USE OF MELANOCORTINS TO TREAT INSULIN SENSITIVITY

BACKGROUND OF THE INVENTION

Melanocortins are a family of regulatory peptides which are formed by post-translational processing of pro-hormone pro-opiomelanocortin (POMC; 131 amino acids in length). POMC is processed into three classes of hormones; the melanocortins, adrenocorticotropin hormone, and various endorphins (e.g. lipotropin) (Cone *et al.*, Recent Prog. Horm. Res., 51:287-317, (1996); Cone *et al.*, Ann. N.Y. Acad. Sci., 31:342-363, (1993)).

Five melanocortin receptors (MC-R) have been characterized to date. These include melanocyte-specific receptor (MC1-R), corticoadrenal-specific ACTH receptor (MC2-R), melacortin-3 (MC3-R), melanocortin-4 (MC4-R) and melanocortin-5 receptor (MC5-R). All of the melanocortin receptors respond to the peptide hormone class of melanocyte stimulating hormones (MSH) (Cone *et al.*, Ann. N.Y. Acad. Sci., 680:342-363 (1993); Cone *et al.*, Recent Prog. Horm. Res., 51:287-318 (1996)).

There has been great interest in melanocortin (MC-R) receptors as targets for the design of novel therapeutics to treat disorders of body weight such as obesity and cachexia. One of the receptors, MC4-R, is a 332 amino acid transmembrane protein expressed in brain as well as placental and gut tissues (Cone *et al.*, Ann. N.Y. Acad. Sci., 680:342-363 (1993); Cone *et al.*, Recent Prog. Horm. Res., 51:287-318 (1996)). Recent pharmacological confirmation has established that central MC4-R receptors are the prime mediators of the anorexic and orexigenic effects reported for melanocortin agonists and antagonists, respectively (Giraudo *et al.*, Brain Res., 809:302-306 (1998); Farooqi *et al.*, NE J Med., 348:1085-1095 (2003); MacNeil *et al.*, Eu. J. Pharm., 44:141-157 (2002); MacNeil *et al.*, Eu. J. Pharm., 450:93-109 (2002); Kask *et al.*, NeuroReport, 10:707-711 (1999); Chen *et al.*,. Transgenic Res., 9:145-54, (2000); Marsh *et al.*, Nat Genet., 21:119-22, (1999); Balthasar *et al.*, Cell, 123:493-505 (2005)).

Complications of body weight disorders commonly include an inability to produce and utilize insulin, often resulting in faulty glucose regulation. The

consequence of failure to properly control glucose metabolism affects many aspects of overall health including energy metabolism, neuropathy and heart disease. Current progress with receptor-selective melanocortin receptor ligands evidences the therapeutic potential of melanocortin receptor activation, particularly MC4-R, in the treatment of glucose regulation, including insulin metabolism.

SUMMARY OF THE INVENTION

The present invention is directed to the use of peptides which are ligands of one or more of the melanocortin receptors (MC-R), or the pharmaceutically-acceptable salts thereof, to treat mammals suffering from insulin resistance. In one embodiment, the ligands are agonists to the melanocortin 4 receptor. In a preferred embodiment, the melanocortin receptor ligands are according to the formulae described herein or are selected from particular peptides described herein.

The insulin resistant subject mammals may be obese or overweight and may lose weight as a result of the administration of the peptides of the invention. The insulin resistant subject mammals may also be normal weight or lean. The insulin resistant condition of the subject mammals may be treated independent of weight loss. In addition, the subject mammals may be human subjects of any age, such as an infant, a child, an adult or an elderly adult.

In the first embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor 4 ligand according to Formula (I) and pharmaceutically acceptable salts, hydrates, solvates or prodrugs thereof (see International Patent Application Publication Number WO 2007/008704, incorporated herein by reference in its entirety):

$$(R^2R^3)\text{-}A^1\text{-}c(A^2\text{-}A^3\text{-}A^4\text{-}A^5\text{-}A^6\text{-}A^7\text{-}A^8\text{-}A^9)\text{-}A^{10}\text{-}R^1 \quad (I)$$

wherein:

A^1 is Acc, HN-$(CH_2)_m$-C(O), L- or D-amino acid, or deleted;

A^2 is Cys, D-Cys, hCys, D-hCys, Pen, D-Pen, Asp, or Glu;

A^3 is Gly, Ala, ß-Ala, Gaba, Aib, D-amino acid, or deleted;

A^4 is His, 2-Pal, 3-Pal, 4-Pal, Taz, 2-Thi, 3-Thi, or (X^1,X^2,X^3,X^4,X^5)Phe;

A^5 is D-Phe, D-1-Nal, D-2-Nal, D-Trp, D-Bal, D-(X^1,X^2,X^3,X^4,X^5)Phe, L-Phe or

D-(Et)Tyr;

A^6 is Arg, hArg, Dab, Dap, Lys, Orn, or HN-CH($(CH_2)_n$-N(R^4R^5))-C(O);

A^7 is Trp, 1-Nal, 2-Nal, Bal, Bip, D-Trp, D-1-Nal, D-2-Nal, D-Bal or D-Bip;

A^8 is Gly, D-Ala, Acc, Ala, β-Ala, Gaba, Apn, Ahx, Aha, HN-$(CH_2)_s$-C(O), or deleted;

A^9 is Cys, D-Cys, hCys, D-hCys, Pen, D-Pen, Dab, Dap, Orn, or Lys;

A^{10} is Acc, HN-$(CH_2)_t$-C(O), L- or D-amino acid, or deleted;

R^1 is OH or NH_2;

each of R^2 and R^3 is, independently for each occurrence, selected from the group consisting of H, (C_1-C_{30})alkyl, (C_1-C_{30})heteroalkyl, (C_1-C_{30})acyl, (C_2-C_{30})alkenyl, (C_2-C_{30})alkynyl, aryl(C_1-C_{30})alkyl, aryl(C_1-C_{30})acyl, substituted (C_1-C_{30})alkyl, substituted (C_1-C_{30})heteroalkyl, substituted (C_1-C_{30})acyl, substituted (C_2-C_{30})alkenyl, substituted (C_2-C_{30})alkynyl, substituted aryl(C_1-C_{30})alkyl, and substituted aryl(C_1-C_{30})acyl;

each of R^4 and R^5 is, independently for each occurrence, H, (C_1-C_{40})alkyl, (C_1-C_{40})heteroalkyl, (C_1-C_{40})acyl, (C_2-C_{40})alkenyl, (C_2-C_{40})alkynyl, aryl(C_1-C_{40})alkyl, aryl(C_1-C_{40})acyl, substituted (C_1-C_{40})alkyl, substituted (C_1-C_{40})heteroalkyl, substituted (C_1-C_{40})acyl, substituted (C_2-C_{40})alkenyl, substituted (C_2-C_{40})alkynyl, substituted aryl(C_1-C_{40})alkyl, substituted aryl(C_1-C_{40})acyl, (C_1-C_{40})alkylsulfonyl, or -C(NH)-NH_2;

m is, independently for each occurrence, 1, 2, 3, 4, 5, 6 or 7;

n is, independently for each occurrence, 1, 2, 3, 4 or 5;

s is, independently for each occurrence, 1, 2, 3, 4, 5, 6, or 7;

t is, independently for each occurrence, 1, 2, 3, 4, 5, 6, or 7;

X^1, X^2, X^3, X^4, and X^5 each is, independently for each occurrence, H, F, Cl, Br, I, ($C_{1\text{-}10}$)alkyl, substituted ($C_{1\text{-}10}$)alkyl, ($C_{2\text{-}10}$)alkenyl, substituted ($C_{2\text{-}10}$)alkenyl, ($C_{2\text{-}10}$)alkynyl, substituted ($C_{2\text{-}10}$)alkynyl, aryl, substituted aryl, OH, NH_2, NO_2, or CN; provided that

(I). when R^4 is (C_1-C_{40})acyl, aryl(C_1-C_{40})acyl, substituted (C_1-C_{40})acyl, substituted aryl(C_1-C_{40})acyl, (C_1-C_{40})alkylsulfonyl, or -C(NH)-NH_2, then R^5 is H or (C_1-C_{40})alkyl, (C_1-C_{40})heteroalkyl, (C_2-C_{40})alkenyl, (C_2-C_{40})alkynyl, aryl(C_1-C_{40})alkyl, substituted (C_1-C_{40})alkyl, substituted (C_1-

C_{40})heteroalkyl, substituted (C_2-C_{40})alkenyl, substituted (C_2-C_{40})alkynyl, or substituted aryl(C_1-C_{40})alkyl;

(II). when R^2 is (C_1-C_{30})acyl, aryl(C_1-C_{30})acyl, substituted (C_1-C_{30})acyl, or substituted aryl(C_1-C_{30})acyl, then R^3 is H, (C_1-C_{30})alkyl, (C_1-C_{30})heteroalkyl, (C_2-C_{30})alkenyl, (C_2-C_{30})alkynyl, aryl(C_1-C_{30})alkyl, substituted (C_1-C_{30})alkyl, substituted (C_1-C_{30})heteroalkyl, substituted (C_2-C_{30})alkenyl, substituted (C_2-C_{30})alkynyl, or substituted aryl(C_1-C_{30})alkyl;

(III). either A^3 or A^8 or both must be present in said compound;

(IV). when A^2 is Cys, D-Cys, hCys, D-hCys, Pen, or D-Pen, then A^9 is Cys, D-Cys, hCys, D-hCys, Pen, or D-Pen;

(V). when A^2 is Asp or Glu, then A^9 is Dab, Dap, Orn, or Lys;

(VI). when A^8 is Ala or Gly, then A^1 is not Nle; and

(VII). when A^1 is deleted, then R^2 and R^3 cannot both be H;

or pharmaceutically acceptable salts thereof.

