In some embodiments, the invention relates to peptidic compounds of Formula (I) as defined above, wherein X14 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group is functionalized by -C(O)-R^5, X40 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group can be functionalized by -C(O)-R^5, and R^5 is a lipophilic moiety selected from an acyclic linear or branched (C_4-C_{30}) saturated or unsaturated hydrocarbon group, and/or a cyclic saturated, unsaturated or aromatic group, wherein the lipophilic moiety may be attached to the -NH_2 side chain group by a linker selected from $(\beta\text{-Ala})_{1-4}$, $(\gamma\text{-Glu})_{1-4}$, $(\varepsilon\text{-Ahx})_{1-4}$, or $(GABA)_{1-4}$ in all stereoisomeric forms.

In certain embodiments, X14 represents an amino acid residue with a functionalized -NH_2 side chain group, such as functionalized Lys, Orn, Dab or Dap, wherein at least one H atom of the -NH_2 side chain group is replaced by -C(O)-R^5, which is selected from the group consisting of the substituents according to Table 3 above.

In some embodiments, X14 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group is functionalized by -C(O)-R^5, X40 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group can be functionalized by -C(O)-R^5, and -C(O)-R^5 is selected from the group consisting of the substituents according to Table 3 above.

In some embodiments of the invention, position X14 and/or X40 in formula (II) represents Lysine (Lys). According to some embodiments, Lys at position 14 and optionally at position 40 is functionalized, e.g. with a group -C(O)R^5 as described above. In other embodiments, X40 is absent and X14 is Lys functionalized with -C(O)-R^5, -C(O)O-R^5, -C(O)NH-R5, -S(O)2-R^5 or R^5, preferably by -C(O)-R^5, wherein R^5 is as defined above. In particular, X14 is Lys functionalized with C(O)-R^5, wherein R^5 is selected from the group

In some embodiments, X14 is Lys functionalized with C(O)-R^5, wherein R^5 is selected from the group consisting of (S)-4-carboxy-4-hexadecanoylamino-butyryl (γE-x53), (S)-4-carboxy-4-octadecanoylamino-butyryl (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl (γE-γE-x70), 4-octadecanoylamino-butyryl (GABA-x70), (S)-4-Carboxy-4-henicosanoylamino-butyryl (γE-x76), and 3-(3-Octadecanoylamino-propionylamino)-propionyl (β-Ala-β-Ala-x70).

A further embodiment relates to a group of compounds, wherein

R^1 is NH_2,

R^2 is NH_2 or

R^1 and R^2 are NH_2.

A further embodiment relates to a group of compounds, wherein

X3 represents an amino acid residue selected from Gln, Glu and His,

X12 represents an amino acid residue selected from Ile and Lys,

X14 represents an amino acid residue having a side chain with an -NH_2 group, wherein the -NH_2 side chain group is functionalized by - C(O)-R^5, wherein R^5 is as described above,

X15 represents an amino acid residue selected from Asp and Glu,

X16 represents an amino acid residue selected from Ser, Lys, Glu and Gln,

X17 represents an amino acid residue selected from Arg, Lys, Glu, Ile, Gln, Leu, Aib, Tyr and Ala,

X18 represents an amino acid residue selected from Ala, Arg, Aib, Leu, Lys and Tyr,

X19 represents an amino acid residue selected from Ala, Gln, Val and Aib,

X20 represents an amino acid residue selected from Gln, Aib, Phe, Arg, Leu, Lys and His,

X21 represents an amino acid residue selected from Asp, Glu, Tyr, and Leu,

A further embodiment relates to a group of compounds, wherein
X28 represents Asn,
X29 represents Thr.

A further embodiment relates to a group of compounds, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by $-C(O)-R^5$, wherein R^5 is selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53), (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

A further embodiment relates to a group of compounds, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,

X14 represents Lys, wherein the -NH_2 side chain group is functionalized by - C(O)-R^5, wherein R^5 is (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

A further embodiment relates to a group of compounds, wherein
X3 represents Glu,
X12 represents Ile,
X14 represents Lys, wherein the -NH_2 side chain group is functionalized by - C(O)-R^5, wherein R^5 is selected from (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents Glu,
X28 represents an amino acid residue selected from Asn and Ala,

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Claims

1. A peptidic compound having the formula (I):

$R^1 - Z - R^2$ (I)

wherein Z is a peptide moiety having the formula (II)

Tyr-Aib-X3-Gly-Thr-Phe-Thr-Ser-Asp-Leu-Ser-X12-Gln-X14-X15-X16-X17-X18-X19-X20-X21-Phe-Ile-Glu-Trp-Leu-Lys-X28-X29-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-X40 (II)

X3 represents an amino acid residue selected from Gln, Glu and His,
X12 represents an amino acid residue selected from Ile and Lys,
X14 represents an amino acid residue having a side chain with an $-NH_2$ group, wherein the $-NH_2$ side chain group is functionalized by $-C(O)-R^5$, wherein R^5 may be a moiety comprising up to 50 or up to 100 carbon atoms and optionally heteroatoms selected from halogen, N, O, S and/or P,
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser, Lys, Glu and Gln,
X17 represents an amino acid residue selected from Arg, Lys, Glu, Gln, Leu, Aib, Tyr and Ala,
X18 represents an amino acid residue selected from Ala and Arg,
X19 represents an amino acid residue selected from Ala and Val,
X20 represents an amino acid residue selected from Gln, Aib, Lys and His,

X21 represents an amino acid residue selected from Asp, Glu and Leu,

X28 represents an amino acid residue selected from Asn and Ala,

X29 represents an amino acid residue selected from Gly, Thr and D-Ala,

X40 is either absent or represents Lys,

R^1 represents NH_2,

R^2 represents the C-terminal group of the peptidic compound and is selected from OH and NH_2,

or a salt or solvate thereof, wherein the compound is a GLP-1 and GIP receptor agonist.

