucose cotransporter-2 (SGLT2) inhibitor.
- 25 8. The agent according to any one of the preceding claims, for use as a medicament.
9. An agent comprising:
 - 30 a) a peptide or a peptide analog selected from the group consisting of:
 - (i) a peptide or peptide analog comprising or consisting of an amino acid sequence of the general formula:

$$\text{KX}_2\text{LAX}_5\text{X}_6\text{X}_7\text{X}_8\text{IX}_{10}\text{LX}_{12}\text{YGIK}$$

(SEQ ID NO: 140)

 wherein:
 - 35 X_2 is C, P or G;
 - X_5 is E or G;
 - X_6 is C, D or I;

X_7 is D, I, S or G;

X_8 is S, D or G;

X_{10} is E or G;

X_{12} is S or T;

5 with the proviso that if X_{12} is T, the peptide comprises no more than 25 amino acid residues;

(ii) a peptide or peptide analog comprising or consisting of an amino acid sequence selected from the group consisting of VDTYDGGISVVYGLR (SEQ ID NO: 138), VDTYDGDISVVYGLR (SEQ ID NO: 1),
 10 VDTYDGDISVVYGL (SEQ ID NO: 3), VDTYDGDISVVYG (SEQ ID NO: 6), GDISVVYGLR (SEQ ID NO: 26), VDTYDGDIS (SEQ ID NO: 28), VDTYDGRGDSVVYGLR (SEQ ID NO: 67), VDVPNGDISLAYGLR (SEQ ID NO: 69), VDVPNGDISLAYGL (SEQ ID NO: 71) DVPNGDISLAYGLR (SEQ ID NO: 72), VDVPNGDISLAYG (SEQ ID NO: 74), PNGDISLAYGLR (SEQ ID NO: 81), VDVPNGDISLA (SEQ ID NO: 83), GDISLAYGLR (SEQ ID NO: 94), VDVPNGDIS (SEQ ID NO: 96), CLAEIDSC (SEQ ID NO: 142), CFKPLAEIDSIECSYGIK (SEQ ID NO: 143), KPLAEGDIELSYGIK (SEQ ID NO: 147), KPLAEIELSYGIK (SEQ ID NO: 148), KCLAEIDSCIELSYGIK (SEQ ID NO: 155) and CFKPLAEIDSIEC (SEQ ID NO: 156); and
 15 (iii) a peptide or peptide analog consisting of the amino acid sequence GDPNDGRGDSVVYGLR (SEQ ID NO: 137);

b) a polynucleotide encoding upon expression, the peptide of a);
 c) a vector comprising the polynucleotide of b); or
 d) a cell comprising the polynucleotide of b), or the vector of c);
 20 for use in the treatment of an endocrine disease and/or a metabolic disease in a mammal, such as a human.

10. The agent for use according to claim 9, wherein the peptide or peptide analog of the general formula of SEQ ID NO: 140 comprises or consists of an amino acid
 30 sequence selected from the group consisting of KPLAEIDSIELSYGIK (SEQ ID NO: 136), KCLAECDIELSYGIK (SEQ ID NO: 141), KPLAEDISIELSYGIK (SEQ ID NO: 145), KPLAEIGDIELSYGIK (SEQ ID NO: 146), KPLAEIDSIELTYGIK (SEQ ID NO: 149), KPLAEIDGIELSYGIK (SEQ ID NO: 150), KPLAEIDGIELTYGIK (SEQ ID NO: 151), KPLAEIGSIELSYGIK (SEQ ID NO: 152), KGLAEIDSIELSYGIK (SEQ ID NO: 153), and KPLAGIDSIGLSYGIK (SEQ ID NO: 154).

11. The agent for use according to any of claims 9 to 10, wherein the agent is cyclic.
12. The agent for use according to any one of claims 9 to 11, wherein said agent
 5 comprises a second or further active ingredient, such as an active ingredient is
 selected from the group consisting of insulin, glucagon-like peptide-1 (GLP-1),
 sulfonylurea, a dipeptidyl peptidase-4 (DPP4) inhibitor, an alpha-glucosidase
 inhibitor, a thiazolidinedione, a meglitinide and a sodium-glucose cotransporter-2
 (SGLT2) inhibitor.
13. The agent for use according to any of claims 9 to 12, wherein the endocrine
 10 disease and/or metabolic disease are selected from the group consisting of
 diabetes mellitus, type 1 diabetes mellitus, type 2 diabetes mellitus, malnutrition-
 related diabetes mellitus, specified diabetes mellitus, unspecified diabetes mellitus,
 15 disorders of glucose regulation and pancreatic internal secretion, insulin resistance
 syndrome, impaired glucose tolerance, hyperglycemia, hyperinsulinemia, and any
 combinations thereof.
14. The agent for use according to any of claims 9 to 12, wherein the endocrine
 20 disease and/or metabolic disease are selected from the group consisting of
 disorders of the thyroid gland, disorders of endocrine glands, malnutrition,
 nutritional deficiencies, obesity, hyperalimentation, and metabolic disorders.
15. The agent for use according to any of claims 9 to 12, wherein the endocrine
 25 disease and/or metabolic disease is selected from the group consisting of
 nondiabetic hypoglycaemic coma, disorders of pancreatic internal secretion,
 localized adiposity, hyperalimentation, sequelae of hyperalimentation, disorders of
 aromatic amino-acid metabolism, disorders of branched-chain amino-acid
 metabolism and fatty-acid metabolism, disorders of amino-acid metabolism,
 30 lactose intolerance, disorders of carbohydrate metabolism, disorders of sphingolipid
 metabolism, disorders of lipid storage disorders, disorders of glycosaminoglycan
 metabolism, disorders of glycoprotein metabolism, disorders of lipoprotein
 metabolism, lipidemias, disorders of purine and pyrimidine metabolism, disorders of
 porphyrin and bilirubin metabolism, disorders of mineral metabolism, cystic fibrosis,
 35 amyloidosis, volume depletion, disorders of fluid, electrolyte and acid-base balance,
 and postprocedural endocrine and metabolic disorders.