In one aspect of the first embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a subgroup of melanocortin receptor ligands of the immediate foregoing Formula I, wherein`:

A^1 is A6c, Arg, D-Arg, Cha, D-Cha, hCha, Chg, D-Chg, Gaba, Ile, Leu, hLeu, Met, ß-hMet, 2-Nal, D-2-Nal, Nip, Nle, Oic, Phe, D-Phe, hPhe, hPro, Val, or deleted;

A^2 is Asp, Cys, D-Cys, hCys, D-hCys, Glu, Pen, or D-Pen;

A^3 is D-Abu, Aib, Ala, ß-Ala, D-Ala, D-Cha, Gaba, D-Glu, Gly, D-Ile, D-Leu, D-Tle, D-Val, or deleted;

A^4 is His or 3-Pal;

A^5 is D-Bal, D-1-Nal, D-2-Nal, D-Phe, D-Trp, or D-(Et)Tyr;

A^6 is Arg, or hArg;

A^7 is Bal, Bip, 1-Nal, 2-Nal, Trp, D-Trp;

A^8 is A6c, D-Ala, Aha, Ahx, Ala, ß-Ala, Apn, Gaba, Gly or deleted;

A^9 is Cys, D-Cys, hCys, D-hCys, Lys, Pen, or D-Pen;

A^{10} is Thr, or deleted;

wherein at least one of A^3 or A^8 is deleted, but not both,

or pharmaceutically acceptable salts thereof.

More preferred compounds of the immediately foregoing group of ligands according to Formula (I) useful to treat insulin resistance in a mammalian subject, with or without weight loss, are compounds of the formula:

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-A6c-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:2

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-NH_2; SEQ ID NO:3

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:2

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-NH_2; SEQ ID NO:4

Ac-A6c-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:5

Ac-D-2-Nal-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-ß-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Gaba-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Aib-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Gly-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(D-Cys-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-ß-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Gaba-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Aib-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Gly-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-ß-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Gaba-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Aib-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Gly-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(D-Cys-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-D-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-*ß*-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-Gaba-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-Aib-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Oic-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Nip-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hPro-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hLeu-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Phe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Phe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

n-butanoyl-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:12

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-*ß* -hMet-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Gaba-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Cha-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-hCha-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Leu-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-hLeu-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Phe-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-D-Ala-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-*ß*-Ala-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Gaba-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Aha-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Apn-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-D-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-NH_2; SEQ ID NO:16

n-butanoyl-Nle-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:17

n-butanoyl-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:17

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-1-Nal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Bal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:61

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-D-Ala-Lys)-NH_2; SEQ ID NO:19

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-NH_2; SEQ ID NO:20

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:21

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

D-Phe-c(Cys-His-D-Phe-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:23

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-Arg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:25

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:27

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Trp-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-OH; SEQ ID NO:29

Ac-Nle-c(Cys-D-Abu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Val-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Ile-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Tle-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:31

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Leu-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Cha-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Ile-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Val-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-2-Nal-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:35

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:36

Ac-Nle-c(Cys-His-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:37

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:39

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:39

Ac-hPhe-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Cha-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-OH; SEQ ID NO:41

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-OH; SEQ ID NO:42

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Ala-D-Cys)-Thr-OH; SEQ ID NO:43

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-OH; SEQ ID NO:43

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-OH; SEQ ID NO:43

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-OH; SEQ ID NO:42

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-OH; SEQ ID NO:41

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:29

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-D-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH;SEQ ID NO:44

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Gaba-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-D-Ala-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:47

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-OH; SEQ ID NO:29

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-OH; SEQ ID NO:48

Ac-Arg-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:49

Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:50

Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:50

Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:51

Ac-D-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:52

Ac-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:52

Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:51

Ac-D-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:53

Ac-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:53

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:27

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:2

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-NH_2; SEQ ID NO:3

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:2

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-NH_2; SEQ ID NO:4

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:21

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

D-Phe-c(Cys-His-D-Phe-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:23

D-Phe-c(Cys-His-D-Phe-Arg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:25

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Trp-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-OH; SEQ ID NO:29

Ac-Nle-c(Cys-D-Abu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Val-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Ile-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Tle-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:31

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Leu-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Cha-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Ile-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Val-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-2-Nal-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:35

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:36

Ac-Nle-c(Cys-His-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:37

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-NH_2; SEQ ID NO:20

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-β-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:39

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:39

Ac-hPhe-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Cha-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40 or

Ac-Arg-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:49

or pharmaceutically acceptable salts thereof.

In the second embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor ligand according to Formula (II) and pharmaceutically acceptable salts, hydrates, solvates or prodrugs thereof (see International Patent Application Publication Number WO 2007/008704 incorporated herein by reference in its entirety):

(R^2R^3)-A^1-c(A^2-A^3-A^4-A^5-A^6-A^7-A^8-A^9)-NH_2

(II)

wherein:

A^1 is Nle or deleted;

A^2 is Cys or Asp;

A^3 is Glu or D-Ala;

A^4 is His;

A^5 is D-Phe;

A^6 is Arg;

A^7 is Trp, 2-Nal or Bal;

A^8 is Gly, Ala, D-Ala, β-Ala, Gaba or Apn;

A^9 is Cys or Lys;

each of R^2 and R^3 is independently selected from the group consisting of H or (C_1-C_6)acyl;

provided that

(I). when R^2 is (C_1-C_6)acyl, then R^3 is H; and

(II). when A^2 is Cys, then A^9 is Cys,

or a pharmaceutically acceptable salt thereof.

More preferred of the immediately foregoing group of compounds which are useful to treat insulin resistance in a mammalian subject, with or without weight loss, are compounds of the formula:

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Ala-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-β-Ala-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:54

Ac-c(Cys-Glu-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:55

Ac-c(Cys-Glu-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2; SEQ ID NO:55

Ac-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:56

Ac-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2; SEQ ID NO:56

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:57

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-β-Ala-Cys)-NH_2; SEQ ID NO:57

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:57 or

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Ala-Lys)-NH_2; SEQ ID NO:58

or a pharmaceutically acceptable salt thereof.

In the third embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor compound according to Formula (III), and pharmaceutically acceptable salts, hydrates, solvates or prodrugs thereof (see International Application Publication Number WO 2007/008684, incorporated herein by reference in its entirety):

(R^2R^3)-B^1-A^1-c(A^2-A^3-A^4-A^5-A^6-A^7-A^8-A^9)-A^{10}-A^{11}-A^{12}-A^{13}-B^2-B^3-R^1

(III)

wherein:

B^1 is a peptide moiety which contains 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 ,or 15 amino acids, wherein at least 5 amino acids are independently selected from the group consisting of L-Arg, D-Arg, L-hArg and D-hArg, or B^1 is optionally deleted;

A^1 is Acc, HN-$(CH_2)_m$-C(O), L- or D-amino acid or deleted;

A^2 is Cys, D-Cys, hCys, D-hCys, Pen, D-Pen, Asp or Glu;

A^3 is Gly, Glu, Ala, ß-Ala, Gaba, Aib, D-amino acid or deleted;

A^4 is His, 2-Pal, 3-Pal, 4-Pal, Taz, 2-Thi, 3-Thi or (X^1,X^2,X^3,X^4,X^5)Phe;

A^5 is D-Phe, D-1-Nal, D-2-Nal, D-Trp, D-Bal, D-(X^1,X^2,X^3,X^4,X^5)Phe, D-(Et)Tyr, D-Dip, D-Bip or D-Bpa ;

A^6 is Arg, hArg, Dab, Dap, Lys, Orn or HN-CH($(CH_2)_n$-N(R^4R^5))-C(O);

A^7 is Trp, 1-Nal, 2-Nal, Bal, Bip, Dip, Bpa, D-Trp, D-1-Nal, D-2-Nal, D-Bal, D-Bip, D-Dip or D-Bpa;

A^8 is Gly, D-Ala, Acc, Ala, ß-Ala, Gaba, Apn, Ahx, Aha, HN-$(CH_2)_s$-C(O) or deleted;

A^9 is Cys, D-Cys, hCys, D-hCys, Pen, D-Pen, Dab, Dap, Orn or Lys;

A^{10} is Acc, HN-$(CH_2)_t$-C(O), Pro, hPro, 3-Hyp, 4-Hyp, Thr, an L- or D-amino acid or deleted;

A^{11} is Pro, hPro, 3-Hyp, 4-Hyp or deleted;

A^{12} is Lys, Dab, Dap, Arg, hArg or deleted;

A^{13} is Asp, Glu or deleted;

B^2 is a peptide moiety containing 1, 2, 3, 4, or 5 amino acids or deleted,

B^3 is a peptide moiety which contains 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15 amino acids wherein at least 5 amino acids are independently selected from the group consisting of L-Arg, D-Arg, L-hArg and D-hArg, or is deleted;

R^1 is OH or NH_2;

R^2 and R^3 each is , independently for each occurrence, selected from the group consisting of H, (C_1-C_{30})alkyl, (C_1-C_{30})heteroalkyl, (C_1-C_{30})acyl, (C_2-C_{30})alkenyl, (C_2-C_{30})alkynyl, aryl(C_1-C_{30})alkyl, aryl(C_1-C_{30})acyl, substituted (C_1-C_{30})alkyl, substituted (C_1-C_{30})heteroalkyl, substituted (C_1-C_{30})acyl, substituted (C_2-C_{30})alkenyl, substituted (C_2-C_{30})alkynyl, substituted aryl(C_1-C_{30})alkyl and substituted aryl(C_1-C_{30})acyl;

R^4 and R^5 each is, independently for each occurrence, H, (C_1-C_{40})alkyl, (C_1-C_{40})heteroalkyl, (C_1-C_{40})acyl, (C_2-C_{40})alkenyl, (C_2-C_{40})alkynyl, aryl(C_1-C_{40})alkyl, aryl(C_1-C_{40})acyl, substituted (C_1-C_{40})alkyl, substituted (C_1-C_{40})heteroalkyl, substituted (C_1-C_{40})acyl, substituted (C_2-C_{40})alkenyl, substituted (C_2-C_{40})alkynyl, substituted aryl(C_1-C_{40})alkyl, substituted aryl(C_1-C_{40})acyl, (C_1-C_{40})alkylsulfonyl or C(NH)-NH_2;

n is, independently for each occurrence, 1, 2, 3, 4 or 5;

m is, independently for each occurrence, 1, 2, 3, 4, 5, 6 or 7;

s is, independently for each occurrence, 1, 2, 3, 4, 5, 6 or 7;

t is, independently for each occurrence, 1, 2, 3, 4, 5, 6 or 7;

X^1, X^2, X^3, X^4 and X^5 each is, independently for each occurrence, H, F, Cl, Br, I, ($C_{1\text{-}10}$)alkyl, substituted ($C_{1\text{-}10}$)alkyl, ($C_{2\text{-}10}$)alkenyl, substituted ($C_{2\text{-}10}$)alkenyl, ($C_{2\text{-}10}$)alkynyl, substituted ($C_{2\text{-}10}$)alkynyl, aryl, substituted aryl, OH, NH_2, NO_2 or CN;

provided that:

(I) when R^4 is (C_1-C_{40})acyl, aryl(C_1-C_{40})acyl, substituted (C_1-C_{40})acyl, substituted aryl(C_1-C_{40})acyl, (C_1-C_{40})alkylsulfonyl or C(NH)-NH_2, then R^5 is H, (C_1-C_{40})alkyl, (C_1-C_{40})heteroalkyl, (C_2-C_{40})alkenyl, (C_2-C_{40})alkynyl, aryl(C_1-C_{40})alkyl, substituted (C_1-C_{40})alkyl, substituted (C_1-C_{40})heteroalkyl, substituted (C_2-C_{40})alkenyl, substituted (C_2-C_{40})alkynyl or substituted aryl(C_1-C_{40})alkyl;

(II) when R^2 is (C_1-C_{30})acyl, aryl(C_1-C_{30})acyl, substituted (C_1-C_{30})acyl or substituted aryl(C_1-C_{30})acyl, then R^3 is H, (C_1-C_{30})alkyl, (C_1-C_{30})heteroalkyl, (C_2-C_{30})alkenyl, (C_2-C_{30})alkynyl, aryl(C_1-C_{30})alkyl, substituted (C_1-C_{30})alkyl, substituted

(C_1-C_{30})heteroalkyl, substituted (C_2-C_{30})alkenyl, substituted (C_2-C_{30})alkynyl or substituted aryl(C_1-C_{30})alkyl;

(III) neither B^1 nor B^2 contains one or more of the following amino acid sequences: Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$, Tyr-Ala-Arg-Lys-Ala-$(Arg)_2$-Gln-Ala-$(Arg)_2$, Tyr-Ala-Arg-$(Ala)_2$-$(Arg)_2$-$(Ala)_2$-$(Arg)_2$, Tyr-Ala-$(Arg)_9$, Tyr-$(Ala)_3$-$(Arg)_7$, Tyr-Ala-Arg-Ala-Pro-$(Arg)_2$-Ala-$(Arg)_3$ or Tyr-Ala-Arg-Ala-Pro-$(Arg)_2$-Pro-$(Arg)_2$;

(IV) either B^1 or B^2 or both must be present in said compound;

(V) when A^2 is Cys, D-Cys, hCys, D-hCys, Pen or D-Pen, then A^9 is Cys, D-Cys, hCys, D-hCys, Pen or D-Pen; and

(VI) when A^2 is Asp or Glu, then A^9 is Dab, Dap, Orn or Lys;

or pharmaceutically acceptable salts thereof.

In one aspect of the third embodiment, the invention is directed to the use of compounds of Formula (III) to treat insulin resistance in a mammalian subject, with or without weight loss, wherein

B^1 is Arg-Lys-Gln-Lys-$(Arg)_5$, Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$, Arg-$(Lys)_2$-$(Arg)_3$-Gln-$(Arg)_2$, Arg-$(Lys)_2$-$(Arg)_4$-Gln-Arg, Arg-$(Lys)_2$-$(Arg)_5$-Gln, Arg-$(Lys)_2$-Gln-$(Arg)_5$, Arg-Gln-$(Lys)_2$-$(Arg)_5$, Arg-Gln-$(Arg)_7$, Arg-Gln-$(Arg)_8$, $(Arg)_2$-Gln-$(Arg)_6$, $(Arg)_2$-Gln-$(Arg)_7$, $(Arg)_3$-Gln-$(Arg)_5$, $(Arg)_3$-Gln-$(Arg)_6$, $(Arg)_4$-Gln-$(Arg)_4$, $(Arg)_4$-Gln-$(Arg)_5$, $(Arg)_5$, $(Arg)_5$-Gln-$(Arg)_3$, $(Arg)_5$-Gln-$(Arg)_4$, $(Arg)_6$, $(Arg)_6$-Gln-$(Arg)_3$, $(Arg)_7$, $(Arg)_7$-Gln-$(Arg)_2$, $(Arg)_8$, $(Arg)_8$-Gln-Arg, $(Arg)_9$, $(Arg)_9$-Gln, (D-Arg)$_5$, (D-Arg)$_6$, (D-Arg)$_7$, (D-Arg)$_8$, (D-Arg)$_9$, Gln-Arg-$(Lys)_2$-$(Arg)_5$, Gln-$(Arg)_8$, Gln-$(Arg)_9$, Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$, Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Doc; or deleted;

B^2 is ß-Ala, ß-Ala-Gly, ß-Ala-Tyr, ß-Ala-Tyr-Gly, (ß-Ala)$_2$, (ß-Ala)$_2$-Gly, (ß-Ala)$_2$-Tyr, (ß-Ala)$_2$-Tyr-Gly, Doc, Doc-Gly, Doc-Tyr, Doc-Tyr-Gly, $(Doc)_2$, $(Doc)_2$-Gly, $(Doc)_2$-Tyr, $Doc)_2$-Tyr-Gly, or deleted;

B^3 is Arg-Lys-Gln-Lys-$(Arg)_5$, Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$, Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$, Arg-$(Lys)_2$-Gln-$(Arg)_5$, Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$, Arg-$(Lys)_2$-$(Arg)_3$-Gln-$(Arg)_2$, Arg-$(Lys)_2$-$(Arg)_4$-Gln-Arg, Arg-$(Lys)_2$-$(Arg)_5$-Gln, Arg-Gln-$(Lys)_2$-$(Arg)_5$, Arg-Gln-$(Arg)_7$, Arg-Gln-$(Arg)_8$, $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$, $(Arg)_2$-Gln-$(Arg)_6$, $(Arg)_2$-Gln-$(Arg)_7$, $(Arg)_3$-Gln-$(Arg)_5$, $(Arg)_3$-Gln-$(Arg)_6$, $(Arg)_4$-Gln-$(Arg)_4$, $(Arg)_4$-Gln-$(Arg)_5$, $(Arg)_5$, $(Arg)_5$-Gln-$(Arg)_3$, $(Arg)_5$-Gln-$(Arg)_4$, $(Arg)_6$, $(Arg)_6$-Gln-$(Arg)_3$, $(Arg)_7$, $(Arg)_7$-

Gln-$(Arg)_2$, $(Arg)_8$, $(Arg)_8$-Gln-Arg, $(Arg)_9$, $(Arg)_9$-Gln, $(D\text{-}Arg)_5$, $(D\text{-}Arg)_6$, $(D\text{-}Arg)_7$, $(D\text{-}Arg)_8$, $(D\text{-}Arg)_9$, Gln-Arg-$(Lys)_2$-$(Arg)_5$, Gln-$(Arg)_8$, Gln-$(Arg)_9$, or deleted;

A^1 is A6c, Cha, hCha, Chg, D-Chg, hChg, Gaba, hLeu, Met, ß-hMet, D-2-Nal, Nip, Nle, Oic, Phe, D-Phe, hPhe, hPro, or deleted;

A^2 is Cys

A^3 is D-Abu, Aib, Ala, ß-Ala, D-Ala, D-Cha, Gaba, Glu, Gly, D-Ile, D-Leu, D-Met, D-Nle, D-Phe, D-Tle, D-Trp, D-Tyr, D-Val, or deleted;

A^4 is His;

A^5 is D-Bal, D-1-Nal, D-2-Nal, D-Phe, D-(X^1,X^2,X^3,X^4,X^5)Phe, D-Trp, or D-(Et)Tyr;

A^6 is Arg or hArg;

A^7 is Bal, Bip, 1-Nal, 2-Nal, Trp, or D-Trp;

A^8 is A5c, A6c, Aha, Ahx, Ala, ß-Ala, Apn, Gaba, Gly, or deleted;

A^9 is Cys, D-Cys, hCys, D-hCys, Lys, Pen, or D-Pen;

A^{10} is Pro, Thr or deleted;

A^{11} is Pro or deleted;

A^{12} is arg, Lys, or deleted;

A^{13} is Asp or deleted;

each of R^2 and R^3 is, independently, H or acyl;

or pharmaceutically acceptable salts thereof.

Preferred ligands of the immeduiately foregoing group of compounds according to Formula (III), useful to treat insulin resistance in a mammalian subject, with or without weight loss, are compounds of the formula:

Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2; (SEQ ID NO:60)

Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Doc-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2; (SEQ ID NO:61)

Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:62)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:62)

Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:63)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Pro)_2$-Lys-Asp-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:64)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:65)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(\beta\text{-Ala})_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:66)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:67)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:68)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:69)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:69)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:70)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:72)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:73)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:74)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:75)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-β-Ala-Tyr-Gly-Arg-$(Lys)_2$-Gln-$(Arg)_5$-NH_2; (SEQ ID NO:76)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Gln-Lys-$(Arg)_5$-NH_2; (SEQ ID NO:77)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_4$-Gln-Arg-NH_2; (SEQ ID NO:78)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Aib-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:79)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:80)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:80)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:81)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:82)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:82)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:81)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:83)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:84)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:83)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_3$-Gln-$(Arg)_2$-NH_2; (SEQ ID NO:85)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Gln-$(Lys)_2$-$(Arg)_5$-NH_2; (SEQ ID NO:86)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_5$-Gln-NH_2; (SEQ ID NO:87)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:88)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:89)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:88)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:90)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:91)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:92)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:93)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:94)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:95)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:96)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:97)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:92)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:98)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:99)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:100)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:101)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:102)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:103)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:104)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:105)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:100)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:101)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:102)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:103)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:106)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Gln-$(Arg)_5$-NH_2; (SEQ ID NO:107)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Gln-Lys-$(Arg)_5$-NH_2; (SEQ ID NO:108)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Gln-$(Lys)_2$-$(Arg)_5$-NH_2; (SEQ ID NO:109)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_3$-Gln-$(Arg)_2$-NH_2; (SEQ ID NO:110)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_4$-Gln-Arg-NH_2; (SEQ ID NO:111)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_5$-Gln-NH_2; (SEQ ID NO:112)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:113)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:113)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:114)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:114)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:115)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:115)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:116)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:116)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:117)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:117)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:118)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:118)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:119)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:119)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:120)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:120)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:121)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:121)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:122)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:122)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:123)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:123)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:124)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:124)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:125)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:125)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:126)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:126)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:127)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:127)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:128)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:128)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:129)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:129)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:130)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:130)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:131)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:131)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:132)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:133)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:133)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:134)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:134)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:135)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:135)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:136)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:137)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:136)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:139)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:140)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:141)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:142)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:141)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:142)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:143)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:144)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:145)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:146)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:148)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:147)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:147)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:148)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:149)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:149)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:151)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:150)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:150)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:151)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:152)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:152)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:154)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:153)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:153)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:154)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:155)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:155)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:157)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:156)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:156)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:157)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:158)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:158)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:159)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:160)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:161)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:162)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:164)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:163)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:163)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:164)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-Ala})_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:165)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:165)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:166)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:166)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:168)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:167)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:167)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:168)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:170)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:169)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:169)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:170)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:171)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:171)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:173)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:172)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:172)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:173)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:174)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:174)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:175)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:176)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:177)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:178)