2. A compound of claim 1, wherein

X14 represents an amino acid residue with a functionalized -NH_2 side chain group, such as functionalized Lys, Orn, Dab or Dap, wherein at least one H atom of the -NH_2 side chain group is replaced by -C(O)-R^5, which is selected from

(S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, 4-Hexadecanoylamino-butyryl-, 4-{3-[(R)-2,5,7,8-tetramethyl-2-((4R,8R)-4,8,12-trimethyl-tridecyl)-chroman-6-yloxycarbonyl]-propionylamino}-butyryl-, 4-octadecanoylamino-butyryl, 4-((Z)-octadec-9-enoylamino)-butyryl-, 6-[(4,4-Diphenyl-cyclohexyloxy)-hydroxy-phosphoryloxy]-hexanoyl-, Hexadecanoyl-, (S)-4-Carboxy-4-(15-carboxy-pentadecanoylamino)-butyryl-, (S)-4-Carboxy-4-{3-[3-((2S,3R,4S,5R)-5-carboxy-2,3,4,5-tetrahydroxy-pentanoylamino)-propionylamino]-propionylamino}-butyryl, (S)-4-Carboxy-4-{3-[(R)-2,5,7,8-tetramethyl-2-((4R,8R)-4,8,12-trimethyl-tridecyl)-chroman-6-yloxycarbonyl]-propionylamino}-butyryl-, (S)-4-Carboxy-4-((9Z,12Z)-octadeca-9,12-dienoylamino)-butyryl-, (S)-4-Carboxy-4-[6-((2S,3R,4S,5R)-5-carboxy-2,3,4,5-tetrahydroxy-pentanoylamino)-hexanoylamino]-butyryl-, (S)-4-Carboxy-4-

((2S,3R,4S,5R)-5-carboxy-2,3,4,5-tetrahydroxy-pentanoylamino)-butyryl-, (S)-4-Carboxy-4-tetradecanoylamino-butyryl-, (S)-4-(11-Benzyloxycarbonyl-undecanoylamino)-4-carboxy-butyryl-, (S)-4-Carboxy-4-[11-((2S,3R,4R,5R)-2,3,4,5,6-pentahydroxy-hexylcarbamoyl)-undecanoylamino]-butyryl-, (S)-4-Carboxy-4-((Z)-octadec-9-enoylamino)-butyryl-, (S)-4-Carboxy-4-(4-dodecyloxy-benzoylamino)-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-, (S)-4-Carboxy-4-docosanoylamino-butyryl-, (S)-4-Carboxy-4-((Z)-nonadec-10-enoylamino)-butyryl-, (S)-4-Carboxy-4-(4-decyloxy-benzoylamino)-butyryl-, (S)-4-Carboxy-4-[(4'-octyloxy-biphenyl-4-carbonyl)-amino]-butyryl-, (S)-4-Carboxy-4-(12-phenyl-dodecanoylamino)-butyryl-, (S)-4-Carboxy-4-icosanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-hexadecanoylamino-butyrylamino)-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl-, 3-(3-Hexadecanoylamino-propionylamino)-propionyl-, 3-Hexadecanoylamino-propionyl-, (S)-4-Carboxy-4-[(R)-4-((3R,5S,7R,8R,9R,10S,12S,13R,14R,17R)-3,7,12-trihydroxy-8,10,13-trimethyl-hexadecahydro-cyclopenta[a]phenanthren-17-yl)-pentanoylamino]-butyryl-, (S)-4-Carboxy-4-[(R)-4-((3R,5R,8R,9S,10S,13R,14S,17R)-3-hydroxy-10,13-dimethyl-hexadecahydro-cyclopenta[a]phenanthren-17-yl)-pentanoylamino]-butyryl-, (S)-4-Carboxy-4-((9S,10R)-9,10,16-trihydroxy-hexadecanoylamino)-butyryl-, tetradecanoyl-, 11-Carboxy-undecanoyl-, 11-Benzyloxycarbonyl-undecanoyl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-tetradecanoylamino-butyrylamino)-butyryl-, 6-[Hydroxy-(naphthalen-2-yloxy)-phosphoryloxy]-hexanoyl-, 6-[Hydroxy-(5-phenyl-pentyloxy)-phosphoryloxy]-hexanoyl-, 4-(Naphthalene-2-sulfonylamino)-4-oxo-butyryl-, 4-(Biphenyl-4-sulfonylamino)-4-oxo-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-

carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-, (S)-4-Carboxy-2-{(S)-4-carboxy-2-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-2-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-,(S)-4-Carboxy-2-{(S)-4-carboxy-2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-, 2-(2-{2-[2-(2-{2-[(S)-4-Carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetyl-, 2-(2-{2-[(S)-4-Carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetyl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-{(S)-4-carboxy-4-[(S)-4-carboxy-4-(19-carboxy-nonadecanoylamino)-butyrylamino]-butyrylamino}-butyrylamino)-butyryl-, 2-(2-{2-[2-(2-{2-[(S)-4-Carboxy-4-(16-1H-tetrazol-5-yl-hexadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetyl-, 2-(2-{2-[2-(2-{2-[(S)-4-Carboxy-4-(16-carboxy-hexadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetyl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-{2-[2-(2-{2-[2-(2-{(S)-4-carboxy-4-[10-(4-carboxy-phenoxy)-decanoylamino]-butyrylamino}-ethoxy)-ethoxy]-acetylamino}-ethoxy)-ethoxy]-acetylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(7-carboxy-heptanoylamino)-butyrylamino]-

ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(11-carboxy-undecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(13-carboxy-tridecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(15-carboxy-pentadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, and (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(19-carboxy-nonadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-,

X40 is absent or represents Lys.