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:179)

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:180)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:181)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:182)

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:183)

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:184)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:183)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:185)

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:186)

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:185)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:186)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:188)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:187)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:188)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:189)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:190)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:189)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:190)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:191)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:192)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:191)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:192)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:193)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:194)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:193)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:194)

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:195)

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:196)

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:197)

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:198)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:199)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:200)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:199)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:200)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:201)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:202)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:203)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:203)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:205)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:204)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:204)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:205)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:207)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:206)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:206)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:207)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:208)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:208)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:209)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:210)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:209)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:211)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:212)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:213)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:213)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:267)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:214)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:216)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:214)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:217)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:215)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:216)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:215)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:217)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:218)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:219)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:218)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:219)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:221)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:220)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:221)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:222)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:223)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:222)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:223)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:224)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:225)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:224)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:225)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:227)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:226)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:228)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:227)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:228)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:229)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:230)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:232)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:231)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:232)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:233)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:234)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:235)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:236)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:235)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:236)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:237)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:238)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:237)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:238)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:239)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:240)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:239)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:240)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:241)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:242)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:241)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:242)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:243)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:244)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:243)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:244)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:245)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:246)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:245)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:246)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:247)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:248)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:247)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:248)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:249)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:250)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:249)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:250)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:251)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:252)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:251)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:252)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:253)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:254)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:253)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:254)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:255)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:256)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:255)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:256)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:257)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:258)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:257)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:258)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:259)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:260)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:259)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:260)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:261)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:262)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:261)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:262)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:263)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:264)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:263)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:264)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:265)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:266)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:265) or

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:266);

or pharmaceutically acceptable salts thereof.

In a fourth embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor compound according to Formula (IV), and pharmaceutically acceptable salts, hydrates, solvates and prodrugs thereof, with a compound having the following formula (formula (IV)):

Ac-c(Cys-Glu-His-A^1-Arg-A^2-A^3-Cys)-$(Pro)_2$-Lys-Asp-NH_2

(IV)

wherein:

A^1 is the D-isomer of X-Phe or 2-Nal where X is halogen;

A^2 is Bal, 1-Nal, 2-Nal, or Trp; and

A^3 is Aib, Ala, ß-Ala or Gly,

or pharmaceutically acceptable salts thereof.

Preferred compounds of the immediately foregoing formula discovered to treat insulin resistance in a mammalian subject, with or without weight loss, include the following:

Ac-c(Cys-Glu-His-D-4-Br-Phe-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:268)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:2690)

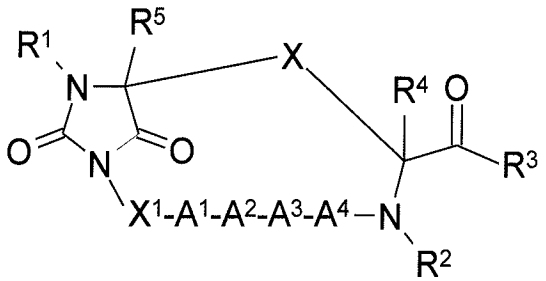
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-ß-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:270) or

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Aib-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:270)

or pharmaceutically acceptable salts thereof.

The invention additionally provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor compound modified with a hydantoin moiety according to Formula (V), (VI) or (VII), and pharmaceutically acceptable salts, hydrates, solvates or prodrugs thereof.

According to a fifth embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor ligand according to the following formula (Formula (V)), pharmaceutically-acceptable salts, hydrates, solvates and/or prodrugs thereof (see International Patent Application Number PCT/US08/06675 incorporated herein by reference in its entirety):



(V)

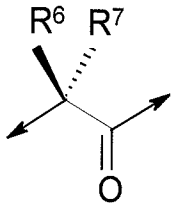
wherein

X is selected from the group consisting of $-CH_2-S-S-CH_2-$, $-C(CH_3)_2-S-S-CH_2-$, $-CH_2-S-S-C(CH_3)_2-$, $-C(CH_3)_2-S-S-C(CH_3)_2-$, $-(CH_2)_2-S-S-CH_2-$, $-CH_2-S-S-(CH_2)_2-$, $-(CH_2)_2-S-S-(CH_2)_2-$, $-C(CH_3)_2-S-S-(CH_2)_2-$, $-(CH_2)_2-S-S-C(CH_3)_2-$, $-(CH_2)_t-C(O)-NR^8-(CH_2)_r-$ and $-(CH_2)_r-NR^8-C(O)-(CH_2)_t-$;

R^1 and R^2 each is, independently, H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl;

R^3 is -OH or $-NH_2$;

R^4 and R^5 each is, independently, H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl;

X^1 is  ;

A^1 is His, 2-Pal, 3-Pal, 4-Pal, (X^1,X^2,X^3,X^4,X^5)Phe, Taz, 2-Thi, 3-Thi or is deleted;

A^2 is D-Bal, D-1-Nal, D-2-Nal, D-Phe or D-(X^1,X^2,X^3,X^4,X^5)Phe;

A^3 is Arg, hArg, Dab, Dap, Lys or Orn;

A^4 is Bal, 1-Nal, 2-Nal, (X^1,X^2,X^3,X^4,X^5)Phe or Trp;

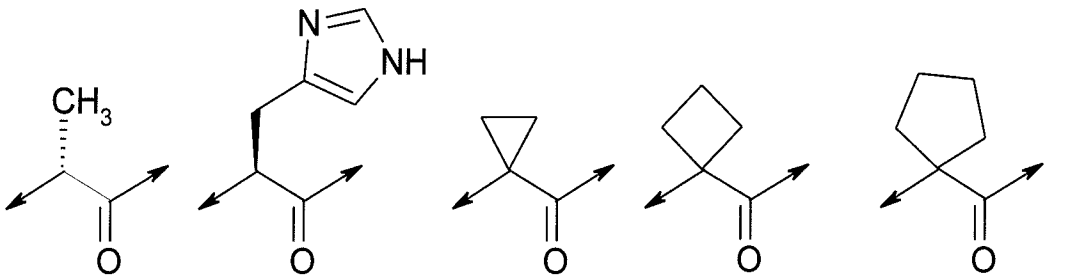
R^6 and R^7 each is, independently for each occurrence thereof, H, (C_1-C_{10})alkyl, (C_1-C_{10})heteroalkyl, aryl(C_1-C_5)alkyl, substituted (C_1-C_{10})alkyl, substituted (C_1-C_{10})heteroalkyl or substituted aryl(C_1-C_5)alkyl provided that R^6 and R^7 may be joined together to form a ring;

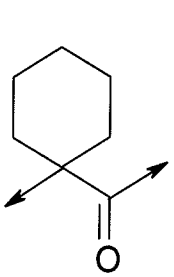
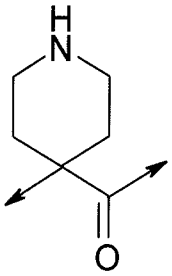
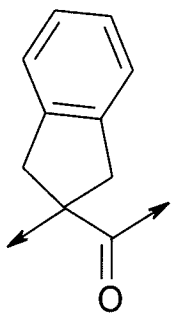
R^8 is H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl;

r is, independently for each occurrence thereof, 1, 2, 3, 4 or 5; and

t is, independently for each occurrence thereof, 1 or 2.

Preferrably, a compound according the foregoing fourmula found useful to treat insulin resistance in a mammalian subject, with or without weight loss, include compounds wherein X^1 is selected from the group consisting of:


,
,
,
,
,


, 
and 
. Representative embodiments

of the foregoing class of compounds useful to treat insulin resistance in a mammalian subject, with or without weight loss, are as follows:

c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO: 271)

c[Hydantoin(C(O)-(hCys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:271)

c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-2-Nal-Arg-Trp-Cys]-NH_2; (SEQ ID NO:272) or

c[Hydantoin(C(O)-(hCys-D-Ala))-His-D-2-Nal-Arg-Trp-Cys]-NH_2; (SEQ ID NO:272)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2; (SEQ ID NO:273) or

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-His))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-His))-D-Phe-Arg-Trp-Lys]-NH_2 (SEQ ID NO: 274)

c[Hydantoin(C(O)-(Asp-A3c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A5c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A6c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A3c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-A5c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-A6c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-Aic))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-Apc))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin-(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2(SEQ ID NO:275)

c[Hydantoin-(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)

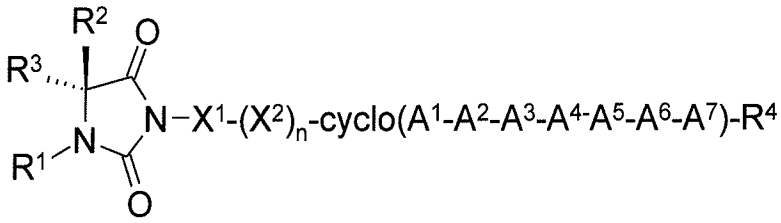
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2; (SEQ ID NO:276) or

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2, (SEQ ID NO:276)

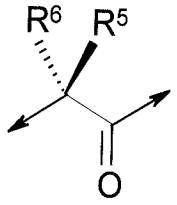
c[Hydantoin(C(O)-(Glu-His))-D-Phe-Arg-Trp-Dap]-NH_2 (SEQ ID NO:277)

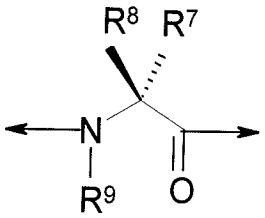
According to a sixth embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor compound according to Formula (VI), pharmaceutically-acceptable salts, hydrates, solvates and/or prodrugs thereof (see International Patent Application Number PCT/US08/06675 which is incorporated herein by reference in its entirety):