3. A compound of any one of claims 1 - 2, wherein

X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, 4-octadecanoylamino-butyryl-, Hexadecanoyl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl-.

4. A compound according to any one of claims 1-3, wherein

X14 is Lys functionalized with $C(O)-R^5$, wherein R^5 is selected from the group consisting of (S)-4-carboxy-4-hexadecanoylamino-butyryl (γE-x53), (S)-4-carboxy-4-octadecanoylamino-butyryl (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl (γE-γE-x70), 4-octadecanoylamino-butyryl (GABA-x70), (S)-4-Carboxy-4-henicosanoylamino-butyryl (γE-x76), and 3-(3-Octadecanoylamino-propionylamino)-propionyl (β-Ala-β-Ala-x70).

5. A compound of any one of claims 1 - 4, wherein R^2 is NH_2.

6. A compound according to any one of claims 1-5,wherein the peptidic compound has a relative activity of at least 0.04%, preferably at least 0.08%, more preferably at least 0.2% compared to that of natural GIP at the GIP receptor.

7. A compound according to any one of claims 1-6, wherein the peptidic compound exhibits a relative activity of at least 0.07%, preferably at least 0.1%, more preferably at least 0.14%, more preferably at least 0.35% and even more preferably at least 0.4% compared to that of GLP-1(7-36) at the GLP-1 receptor.

8. A compound according to any one of claims 6 or 7, wherein the peptidic compound further exhibits a relative activity of at least 0.1%, preferably at least 0.2%, more preferably at least 0.3%, more preferably at least 0.4% and even more preferably at least 0.5% compared to that of natural glucagon at the glucagon receptor.

9. A compound of any one of claims 1 - 8, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl- and 4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-,
X15 represents an amino acid residue selected from Glu and Asp,
X16 represents an amino acid residue selected from Ser and Lys,

X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

10. A compound of any one of claims 1 – 9, wherein
X3 represents Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl- and 4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-,
X15 represents an amino acid residue selected from Glu and Asp,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

11. A compound of any one of claims 1 – 10, wherein
X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-octadecanoylamino-butyryl, 4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl-.

12. A compound of any one of claims 1 – 9, wherein
X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-.

13. A compound of any one of claims 1 – 9, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl- and (S)-4-Carboxy-4-octadecanoylamino-butyryl-,
X15 represents an amino acid residue selected from Glu and Asp,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

14. A compound of any one of claims 1 - 13, wherein X19 represents Ala.

15. A compound of any one of claims 1 - 14, wherein
X28 represents Ala,
X29 represents Gly.

16. A compound of any one of claims 1 - 14, wherein
X28 represents Asn,
X29 represents Thr.

17. A compound of any one of claims 1 - 9, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by - $C(O)-R^5$, wherein R^5 is selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53), (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

18. A compound of any one of claims 1-9,12-17, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by - $C(O)-R^5$, wherein R^5 is (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

19. A compound of any one of claims 1-11, 14-17, wherein
X3 represents Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by - $C(O)-R^5$, wherein R^5 is selected from (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,

X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

20. The compound of any one of claims 1-19, selected from the compounds of SEQ ID NO.: 8-39 or a salt or solvate thereof.

21. The compound of any one of claims 1-19, selected from the compounds of SEQ ID NO.: 8-10 and 12-38 or a salt or solvate thereof.

22. The compound of claim 20, selected from the compounds of SEQ ID NO.: 8-13 and 39 or a salt or solvate thereof.

23. The compound of claim 21, selected from the compounds of SEQ ID NO.: 8-10 and 12-13 or a salt or solvate thereof.

24. The compound of claim 20, selected from the compounds of SEQ ID NO.: 14-21 or a salt or solvate thereof.

25. The compound of claim 20, selected from the compounds of SEQ ID NO.: 22-38 or a salt or solvate thereof.

26. The compound of any one of claims 1-25 for use in medicine, particularly in human medicine.

27. The compound for use according to claim 26 which is present as an active agent in a pharmaceutical composition together with at least one pharmaceutically acceptable carrier.