(VI)

wherein

X^1 is  ;

X^2 is  ;

A^1 is Asp, Cys, D-Cys, Dab, Dap, Glu, Lys, Orn, Pen or D-Pen;

A^2 is an L- or D-amino acid;

A^3 is His, 2-Pal, 3-Pal, 4-Pal, (X^1,X^2,X^3,X^4,X^5)Phe, Taz, 2-Thi or 3-Thi;

A^4 is D-Bal, D-1-Nal, D-2-Nal, D-Phe or D-(X^1,X^2,X^3,X^4,X^5)Phe;

A^5 is Arg, hArg, Dab, Dap, Lys or Orn;

A^6 is Bal, 1-Nal, 2-Nal, (X^1,X^2,X^3,X^4,X^5)Phe or Trp, ;

A^7 is Asp, Cys, D-Cys, Dab, Dap, Glu, Lys, Orn, Pen or D-Pen;

R^1 is H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl;

R^2 and R^3 each is, independently, H, (C_1-C_{10})alkyl, (C_1-C_{10})heteroalkyl, aryl(C_1-C_5)alkyl, substituted (C_1-C_{10})alkyl, substituted (C_1-C_{10})heteroalkyl or substituted aryl(C_1-C_5)alkyl or R^2 and R^3 may be fused together form a cyclic moiety;

R^4 is CO_2H or $C(O)NH_2$;

R^5 and R^6 each is, independently, H, (C_1-C_{10})alkyl, (C_1-C_{10})heteroalkyl, aryl(C_1-C_5)alkyl, substituted (C_1-C_{10})alkyl, substituted (C_1-C_{10})heteroalkyl or substituted aryl(C_1-C_5)alkyl or R^5 and R^6 may be fused together form a cyclic moiety;

R^7 and R^8 each is, independently, H, (C_1-C_{10})alkyl, (C_1-C_{10})heteroalkyl, aryl(C_1-C_5)alkyl, substituted (C_1-C_{10})alkyl, substituted (C_1-C_{10})heteroalkyl or substituted aryl(C_1-C_5)alkyl; or R^7 and R^8 may be fused together form a cyclic moiety;

R^9 is H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl; and

n is, independently for each occurrence thereof, 1, 2, 3, 4, 5, 6 or 7;

or a pharmaceutically acceptable salt thereof.

A preferred class of compounds according to Formula (VI) useful to treat insulin resistance in a mammalian subject, with or without weight loss, are those compounds wherein:

A^1 is Cys;

A^2 is D-Ala, Asn, Asp, Gln, Glu or D-Phe;

A^3 is His;

A^4 is D-2-Nal or D-Phe;

A^5 is Arg;

A^6 is Trp; and

A^7 is Cys or Pen;

each of R^1, R^2, R^3, and R^9 is, independently, H;

R^4 is $C(O)NH_2$;

each of R^5 and R^6 is, independently, H, $(C_1\text{-}C_{10})$alkyl, $(C_1\text{-}C_{10})$heteroalkyl, substituted $(C_1\text{-}C_{10})$alkyl or substituted $(C_1\text{-}C_{10})$heteroalkyl or R^5 and R^6 may be fused together form a cyclic moiety; and

each of R^7 and R^8 is, independently, H, $(C_1\text{-}C_{10})$alkyl, $(C_1\text{-}C_{10})$heteroalkyl, substituted $(C_1\text{-}C_{10})$alkyl or substituted $(C_1\text{-}C_{10})$heteroalkyl;

or pharmaceutically acceptable salts thereof.

Preferred compounds of the immediately foregoing formula (Formula (VI)) useful to treat insulin resistance in a mammalian subject, with or without weight loss, include:

Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Aib-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Val-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Ile-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Leu-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:281)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:281)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:282)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:282)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Aib-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Val-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Ile-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Leu-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279) or

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Ala-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(Val-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(Gly-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(A6c-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Gly-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(D-Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Val-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Leu-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Cha-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)or

Hydantoin(C(O)-(Aib-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:285)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:285)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:286)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:286)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:287)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:287)

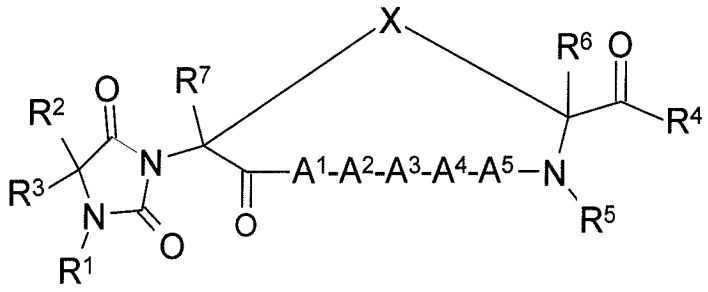
Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:288) and

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:288)

Hydantoin(C(O)-(Nle-Ala))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:289);

or pharmaceutically acceptable salts thereof.

In a seventh embodiment, the invention provides a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor ligand belonging to a class of cyclic peptide analogs that are ligands for the melanocortin receptors having a structure according to Formula (VII) as depicted below (see International Patent Application Number PCT/US08/06675 which is incorporated herein by reference in its entirety):



(VII)

wherein

X is selected from the group consisting of $-CH_2-S-S-CH_2-$, $-C(CH_3)_2-S-S-CH_2-$, $-CH_2-S-S-C(CH_3)_2-$, $-C(CH_3)_2-S-S-C(CH_3)_2-$, $-(CH_2)_2-S-S-CH_2-$, $-CH_2-S-S-(CH_2)_2$,

$-(CH_2)_2$-S-S-$(CH_2)_2$-, -$C(CH_3)_2$-S-S-$(CH_2)_2$-, -$(CH_2)_2$-S-S-$C(CH_3)_2$-, -$(CH_2)_t$-C(O)-NR^8-$(CH_2)_r$- and -$(CH_2)_r$- NR^8-C(O)-$(CH_2)_t$-;

each of R^1 and R^5 is, independently, H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl;

each of R^2 and R^3 is, independently, H, (C_1-C_{10})alkyl, (C_1-C_{10})heteroalkyl, aryl(C_1-C_5)alkyl, substituted (C_1-C_{10})alkyl, substituted (C_1-C_{10})heteroalkyl or substituted aryl(C_1-C_5)alkyl or R^2 and R^3 may be fused together to form a ring;

R^4 is OH or NH_2;

each of R^6 and R^7 is, independently, H, (C_1-C_{10})alkyl or substituted (C_1-C_{10})alkyl;

A^1 is an L- or D-amino acid or deleted;

A^2 is His, 2-Pal, 3-Pal, 4-Pal, (X^1,X^2,X^3,X^4,X^5)Phe, Taz, 2-Thi or 3-Thi;

A^3 is D-Bal, D-1-Nal, D-2-Nal, D-Phe or D-(X^1,X^2,X^3,X^4,X^5)Phe;

A^4 is Arg, hArg, Dab, Dap, Lys or Orn,;

A^5 is Bal, 1-Nal, 2-Nal, (X^1,X^2,X^3,X^4,X^5)Phe or Trp,;

r is, independently for each occurrence thereof, 1, 2, 3, 4 or 5; and

t is, independently for each occurrence thereof, 1 or 2;

or pharmaceutically acceptable salts thereof.

In the preferred aspect of the compounds according to Formula (VII) useful to treat insulin resistance in a mammalian subject, with or without weight loss,

A^1 is Ala, D-Ala, Asn, Asp, Gln, Glu or Gly;

or pharmaceutically acceptable salts thereof.

Preferred compounds according to Formula (VII) useful in the treatment of insulin resistance in a mammalian subject, include the following compounds:

c[Hydantoin(C(O)-(Nle-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Ala-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(D-Ala-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Aib-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Val-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Abu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Leu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Ile-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Cha-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(A6c-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Phe-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Gly-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290) or

c[Hydantoin(C(O)-(Gly-Cys))-Glu-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:291) or

c[Hydantoin(C(O)-(Gly-Cys))-Glu-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:291);

or pharmaceutically acceptable salts thereof.

In an eighth embodiment, the present invention is directed to a method to treat insulin resistance in a mammalian subject, with or without weight loss, by the administration of a therapeutically effective amount of a melanocortin receptor ligand according to Formula (VIII) (see International Patent Application Number PCT/US08/07411, incorporated herein by reference in its entirety):

$$(R^2R^3)\text{-}\ A^0\text{-}A^1\text{-}c(A^2\text{-}A^3\text{-}A^4\text{-}A^5\text{-}A^6\text{-}A^7\text{-}A^8\text{-}A^9)\text{-}A^{10}\text{-}R^1$$
(VIII)

wherein:

A^0 is an aromatic amino acid

A^1 is Acc, HN-$(CH_2)_m$-C(O), an L- or D-amino acid;

A^2 is Asp, Cys, D-Cys, hCys, D-hCys, Glu, Pen, or D-Pen;

A^3 is Aib, Ala, β-Ala, Gaba, Gly or a D-amino acid;

A^4 is His, 2-Pal, 3-Pal, 4-Pal, (X^1,X^2,X^3,X^4,X^5)Phe, Taz, 2-Thi, or 3-Thi;

A^5 is D-Bal, D-1-Nal, D-2-Nal, D-Phe, L-Phe, D-(X^1,X^2,X^3,X^4,X^5)Phe, L-Phe, D-Trp or D-(Et)Tyr;

A^6 is Arg, hArg, Dab, Dap, Lys, Orn, or HN-CH($(CH_2)_n$-N(R^4R^5))-C(O);

A^7 is Bal, D-Bal, Bip, D-Bip, 1-Nal, D-1-Nal, 2-Nal, D-2-Nal, or D-Trp;

A^8 is Acc, Aha, Ahx, Ala, D-Ala, β-Ala, Apn, Gaba, Gly, HN-$(CH_2)_s$-C(O), or deleted;

A^9 is Cys, D-Cys, hCys, D-hCys, Dab, Dap, Lys, Orn, Pen, or D-Pen;

A^{10} is Acc, HN-$(CH_2)_t$-C(O), L- or D-amino acid, or deleted;

R^1 is OH, or NH_2;

each of R^2 and R^3 is, independently for each occurrence selected from the group consisting of H, (C_1-C_{30})alkyl, (C_1-C_{30})heteroalkyl, (C_1-C_{30})acyl, (C_2-C_{30})alkenyl, (C_2-C_{30})alkynyl, aryl(C_1-C_{30})alkyl, aryl(C_1-C_{30})acyl, substituted (C_1-C_{30})alkyl, substituted (C_1-C_{30})heteroalkyl, substituted (C_1-C_{30})acyl, substituted (C_2-C_{30})alkenyl, substituted (C_2-C_{30})alkynyl, substituted aryl(C_1-C_{30})alkyl, and substituted aryl(C_1-C_{30})acyl;

each of R^4 and R^5 is, independently for each occurrence, H, (C_1-C_{40})alkyl, (C_1-C_{40})heteroalkyl, (C_1-C_{40})acyl, (C_2-C_{40})alkenyl, (C_2-C_{40})alkynyl, aryl(C_1-C_{40})alkyl, aryl(C_1-C_{40})acyl, substituted (C_1-C_{40})alkyl, substituted (C_1-C_{40})heteroalkyl, substituted (C_1-C_{40})acyl, substituted (C_2-C_{40})alkenyl, substituted (C_2-C_{40})alkynyl, substituted aryl(C_1-C_{40})alkyl, substituted aryl(C_1-C_{40})acyl, (C_1-C_{40})alkylsulfonyl, or -C(NH)-NH_2;

m is, independently for each occurrence, 1, 2, 3, 4, 5, 6 or 7;

n is, independently for each occurrence, 1, 2, 3, 4 or 5;

s is, independently for each occurrence, 1, 2, 3, 4, 5, 6, or 7;

t is, independently for each occurrence, 1, 2, 3, 4, 5, 6, or 7;

X^1, X^2, X^3, X^4, and X^5 each is, independently for each occurrence, H, F, Cl, Br, I, (C_{1-10})alkyl, substituted (C_{1-10})alkyl, (C_{2-10})alkenyl, substituted (C_{2-10})alkenyl,

(C_{2-10})alkynyl, substituted (C_{2-10})alkynyl, aryl, substituted aryl, OH, NH_2, NO_2, or CN; provided that

(I). when R^4 is (C_1-C_{40})acyl, aryl(C_1-C_{40})acyl, substituted (C_1-C_{40})acyl, substituted aryl(C_1-C_{40})acyl, (C_1-C_{40})alkylsulfonyl, or -C(NH)-NH_2, then R^5 is H or (C_1-C_{40})alkyl, (C_1-C_{40})heteroalkyl, (C_2-C_{40})alkenyl, (C_2-C_{40})alkynyl, aryl(C_1-C_{40})alkyl, substituted (C_1-C_{40})alkyl, substituted (C_1-C_{40})heteroalkyl, substituted (C_2-C_{40})alkenyl, substituted (C_2-C_{40})alkynyl, or substituted aryl(C_1-C_{40})alkyl;

(II). when R^2 is (C_1-C_{30})acyl, aryl(C_1-C_{30})acyl, substituted (C_1-C_{30})acyl, or substituted aryl(C_1-C_{30})acyl, then R^3 is H, (C_1-C_{30})alkyl, (C_1-C_{30})heteroalkyl, (C_2-C_{30})alkenyl, (C_2-C_{30})alkynyl, aryl(C_1-C_{30})alkyl, substituted (C_1-C_{30})alkyl, substituted (C_1-C_{30})heteroalkyl, substituted (C_2-C_{30})alkenyl, substituted (C_2-C_{30})alkynyl, or substituted aryl(C_1-C_{30})alkyl;

(III). when A^2 is Cys, D-Cys, hCys, D-hCys, Pen, or D-Pen, then A^9 is Cys, D-Cys, hCys, D-hCys, Pen, or D-Pen;

(IV). when A^2 is Asp or Glu, then A^9 is Dab, Dap, Orn, or Lys;

(V). when A^8 is Ala or Gly, then A^1 is not Nle; or

pharmaceutically acceptable salts thereof.

A preferred group of compounds of the immediate foregoing formula useful to treat insulin resistance in a mammalian subject, with or without weight loss, is wherein

A^0 is 1-Nal, 2-Nal, His, Pff, Phe, Trp, or Tyr;

A^1 is Arg;

A^2 is Cys;

A^3 is D-Ala;

A^4 is His;

A^5 is D-Phe;

A^6 is Arg;

A^7 is Trp;

A^8 is deleted;

A^9 is Cys; and

A^{10} is deleted;

or pharmaceutically acceptable salts thereof.

Preferred compounds of the immediately foregoing group of compounds is which are useful to treat insulin resistance in a mammalian subject, with or without weight loss, of the formula:

Ac-Tyr-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-2-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-1-Nal-Arg-c(Cys-D-Ala-His-DPhe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Phe-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Trp-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Pff-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

H-His-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:293) or

Ac-His-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

or pharmaceutically acceptable salts thereof.

In yet another preferred embodiment, the compound or compounds of Formula (I), (II), (III), (IV), (V), (VI), (VII) or (VIII) as defined hereinabove, which are useful to treat insulin resistance in a mammalian subject, with or without weight loss, or a pharmaceutically acceptable salt thereof, are provided to said subject in need in a composition with a pharmaceutically acceptable carrier or diluent.

In preferred embodiment, the invention provides a method of treating insulin resistance in a subject in need thereof, comprising peripheral administration of an effective amount of a melanocortin receptor 4 agonist to treat the insulin resistance in the subject in need thereof.

In one aspect, the melanocortin receptor 4 agonist useful to treat insulin resistance with or without an accompanying reduction in body weight in the subject in need thereof, is selected from the group consisting of:

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-A6c-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:2

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-β-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-NH_2; SEQ ID NO:3

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:2

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-NH_2; SEQ ID NO:4

Ac-A6c-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:5

Ac-D-2-Nal-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-β-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Gaba-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Aib-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Gly-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(D-Cys-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-ß-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Gaba-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Aib-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Gly-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-ß-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Gaba-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Aib-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Gly-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(D-Cys-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-D-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-ß-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-Gaba-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-Aib-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Oic-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Nip-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hPro-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hLeu-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Phe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Phe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

n-butanoyl-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:12

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-ß-hMet-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Gaba-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Cha-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-hCha-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Leu-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-hLeu-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Phe-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-D-Ala-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Gaba-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Aha-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Apn-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-D-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-NH_2; SEQ ID NO:16

n-butanoyl-Nle-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:17

n-butanoyl-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:17

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-1-Nal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Bal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:61

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-D-Ala-Lys)-NH_2; SEQ ID NO:19

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-NH_2; SEQ ID NO:20

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:21

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

D-Phe-c(Cys-His-D-Phe-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:23

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-Arg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:25

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:27

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Trp-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-OH; SEQ ID NO:29

Ac-Nle-c(Cys-D-Abu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Val-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Ile-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Tle-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:31

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Leu-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Cha-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Ile-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Val-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-2-Nal-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:35

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:36

Ac-Nle-c(Cys-His-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:37

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-β-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:39

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:39

Ac-hPhe-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Cha-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-*ß*-Ala-Lys)-OH; SEQ ID NO:41

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-OH; SEQ ID NO:42

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Ala-D-Cys)-Thr-OH; SEQ ID NO:43

D-Phe-c(Cys-His-D-Phe-Arg-Trp-*ß*-Ala-D-Cys)-Thr-OH; SEQ ID NO:43

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-OH; SEQ ID NO:43

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-OH; SEQ ID NO:42

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-OH; SEQ ID NO:41

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-D-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Gaba-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-β-Ala-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-D-Ala-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:47

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-OH; SEQ ID NO:48

Ac-Arg-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:49

Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:50

Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:50

Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:51

Ac-D-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:52

Ac-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:52

Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:51

Ac-D-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:53

Ac-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:53

Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:35

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Ala-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:54

Ac-c(Cys-Glu-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:55

Ac-c(Cys-Glu-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2; SEQ ID NO:55

Ac-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:56

Ac-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2; SEQ ID NO:56

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:57

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:57

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Ala-Lys)-NH_2; SEQ ID NO:58

Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2;

(SEQ ID NO:60)

Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Doc-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2; (SEQ ID NO:61)

Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:62)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:62)

Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:63)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Pro)_2$-Lys-Asp-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:64)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:65)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO66)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:67)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:68)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:69)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:69)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:70)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:72)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:73)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:74)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:75)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Gln-$(Arg)_5$-NH_2; (SEQ ID NO:76)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Gln-Lys-$(Arg)_5$-NH_2; (SEQ ID NO:77)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_4$-Gln-Arg-NH_2; (SEQ ID NO:78)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Aib-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:79)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:80)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:80)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:81)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:82)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:82)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:81)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:83)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:84)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:83)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_3$-Gln-$(Arg)_2$-NH_2; (SEQ ID NO:85)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Gln-$(Lys)_2$-$(Arg)_5$-NH_2; (SEQ ID NO:86)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_5$-Gln-NH_2; (SEQ ID NO:87)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:88)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:89)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:88)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:90)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:91)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:92)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:95)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:96)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:97)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:92)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:98)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:99)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:101)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:104)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:105)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:100)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:101)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:102)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:103)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:113)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:113)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:114)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:114)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:115)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:115)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:116)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:116)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:118)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:118)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:119)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:120)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:120)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:121)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:121)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:122)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:122)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:124)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:125)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:125)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:126)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:126)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:127)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:127)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:128)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:128)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:130)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:130)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:133)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:134)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:134)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:135)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:135)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:136)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:137)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:136)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:139)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:140)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:141)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:142)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:141)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:142)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala- $(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:143)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:144)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala- $(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:148)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:148)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:149);

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:149)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:151)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:150)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:150)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:151)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:152)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:152)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:154)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:153)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:154)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:155)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:155)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:157)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:156)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:156)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:157)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:158)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:158)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:159)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:160)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:161)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:162)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:164)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:163)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:163)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:164)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:165)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:165)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:166)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:166)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:168)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:167)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:167)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:168)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:170)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:169)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:169)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:170)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:171)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:171)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:173)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:172)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:172)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:173)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:174)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:174)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:175)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:176)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:177)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:178)

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:179)

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:180)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:181)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:182)

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:183)

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:184)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:183)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:185)

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:186)