28. The compound for use according to claim 26 or 27 together with at least one additional therapeutically active agent, wherein the additional therapeutically active agent is selected from the series of Insulin and Insulin derivatives, GLP-1, GLP-1 analogues and GLP-1 receptor agonists, polymer bound GLP-1 and GLP-1 analogues, dual GLP1/glucagon agonists, PYY3-36 or analogues thereof, pancreatic polypeptide or analogues thereof, Glucagon receptor agonists, GIP receptor agonists or antagonists, ghrelin antagonists or inverse agonists, Xenin and analogues thereof, DDP-IV inhibitors, SGLT2 inhibitors, dual SGLT2 / SGLT1 inhibitors, Biguanides Thiazolidinediones, dual PPAR agonists, Sulfonylureas, Meglitinides, alpha-glucosidase inhibitors, Amylin and Amylin analogues, GPR119 agonists, GPR40 agonists, GPR120 agonists, GPR142 agonists, systemic or low-absorbable TGR5 agonists, Cycloset, inhibitors of 11-beta-HSD, activators of glucokinase, inhibitors of DGAT, inhibitors of protein tyrosinephosphatase 1, inhibitors of glucose-6-phosphatase, inhibitors of fructose-1,6-bisphosphatase, inhibitors of glycogen phosphorylase, inhibitors of phosphoenol pyruvate carboxykinase, inhibitors of glycogen synthase kinase, inhibitors of pyruvate dehydrogenase kinase, alpha2-antagonists, CCR-2 antagonists, modulators of glucose transporter-4, Somatostatin receptor 3 agonists, HMG-CoA-reductase inhibitors, fibrates, nicotinic acid and the derivatives thereof, nicotinic acid receptor 1 agonists, PPAR-alpha, gamma or alpha/gamma) agonists or modulators, PPAR-delta agonists, ACAT inhibitors, cholesterol absorption inhibitors, bile acid-binding substances, IBAT inhibitors, MTP inhibitors, modulators of PCSK9, LDL receptor up-regulators by liver selective thyroid hormone receptor ß agonists, HDL-raising compounds, lipid metabolism modulators, PLA2 inhibitors , ApoA-I enhancers, thyroid hormone receptor agonists, cholesterol synthesis inhibitors, omega-3 fatty acids and derivatives thereof, active substances for the treatment of obesity, such as Sibutramine, Tesofensine, Orlistat, CB-1receptor antagonists, MCH-1 antagonists, MC4 receptor agonists and partial

agonists, NPY5 or NPY2 antagonists, NPY4 agonists, beta-3-agonists, leptin or leptin mimetics, agonists of the 5HT2c receptor, or the combinations of bupropione/naltrexone (CONTRAVE), bupropione/zonisamide (EMPATIC), bupropione/phentermine or pramlintide/metreleptin, QNEXA (Phentermine+ topiramate), lipase inhibitors, angiogenesis inhibitors, H3 antagonists, AgRP inhibitors, triple monoamine uptake inhibitors (norepinephrine and acetylcholine), MetAP2 inhibitors, nasal formulation of the calcium channel blocker diltiazem, antisense against production of fibroblast growth factor receptor 4, prohibitin targeting peptide-1, drugs for influencing high blood pressure, chronic heart failure or atherosclerosis, such as angiotensin II receptor antagonists, ACE inhibitors, ECE inhibitors, diuretics, beta-blockers, calcium antagonists, centrally acting hypertensives, antagonists of the alpha-2-adrenergic receptor, inhibitors of neutral endopeptidase, thrombocyte aggregation inhibitors.

29. The compound for use according to claim 26 or 27 together with at least one additional therapeutically active agent, wherein the additional therapeutically active agent particularly is a GLP-1 agonist and/or insulin or an insulin analogue and/or a gastrointestinal peptide.

30. The compound for use according to any one of claims 26-29 for the treatment or prevention of hyperglycemia, type 2 diabetes, impaired glucose tolerance, type 1 diabetes, obesity, metabolic syndrome and neurodegenerative disorders, particularly for delaying or preventing disease progression in type 2 diabetes, treating metabolic syndrome, treating obesity or preventing overweight, for decreasing food intake, increase energy expenditure, reducing body weight, delaying the progression from impaired glucose tolerance (IGT) to type 2 diabetes; delaying the progression from type 2 diabetes to insulin-requiring diabetes; regulating appetite; inducing satiety; preventing weight regain after successful weight loss; treating a disease or state related

to overweight or obesity; treating bulimia; treating binge eating; treating atherosclerosis, hypertension, IGT, dyslipidemia, coronary heart disease, hepatic steatosis, treatment of beta-blocker poisoning, use for inhibition of the motility of the gastro-intestinal tract, useful in connection with investigations of the gastro-intestinal tract using techniques such as X-ray, CT- and NMR-scanning.

31. The compound for use according to any one of claims 26-30 for the treatment or prevention of hyperglycemia, type 2 diabetes, obesity.

It, 14 October 2014

In some embodiments, the invention relates to peptidic compounds of Formula (I) as defined above, wherein X14 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group is functionalized by -C(O)-R^5, X40 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group can be functionalized by -C(O)-R^5, and R^5 is a lipophilic moiety selected from an acyclic linear or branched (C_4-C_{30}) saturated or unsaturated hydrocarbon group, and/or a cyclic saturated, unsaturated or aromatic group, wherein the lipophilic moiety may be attached to the -NH_2 side chain group by a linker selected from $(\beta\text{-Ala})_{1\text{-}4}$, $(\gamma\text{-Glu})_{1\text{-}4}$, $(\varepsilon\text{-Ahx})_{1\text{-}4}$, or $(GABA)_{1\text{-}4}$ in all stereoisomeric forms.

In certain embodiments, X14 represents an amino acid residue with a functionalized -NH_2 side chain group, such as functionalized Lys, Orn, Dab or Dap, wherein at least one H atom of the -NH_2 side chain group is replaced by -C(O)-R^5, which is selected from the group consisting of the substituents according to Table 3 above.

In some embodiments, X14 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group is functionalized by -C(O)-R^5, X40 represents an amino acid residue selected from Lys, Orn, Dab and Dap, wherein the -NH_2 side chain group can be functionalized by -C(O)-R^5, and -C(O)-R^5 is selected from the group consisting of the substituents according to Table 3 above.

In some embodiments of the invention, position X14 and/or X40 in formula (II) represents Lysine (Lys). According to some embodiments, Lys at position 14 and optionally at position 40 is functionalized, e.g. with a group -C(O)R^5 as described above. In other embodiments, X40 is absent and X14 is Lys functionalized with -C(O)-R^5, -C(O)O-R^5, -C(O)NH-R5, -S(O)2-R^5 or R^5, preferably by -C(O)-R^5, wherein R^5 is as defined above. In particular, X14 is Lys functionalized with C(O)-R^5, **which** is selected from the group

In some embodiments, X14 is Lys functionalized with C(O)-R^5, **which** is selected from the group consisting of (S)-4-carboxy-4-hexadecanoylamino-butyryl (γE-x53), (S)-4-carboxy-4-octadecanoylamino-butyryl (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl (γE-γE-x70), 4-octadecanoylamino-butyryl (GABA-x70), (S)-4-Carboxy-4-henicosanoylamino-butyryl (γE-x76), and 3-(3-Octadecanoylamino-propionylamino)-propionyl (β-Ala-β-Ala-x70).

A further embodiment relates to a group of compounds, wherein

R^1 is NH_2,

R^2 is NH_2 or

R^1 and R^2 are NH_2.

A further embodiment relates to a group of compounds, wherein

X3 represents an amino acid residue selected from Gln, Glu and His,

X12 represents an amino acid residue selected from Ile and Lys,

X14 represents an amino acid residue having a side chain with an -NH_2 group, wherein the -NH_2 side chain group is functionalized by - C(O)-R^5, wherein R^5 is as described above,

X15 represents an amino acid residue selected from Asp and Glu,

X16 represents an amino acid residue selected from Ser, Lys, Glu and Gln,

X17 represents an amino acid residue selected from Arg, Lys, Glu, Ile, Gln, Leu, Aib, Tyr and Ala,

X18 represents an amino acid residue selected from Ala, Arg, Aib, Leu, Lys and Tyr,

X19 represents an amino acid residue selected from Ala, Gln, Val and Aib,

X20 represents an amino acid residue selected from Gln, Aib, Phe, Arg, Leu, Lys and His,

X21 represents an amino acid residue selected from Asp, Glu, Tyr, and Leu,

A further embodiment relates to a group of compounds, wherein

X28 represents Asn,

X29 represents Thr.

A further embodiment relates to a group of compounds, wherein

X3 represents an amino acid residue selected from Gln and Glu,

X12 represents Ile,

X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by $-C(O)-R^5$, **which** is selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53), (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),

X15 represents an amino acid residue selected from Asp and Glu,

X16 represents an amino acid residue selected from Ser and Lys,

X17 represents Arg,

X18 represents Ala,

X19 represents Ala,

X20 represents an amino acid residue selected from Gln and Aib,

X21 represents an amino acid residue selected from Asp and Glu,

X28 represents an amino acid residue selected from Asn and Ala,

X29 represents an amino acid residue selected from Gly and Thr,

X40 is absent.

A further embodiment relates to a group of compounds, wherein

X3 represents an amino acid residue selected from Gln and Glu,

X12 represents Ile,

X14 represents Lys, wherein the -NH_2 side chain group is functionalized by - C(O)-R^5, **which** is (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

A further embodiment relates to a group of compounds, wherein
X3 represents Glu,
X12 represents Ile,
X14 represents Lys, wherein the -NH_2 side chain group is functionalized by - C(O)-R^5, **which** is selected from (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents Glu,
X28 represents an amino acid residue selected from Asn and Ala,

Claims

1. A peptidic compound having the formula (I):

$R^1 - Z - R^2$ (I)

wherein Z is a peptide moiety having the formula (II)

Tyr-Aib-X3-Gly-Thr-Phe-Thr-Ser-Asp-Leu-Ser-X12-Gln-X14-X15-X16-X17-X18-X19-X20-X21-Phe-Ile-Glu-Trp-Leu-Lys-X28-X29-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-X40 (II)

X3 represents an amino acid residue selected from Gln, Glu and His,
X12 represents an amino acid residue selected from Ile and Lys,
X14 represents an amino acid residue having a side chain with an $-NH_2$ group, wherein the $-NH_2$ side chain group is functionalized by $-C(O)-R^5$, wherein R^5 may be a moiety comprising up to 50 or up to 100 carbon atoms and optionally heteroatoms selected from halogen, N, O, S and/or P,
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser, Lys, Glu and Gln,
X17 represents an amino acid residue selected from Arg, Lys, Glu, Gln, Leu, Aib, Tyr and Ala,
X18 represents an amino acid residue selected from Ala and Arg,
X19 represents an amino acid residue selected from Ala and Val,
X20 represents an amino acid residue selected from Gln, Aib, Lys and His,

X21 represents an amino acid residue selected from Asp, Glu and Leu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly, Thr and D-Ala,
X40 is either absent or represents Lys,

R^1 represents NH_2,
R^2 represents the C-terminal group of the peptidic compound and is selected from OH and NH_2,

or a salt or solvate thereof, wherein the compound is a GLP-1 and GIP receptor agonist.