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:185)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:186)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:188)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:187)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:188)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:189)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:190)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:189)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:190)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:191)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:192)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:191)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:192)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:193)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:194)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:193)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:194)

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:195)

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:196)

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:197)

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:198)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:199)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:200)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:199)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:200)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:201)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:202)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:203)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:203)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:205)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:204)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:204)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:205)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:207)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:206)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:206)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:207)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:208)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:208)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:209)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:210)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:209)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:211)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:212)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:213)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:213)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:267)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:214)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:216)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:214)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:217)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:215)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:216)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:215)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:217)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:218)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:219)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:218)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:219)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:221)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:220)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:221)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:222)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:223)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:222)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:223)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:224)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:225)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:224)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:225)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:227)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:226)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:228)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:227)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:228)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:229)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:230)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:232)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:231)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:232)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:233)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:234)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:235)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:236)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:235)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:236)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:237)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:238)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:237)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:238)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:239)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:240)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:239)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:240)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:241)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:242)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:241)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:242)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:243)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:244)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:243)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:244)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:245)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:246)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:245)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:246)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:247)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:248)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:247)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:248)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:249)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:250)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:249)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:250)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:251)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:252)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:251)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:252)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:253)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:254)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:253)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:254)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:255)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:256)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:255)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:256)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:257)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:258)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:257)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:258)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:259)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:260)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:259)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:260)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:261)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:262)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:261)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:262)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:263)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:264)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:263)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:264)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:265)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:266)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:265)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:266)

Ac-c(Cys-Glu-His-D-4-Br-Phe-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:268)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-ß-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:270)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Aib-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:270)

c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:271)

c[Hydantoin(C(O)-(hCys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:271)

c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-2-Nal-Arg-Trp-Cys]-NH_2; (SEQ ID NO:272)

c[Hydantoin(C(O)-(hCys-D-Ala))-His-D-2-Nal-Arg-Trp-Cys]-NH_2; (SEQ ID NO:272)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-His))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-His))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A3c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A5c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A6c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A3c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-A5c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-A6c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin (C(O)-(Asp-A5c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-Aic))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-Apc))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin-(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin-(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-His))-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:277)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Aib-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Val-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Ile-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Leu-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:281)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:281)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:282)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:282)

Hydantoin(C(O)-(Ala-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(Val-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(Gly-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(A6c-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Gly-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(D-Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Val-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Leu-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Cha-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Aib-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:285)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:285)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:286)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:286)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:287)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:288)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:288)

Hydantoin(C(O)-(Nle-Ala))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:289)

c[Hydantoin(C(O)-(Ala-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2, (SEQ ID NO:290)

c[Hydantoin(C(O)-(Nle-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(D-Ala-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Aib-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Val-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Abu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Leu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Ile-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Cha-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(A6c-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Phe-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Gly-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Gly-Cys))-Glu-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:291)

Ac-Tyr-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-2-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-1-Nal-Arg-c(Cys-D-Ala-His-DPhe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Phe-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Trp-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Pff-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

H-His-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:293) and

Ac-His-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

or a pharmaceutically acceptable salt thereof.

In one preferred aspect, the melanocortin receptor 4 agonist useful to treat insulin resistance in the subject in need thereof, is Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:50) or a pharmaceutically acceptable salt thereof. In another preferred aspect, the melanocortin receptor 4 agonist useful to treat insulin resistance in the subject in need thereof, is Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278) or a pharmaceutically acceptable salt thereof.

In other aspects of the invention, administration of a compound or compostion comprising a compound or pharmaceutical salt of a compound of the invention useful to treat insulin resistance, is continuous, hourly, four times daily, three time daily, twice daily, once daily, once every other day, twice weekly, once weekly, once every two weeks, once a month, or once every two months, or longer.

The subject in need of treatment may be obese, overweight, of normal weight or lean. The obese, overweight, normal weight or lean subject may suffer from type II diabetes. The preferred administration of a compound or compostion comprising a compound or pharmaceutical salt of a compound of the invention useful to treat insulin resistance, is peripheral administration. Examples of peripheral administration include oral, subcutaneous, intraperitoneal, intramuscular, intravenous, rectal, transdermal or intranasal forms of administration.

BRIEF DESCRIPTION OF THE DRAWINGS:

Figure 1: Food consumed in fasted rats 6 hours after administration of 100 nmole/Kg of selected compounds.

Figure 2. Effect of subcutaneous administration of 75, 300 or 600 nmole/kg/day of Compound A upon (A) body weight, (B) cumulative food intake, (C) insulin levels and (D) glucose levels in rats.

Figure 3. Effect of subcutaneous administration of 75, 300 or 600 nmole/kg/day of Compound B upon (A) body weight, (B) cumulative food intake, (C) insulin levels and (D) glucose levels in rats.

Figure 4. Effect of subcutaneous administration of 200, 600 or 1800 nmole/kg/day of Compound A upon blood glucose levels in mice.

Figure 5. Effect of intraperitoneal administration of 6.4 μmole/kg of Compound A upon blood glucose levels in obese mice.

DETAILED DESCRIPTION OF THE INVENTION

Recent studies have reported that staggering numbers of people world wide are overweight and suffering a wide variety of serious and expensive health problems. According the World Health Organization (as reported in Kouris-Blazos *et al.*, Asia Pac. J. Clin. Nutr., 2007, 16:329-338), an estimated 1 billion people throughout the world are overweight and an estimated 300 million of these are obese. An estimated 22 million children under the age of 5 are severely overweight and in the European Union alone, the number of children who are overweight is expected to rise by 1.3 million children per year (Kosti *et al.*, 2006, Cent. Eur. J. Public Health, 14:151-159). Obesity, as defined by the Statistical Bulletin provided by the Metropolitan Life Insurance Co., (1959, 40:1), is a condition in which a person is approximately 20-25% over normal body weight. Alternatively, an individual is considered obese if the person has a body mass index of greater than 25% over normal or greater than 30% over normal with risk factors (see Bray *et al.*, Diabetes/Metabolism Review, 1988, 4:653-679 or Flynn *et al.*, Proc. Nutritional Society, 1991, 50:413). One of the main causes for obesity is the consumption of a high caloric diet (Riccardi *et al.*, Clin. Nutr., 2004, 23:447-456).

Diabetes is a chronic, debilitating disease afflicting many overweight and obese people. It is estimated that 20.8 million people in the United States alone have diabetes and more than 6 million more additional cases remain undiagnosed (Cornell, Manag. Care Pharm., 2007, 13:S11-5). Type 2 diabetes (also referred to herein as type II diabetes) is a chronic disease characterized by insulin resistance, impaired insulin secretion and hyperglycemia. Worldwide, type II diabetes is believed to affect approximately 171 million people, imparting numerous microvascular and macrovascular complications resulting in morbidity and mortality (Mudaliar, Indian J. Med. Res., 2007, 125:275-296). Mudaliar further notes that

despite the availability of anti-hyperglycaemic agents available, control of glucose remains elusive in many patients.

Insulin resistance, also referred to as reduced insulin sensitivity, is a condition in which the amount of insulin needed to clear glucose from the blood of a subject is increased as compared to the amount of insulin needed to clear the same amount of glucose from the blood of a normal, non-insulin sensitive subject. Insulin resistance is regarded as the main link between obesity and type II diabetes (see Obici *et al.*, J. Clin. Inv., 2001, 108:1079-1085 and references therein). It is known that rats fed a high fat diet show an increase in body weight (diet-induced obesity or DIO) and a decrease in insulin sensitivity. Such DIO rats provide an animal model in which to study the mechanisms of insulin resistance due to obesity (see for example Banno *et al.*, FEBS letters, 2007, 581:1131-1136). The size and weight of adipose tissues are increased in DIO rats and it is thought that the accompanying hypertrophy of adipocytes leads to changes in the release of adipocytokines such as leptin and adiponectin which are known to regulate insulin sensitivity; it is thought that morphological changes in adipose tissue as well as changes in plasma levels of adipocytokines are among the causes of insulin resistance in DIO rats (summarized in Banno, et al., FEBS letters, 2007, 581:1131-1136 and references therein).

Melanocortins are proposed to play a large role in energy metabolism and homeostasis. Melanocortins cleaved from the POMC precursor exert their effects by binding to members of the melanocortin receptor family located in the brain. The major effect of melanocortin in the brain is to reduce food intake however, it has also been shown that melanocortin agonists or antagonists injected directly into the cerebral ventricle affect insulin actions in the periphery while food was withdrawn or while food intake was kept constant (see Schwartz *et al.*, Nature, 2000, 404:661-671; Seeley *et al.*, Ann. Rev. Nutr., 2004, 24:133-149; Cone *et al.*, Recent Prog. Horm. Res., 1996, 51:287-317; Heijbor *et al.*, Diabetologia, 2005, 48:1621-1626; Obici *et al.*, J. Clin. Inv., 2001, 108:1079-1085). Taken together, these data suggest that central administration of melanocortins affects insulin sensitivity and may do so independently of energy balance. Banno *et al.*, (FEBS letters, 2007, 581:1131-1136) demonstrated that intracerebral injections of a melanocortin agonist to DIO rats

ameliorated insulin sensitivity in the periphery, decreased the size of and increased the number of adipocytes in white adipose tissue and decreased triglycerides content in the liver.

Considering the large numbers of overweight and/or insulin resistant subjects in need of treatment, intracerebral administration is an unlikely means to disperse medicaments to patients. There is a need in the art, therefore, to identify melanocortin agonists and antagonists suitable for peripheral administration to affect parameters of insulin action and energy metabolism such as insulin sensitivity, cellular characteristics of white adipose tissue, triglyceride levels and the like.

Nomenclature and Abbreviations

As used herein, an "obese subject" or mammal is characterized as having a body weight approximately 20% or greater than the normal body weight for said subject. Normal body weight may be determined by a comparison of the weight of the subject at a prior point in time, such as when insulin metabolism was normal, or by a comparison of the weight of the subject as compared to averages of other subjects of a similar age and/or condition.

As used herein, an "overweight subject" or mammal is characterized as having a body weight approximately 5% greater to approximately 20% greater than the normal body weight for said subject. Normal body weight may be determined by a comparison of the weight of the subject at a prior point in time, such as when insulin metabolism was normal, or by a comparison of the weight of the subject as compared to averages of other subjects of a similar age and/or condition.