2. A compound of claim 1, wherein
X14 represents an amino acid residue with a functionalized -NH_2 side chain group, such as functionalized Lys, Orn, Dab or Dap, wherein at least one H atom of the -NH_2 side chain group is replaced by -C(O)-R^5, which is selected from
(S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, 4-Hexadecanoylamino-butyryl-, 4-{3-[(R)-2,5,7,8-tetramethyl-2-((4R,8R)-4,8,12-trimethyl-tridecyl)-chroman-6-yloxycarbonyl]-propionylamino}-butyryl-, 4-octadecanoylamino-butyryl, 4-((Z)-octadec-9-enoylamino)-butyryl-, 6-[(4,4-Diphenyl-cyclohexyloxy)-hydroxy-phosphoryloxy]-hexanoyl-, Hexadecanoyl-, (S)-4-Carboxy-4-(15-carboxy-pentadecanoylamino)-butyryl-, (S)-4-Carboxy-4-{3-[3-((2S,3R,4S,5R)-5-carboxy-2,3,4,5-tetrahydroxy-pentanoylamino)-propionylamino]-propionylamino}-butyryl, (S)-4-Carboxy-4-{3-[(R)-2,5,7,8-tetramethyl-2-((4R,8R)-4,8,12-trimethyl-tridecyl)-chroman-6-yloxycarbonyl]-propionylamino}-butyryl-, (S)-4-Carboxy-4-((9Z,12Z)-octadeca-9,12-dienoylamino)-butyryl-, (S)-4-Carboxy-4-[6-((2S,3R,4S,5R)-5-carboxy-2,3,4,5-tetrahydroxy-pentanoylamino)-hexanoylamino]-butyryl-, (S)-4-Carboxy-4-

((2S,3R,4S,5R)-5-carboxy-2,3,4,5-tetrahydroxy-pentanoylamino)-butyryl-, (S)-4-Carboxy-4-tetradecanoylamino-butyryl-, (S)-4-(11-Benzyloxycarbonyl-undecanoylamino)-4-carboxy-butyryl-, (S)-4-Carboxy-4-[11-((2S,3R,4R,5R)-2,3,4,5,6-pentahydroxy-hexylcarbamoyl)-undecanoylamino]-butyryl-, (S)-4-Carboxy-4-((Z)-octadec-9-enoylamino)-butyryl-, (S)-4-Carboxy-4-(4-dodecyloxy-benzoylamino)-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-, (S)-4-Carboxy-4-docosanoylamino-butyryl-, (S)-4-Carboxy-4-((Z)-nonadec-10-enoylamino)-butyryl-, (S)-4-Carboxy-4-(4-decyloxy-benzoylamino)-butyryl-, (S)-4-Carboxy-4-[(4'-octyloxy-biphenyl-4-carbonyl)-amino]-butyryl-, (S)-4-Carboxy-4-(12-phenyl-dodecanoylamino)-butyryl-, (S)-4-Carboxy-4-icosanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-hexadecanoylamino-butyrylamino)-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl-, 3-(3-Hexadecanoylamino-propionylamino)-propionyl-, 3-Hexadecanoylamino-propionyl-, (S)-4-Carboxy-4-[(R)-4-((3R,5S,7R,8R,9R,10S,12S,13R,14R,17R)-3,7,12-trihydroxy-8,10,13-trimethyl-hexadecahydro-cyclopenta[a]phenanthren-17-yl)-pentanoylamino]-butyryl-, (S)-4-Carboxy-4-[(R)-4-((3R,5R,8R,9S,10S,13R,14S,17R)-3-hydroxy-10,13-dimethyl-hexadecahydro-cyclopenta[a]phenanthren-17-yl)-pentanoylamino]-butyryl-, (S)-4-Carboxy-4-((9S,10R)-9,10,16-trihydroxy-hexadecanoylamino)-butyryl-, tetradecanoyl-, 11-Carboxy-undecanoyl-, 11-Benzyloxycarbonyl-undecanoyl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-tetradecanoylamino-butyrylamino)-butyryl-, 6-[Hydroxy-(naphthalen-2-yloxy)-phosphoryloxy]-hexanoyl-, 6-[Hydroxy-(5-phenyl-pentyloxy)-phosphoryloxy]-hexanoyl-, 4-(Naphthalene-2-sulfonylamino)-4-oxo-butyryl-, 4-(Biphenyl-4-sulfonylamino)-4-oxo-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-

carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-, (S)-4-Carboxy-2-{(S)-4-carboxy-2-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-2-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-,(S)-4-Carboxy-2-{(S)-4-carboxy-2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-2-[2-(2-{2-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-butyryl-, 2-(2-{2-[2-(2-{2-[(S)-4-Carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetyl-, 2-(2-{2-[(S)-4-Carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetyl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-{(S)-4-carboxy-4-[(S)-4-carboxy-4-(19-carboxy-nonadecanoylamino)-butyrylamino]-butyrylamino}-butyrylamino)-butyryl-, 2-(2-{2-[2-(2-{2-[(S)-4-Carboxy-4-(16-1H-tetrazol-5-yl-hexadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetyl-, 2-(2-{2-[2-(2-{2-[(S)-4-Carboxy-4-(16-carboxy-hexadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetyl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[(S)-4-carboxy-4-(17-carboxy-heptadecanoylamino)-butyrylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-{2-[2-(2-{2-[2-(2-{(S)-4-carboxy-4-[10-(4-carboxy-phenoxy)-decanoylamino]-butyrylamino}-ethoxy)-ethoxy]-acetylamino}-ethoxy)-ethoxy]-acetylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(7-carboxy-heptanoylamino)-butyrylamino]-

ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(11-carboxy-undecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(13-carboxy-tridecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(15-carboxy-pentadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-, and (S)-4-Carboxy-4-{(S)-4-carboxy-4-[2-(2-{2-[2-(2-{2-[(S)-4-carboxy-4-(19-carboxy-nonadecanoylamino)-butyrylamino]-ethoxy}-ethoxy)-acetylamino]-ethoxy}-ethoxy)-acetylamino]-butyrylamino}-butyryl-,

X40 is absent or represents Lys.

3. A compound of any one of claims 1 - 2, wherein

X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, 4-octadecanoylamino-butyryl-, Hexadecanoyl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl-.

4. A compound according to any one of claims 1-3, wherein

X14 is Lys functionalized with C(O)-R^5, **which** is selected from the group consisting of (S)-4-carboxy-4-hexadecanoylamino-butyryl (γE-x53), (S)-4-carboxy-4-octadecanoylamino-butyryl (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl (γE-γE-x70), 4-octadecanoylamino-butyryl (GABA-x70), (S)-4-Carboxy-4-henicosanoylamino-butyryl (γE-x76), and 3-(3-Octadecanoylamino-propionylamino)-propionyl (β-Ala-β-Ala-x70).

5. A compound of any one of claims 1 - 4, wherein R^2 is NH_2.

6. A compound according to any one of claims 1-5,wherein the peptidic compound has a relative activity of at least 0.04%, preferably at least 0.08%, more preferably at least 0.2% compared to that of natural GIP at the GIP receptor.

7. A compound according to any one of claims 1-6, wherein the peptidic compound exhibits a relative activity of at least 0.07%, preferably at least 0.1%, more preferably at least 0.14%, more preferably at least 0.35% and even more preferably at least 0.4% compared to that of GLP-1(7-36) at the GLP-1 receptor.

8. A compound according to any one of claims 6 or 7, wherein the peptidic compound further exhibits a relative activity of at least 0.1%, preferably at least 0.2%, more preferably at least 0.3%, more preferably at least 0.4% and even more preferably at least 0.5% compared to that of natural glucagon at the glucagon receptor.

9. A compound of any one of claims 1 - 8, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl- and 4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-,
X15 represents an amino acid residue selected from Glu and Asp,
X16 represents an amino acid residue selected from Ser and Lys,

X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

10. A compound of any one of claims 1 – 9, wherein
X3 represents Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl- and 4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-,
X15 represents an amino acid residue selected from Glu and Asp,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

11. A compound of any one of claims 1 – 10, wherein

X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-octadecanoylamino-butyryl, 4-octadecanoylamino-butyryl-, (S)-4-Carboxy-4-henicosanoylamino-butyryl-, (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl-, 3-(3-Octadecanoylamino-propionylamino)-propionyl-.

12. A compound of any one of claims 1 – 9, wherein

X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl-, (S)-4-Carboxy-4-octadecanoylamino-butyryl-.

13. A compound of any one of claims 1 – 9, wherein

X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the -NH_2 side chain group is functionalized by one of the groups selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl- and (S)-4-Carboxy-4-octadecanoylamino-butyryl-,
X15 represents an amino acid residue selected from Glu and Asp,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

14. A compound of any one of claims 1 - 13, wherein X19 represents Ala.

15. A compound of any one of claims 1 - 14, wherein
X28 represents Ala,
X29 represents Gly.

16. A compound of any one of claims 1 - 14, wherein
X28 represents Asn,
X29 represents Thr.

17. A compound of any one of claims 1 - 9, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by - $C(O)-R^5$, **which** is selected from (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53), (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

18. A compound of any one of claims 1-9,12-17, wherein
X3 represents an amino acid residue selected from Gln and Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by - $C(O)-R^5$, **which** is (S)-4-Carboxy-4-hexadecanoylamino-butyryl- (γE-x53),
X15 represents an amino acid residue selected from Asp and Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,
X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents an amino acid residue selected from Asp and Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

19. A compound of any one of claims 1-11, 14-17, wherein
X3 represents Glu,
X12 represents Ile,
X14 represents Lys, wherein the $-NH_2$ side chain group is functionalized by - $C(O)-R^5$, **which** is selected from (S)-4-Carboxy-4-octadecanoylamino-butyryl- (γE-x70), (S)-4-Carboxy-4-((S)-4-carboxy-4-octadecanoylamino-butyrylamino)-butyryl- (γE-γE-x70), 3-(3-Octadecanoylamino-propionylamino)-propionyl- (βA-βA-x70), 4-octadecanoylamino-butyryl- (GABA-x70), and (S)-4-Carboxy-4-henicosanoylamino-butyryl- (γE-x76),
X15 represents Glu,
X16 represents an amino acid residue selected from Ser and Lys,
X17 represents Arg,

X18 represents Ala,
X19 represents Ala,
X20 represents an amino acid residue selected from Gln and Aib,
X21 represents Glu,
X28 represents an amino acid residue selected from Asn and Ala,
X29 represents an amino acid residue selected from Gly and Thr,
X40 is absent.

20. The compound of any one of claims 1-19, selected from the compounds of SEQ ID NO.: 8-39 or a salt or solvate thereof.

21. The compound of any one of claims 1-19, selected from the compounds of SEQ ID NO.: 8-10 and 12-38 or a salt or solvate thereof.

22. The compound of claim 20, selected from the compounds of SEQ ID NO.: 8-13 and 39 or a salt or solvate thereof.

23. The compound of claim 21, selected from the compounds of SEQ ID NO.: 8-10 and 12-13 or a salt or solvate thereof.

24. The compound of claim 20, selected from the compounds of SEQ ID NO.: 14-21 or a salt or solvate thereof.

25. The compound of claim 20, selected from the compounds of SEQ ID NO.: 22-38 or a salt or solvate thereof.

26. The compound of any one of claims 1-25 for use in medicine, particularly in human medicine.

27. The compound for use according to claim 26 which is present as an active agent in a pharmaceutical composition together with at least one pharmaceutically acceptable carrier.

28. The compound for use according to claim 26 or 27 together with at least one additional therapeutically active agent, wherein the additional therapeutically active agent is selected from the series of Insulin and Insulin derivatives, GLP-1, GLP-1 analogues and GLP-1 receptor agonists, polymer bound GLP-1 and GLP-1 analogues, dual GLP1/glucagon agonists, PYY3-36 or analogues thereof, pancreatic polypeptide or analogues thereof, Glucagon receptor agonists, GIP receptor agonists or antagonists, ghrelin antagonists or inverse agonists, Xenin and analogues thereof, DDP-IV inhibitors, SGLT2 inhibitors, dual SGLT2 / SGLT1 inhibitors, Biguanides Thiazolidinediones, dual PPAR agonists, Sulfonylureas, Meglitinides, alpha-glucosidase inhibitors, Amylin and Amylin analogues, GPR119 agonists, GPR40 agonists, GPR120 agonists, GPR142 agonists, systemic or low-absorbable TGR5 agonists, Cycloset, inhibitors of 11-beta-HSD, activators of glucokinase, inhibitors of DGAT, inhibitors of protein tyrosinephosphatase 1, inhibitors of glucose-6-phosphatase, inhibitors of fructose-1,6-bisphosphatase, inhibitors of glycogen phosphorylase, inhibitors of phosphoenol pyruvate carboxykinase, inhibitors of glycogen synthase kinase, inhibitors of pyruvate dehydrogenase kinase, alpha2-antagonists, CCR-2 antagonists, modulators of glucose transporter-4, Somatostatin receptor 3 agonists, HMG-CoA-reductase inhibitors, fibrates, nicotinic acid and the derivatives thereof, nicotinic acid receptor 1 agonists, PPAR-alpha, gamma or alpha/gamma) agonists or modulators, PPAR-delta agonists, ACAT inhibitors, cholesterol absorption inhibitors, bile acid-binding substances, IBAT inhibitors, MTP inhibitors, modulators of PCSK9, LDL receptor up-regulators by liver selective thyroid hormone receptor ß agonists, HDL-raising compounds, lipid metabolism modulators, PLA2 inhibitors , ApoA-I enhancers, thyroid hormone receptor agonists, cholesterol synthesis inhibitors, omega-3 fatty acids and derivatives thereof, active substances for the treatment of obesity, such as Sibutramine, Tesofensine, Orlistat, CB-1receptor antagonists, MCH-1 antagonists, MC4 receptor agonists and partial

agonists, NPY5 or NPY2 antagonists, NPY4 agonists, beta-3-agonists, leptin or leptin mimetics, agonists of the 5HT2c receptor, or the combinations of bupropione/naltrexone (CONTRAVE), bupropione/zonisamide (EMPATIC), bupropione/phentermine or pramlintide/metreleptin, QNEXA (Phentermine+ topiramate), lipase inhibitors, angiogenesis inhibitors, H3 antagonists, AgRP inhibitors, triple monoamine uptake inhibitors (norepinephrine and acetylcholine), MetAP2 inhibitors, nasal formulation of the calcium channel blocker diltiazem, antisense against production of fibroblast growth factor receptor 4, prohibitin targeting peptide-1, drugs for influencing high blood pressure, chronic heart failure or atherosclerosis, such as angiotensin II receptor antagonists, ACE inhibitors, ECE inhibitors, diuretics, beta-blockers, calcium antagonists, centrally acting hypertensives, antagonists of the alpha-2-adrenergic receptor, inhibitors of neutral endopeptidase, thrombocyte aggregation inhibitors.

29. The compound for use according to claim 26 or 27 together with at least one additional therapeutically active agent, wherein the additional therapeutically active agent particularly is a GLP-1 agonist and/or insulin or an insulin analogue and/or a gastrointestinal peptide.

30. The compound for use according to any one of claims 26-29 for the treatment or prevention of hyperglycemia, type 2 diabetes, impaired glucose tolerance, type 1 diabetes, obesity, metabolic syndrome and neurodegenerative disorders, particularly for delaying or preventing disease progression in type 2 diabetes, treating metabolic syndrome, treating obesity or preventing overweight, for decreasing food intake, increase energy expenditure, reducing body weight, delaying the progression from impaired glucose tolerance (IGT) to type 2 diabetes; delaying the progression from type 2 diabetes to insulin-requiring diabetes; regulating appetite; inducing satiety; preventing weight regain after successful weight loss; treating a disease or state related

to overweight or obesity; treating bulimia; treating binge eating; treating atherosclerosis, hypertension, IGT, dyslipidemia, coronary heart disease, hepatic steatosis, treatment of beta-blocker poisoning, use for inhibition of the motility of the gastro-intestinal tract, useful in connection with investigations of the gastro-intestinal tract using techniques such as X-ray, CT- and NMR-scanning.

31. The compound for use according to any one of claims 26-30 for the treatment or prevention of hyperglycemia, type 2 diabetes, obesity.