As used herein, a "normal subject" or mammal is characterized as having a body weight up to approximately 5% greater than to approximately 5% less than the normal body weight for said subject. Normal body weight may be determined by a comparison of the weight of the subject at a prior point in time, such as when insulin metabolism was normal, or by a comparison of the weight of the subject as compared to averages of other subjects of a similar age and/or condition.

As used herein, a "lean subject" or mammal is characterized as having a body weight approximately 5% to 30% or even to 50% less than the normal body weight for said subject. Normal body weight may be determined by a comparison of the

weight of the subject at a prior point in time, such as when insulin metabolism was normal, or by a comparison of the weight of the subject as compared to averages of other subjects of a similar age and/or condition.

As used herein, the terms "treat", "treating" and "treatment" include palliative, curative and prophylactic treatment.

As used herein, "measurable" means the biologic effect is both reproducible and significantly different from the baseline variability of the assay.

As used herein, peripherial administration includes all forms of administration of a compound or a composition comprising a compound of the instant invention which excludes intracranial administration. Examples of peripheral administration include, but are not limited to, oral, parenteral (*e.g.*, intramuscular, intraperitoneal, intravenous or subcutaneous injection, implant and the like), nasal, vaginal, rectal, sublingual or topical routes of administration, including transdermal patch applications and the like.

A "subject", as used herein and throughout this application, refers to a mammalian or non-mammalian animal including, for example and without limitation, a human, a rat, a mouse or farm animal. Reference to a subject does not necessarily indicate the presence of a disease or disorder. The term "subject" includes, for example, a mammalian or non-mammalian animal being dosed with a melanocortin analog as part of an experiment, a mammalian or non-mammalian animal being treated to help alleviate a disease or disorder, and a mammalian or non-mammalian animal being treated prophylactically to retard or prevent the onset of a disease or disorder. Subject mammals may be human subjects of any age, such as an infant, a child, an adult or an elderly adult.

A "therapeutically acceptable amount" of a compound or composition of the invention, regardless of the formulation or route of administration, is that amount which elicits a desired biological response in a subject. The biological effect of the therapeutic amount may occur at and be measured at many levels in an organism. For example, the biological effect of the therapeutic amount may occur at and be measured at the cellular level by measuring the response at a receptor which binds melanocortin and/or a melanocortin analog, or the biological effect of the therapeutic

amount may occur at and be measured at the system level, such as effecting an increase/decrease in the levels of insulin. The biological effect of the therapeutic amount may occur at and be measured at the organism level, such as the alleviation of a symptom(s) or progression of a disease or condition in a subject. A therapeutically acceptable amount of a compound or composition of the invention, regardless of the formulation or route of administration, may result in one or more biological responses in a subject. In the event that the compound or composition of the invention is subject to testing in an *in vitro* system, a therapeutically acceptable amount of the compound or composition may be viewed as that amount which gives a measurable response in the *in vitro* system of choice.

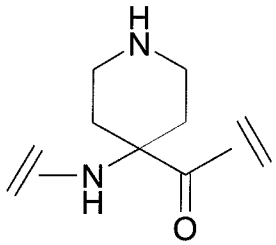
The nomenclature used to define the peptides is that typically used in the art wherein the amino group at the N-terminus appears to the left and the carboxyl group at the C-terminus appears to the right. Where the amino acid has D and L isomeric forms, it is the L form of the amino acid that is represented unless otherwise explicitly indicated.

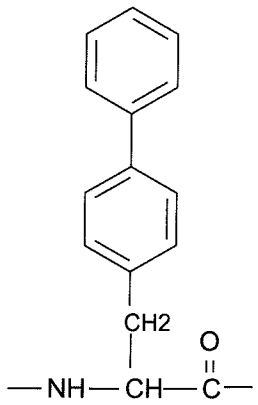
The compounds of the invention useful for the treatment of insulin resistance, with or without weight loss, may possess one or more chiral centers and so exist in a number of stereoisomeric forms. All stereoisomers and mixtures thereof are included in the scope of the present invention. Racemic compounds may either be separated using preparative HPLC and a column with a chiral stationary phase or resolved to yield individual enantiomers utilizing methods known to those skilled in the art. In addition, chiral intermediate compounds may be resolved and used to prepare chiral compounds of the invention.

The compounds of the invention useful for the treatment of insulin resistance, with or without weight loss, may exist in one or more tautomeric forms. All tautomers and mixtures thereof are included in the scope of the present invention. For example, a claim to 2-hydroxypyridinyl would also cover its tautomeric form, α-pyridonyl.

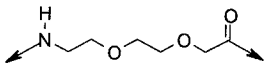
Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this

invention belongs. Also, all publications, patent applications, patents and other references mentioned herein are incorporated by reference in their entirety.

Symbol	Meaning
Abu	α-aminobutyric acid
Ac	acyl group
Acc	1-amino-1-cyclo(C_3-C_9)alkyl carboxylic acid
A3c	1-amino-1-cyclopropanecarboxylic acid
A4c	1-amino-1-cyclobutanecarboxylic acid
A5c	1-amino-1-cyclopentanecarboxylic acid
A6c	1-amino-1-cyclohexanecarboxylic acid
Aha	7-aminoheptanoic acid
Ahx	6-aminohexanoic acid
Aib	α-aminoisobutyric acid
Aic	2-aminoindan-2-carboxylic acid
Ala or A	alanine
β-Ala	β-alanine
Apc	denotes the structure: 
Apn	5-aminopentanoic acid (HN-$(CH2)_4$-C(O)
Arg or R	arginine
hArg	homoarginine
Asn or N	asparagine
Asp or D	aspartic acid
Bal	3-benzothienylalanine
Bip	4,4'-biphenylalanine, represented by the structure



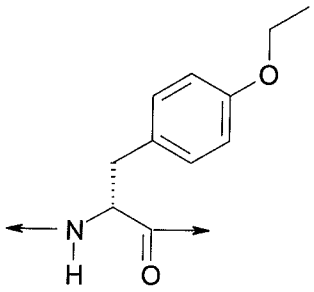
	Bpa	4-benzoylphenylalanine
	4-Br-Phe	4-bromo-phenylalanine
	Cha	ß-cyclohexylalanine
5	hCha	homo-cyclohexylalanine
	Chg	cyclohexylglycine
	Cys or C	cysteine
	hCys	homocysteine
	Dab	2,4-diaminobutyric acid
10	Dap	2,3-diaminopropionic acid
	Dip	*ß,ß*-diphenylalanine
	Doc	8-amino-3,6-dioxaoctanoic acid with the structure of:



	2-Fua	β-(2-furyl)-alanine
15	Gaba	4-aminobutyric acid
	Gln or Q	glutamine
	Glu or E	glutamic acid
	Gly or G	glycine
	His or H	histidine
20	3-Hyp	trans-3-hydroxy-L-proline, *i.e.*, (2S, 3S)-3-hydroxypyrrolidine-2-carboxylic acid
	4-Hyp	4-hydroxyproline, *i.e.*, (2S, 4R)-4-hydroxypyrrolidine-2-carboxylic acid
	Ile or I	isoleucine
	Leu or L	leucine

hLeu	homoleucine
Lys or K	lysine
Met or M	methionine
ß-hMet	ß-homomethionine
1-Nal	ß-(1-naphthyl)alanine:
2-Nal	ß-(2-naphthyl)alanine
Nip	nipecotic acid
Nle	norleucine
Oic	octahydroindole-2-carboxylic acid
Orn	ornithine
2-Pal	ß-(2-pyridiyl)alanine
3-Pal	ß-(3-pyridiyl)alanine
4-Pal	ß-(4-pyridiyl)alanine
Pen	penicillamine
Pff	(*S*)-pentafluorophenylalanine
Phe or F	phenylalanine
hPhe	homophenylalanine
Pro or P	proline
hPro	homoproline
Ser or S	serine
Tle	tert-Leucine
Taz	ß-(4-thiazolyl)alanine
2-Thi	ß-(2-thienyl)alanine
3-Thi	ß-(3-thienyl)alanine
Thr or T	threonine
Trp or W	tryptophan
Tyr or Y	tyrosine

D-(Et)Tyr	has a structure of



Val or V valine

Certain other abbreviations used herein are defined as follows:

Boc: *tert*-butyloxycarbonyl

Bzl: benzyl

DCM: dichloromethane

DIC: N, N-diisopropylcarbodiimide

DIEA: diisopropylethyl amine

Dmab: 4-{N-(1-(4,4-dimethyl-2,6-dioxocyclohexylidene)-3-methylbutyl)-amino} benzyl

DMAP: 4-(dimethylamino)pyridine

DMF dimethylformamide

DNP: 2,4-dinitrophenyl

Fm: fluorenylmethyl

Fmoc: fluorenylmethyloxycarbonyl

For: formyl

HBTU: 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate

cHex cyclohexyl

HOAT: O-(7-azabenzotriazol-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate

HOBt: 1-hydroxy-benzotriazole

MBHA 4-methylbenzhydrylamine

Mmt: 4-methoxytrityl

NMP: N-methylpyrrolidone

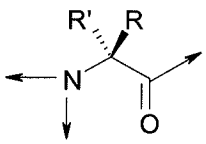
O-tBu oxy-tert-butyl

Pbf: 2,2,4,6,7-pentamethyldihydrobenzofuran-5-sulfonyl

PyBroP	bromo-tris-pyrrolidino-phosphonium hexafluorophosphate
tBu:	tert-butyl
TIS:	triisopropylsilane
TOS:	tosyl
Trt	trityl
TFA:	trifluoro acetic acid
TFFH:	tetramethylfluoroforamidinium hexafluorophosphate
Z:	benzyloxycarbonyl

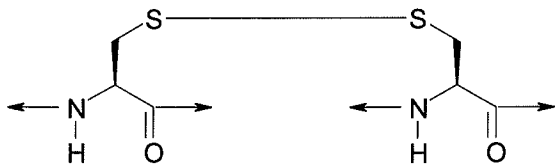
Unless otherwise indicated, with the exception of the N-terminal amino acid, all abbreviations (e.g. Ala) of amino acids in this disclosure stand for the structure of -NH-C(R)(R')-CO-, wherein R and R' each is, independently, hydrogen or the side chain of an amino acid (e.g., R = CH_3 and R' = H for Ala), or R and R' may be joined to form a ring system.

For the N-terminal amino acid, the abbreviation stands for the structure of:

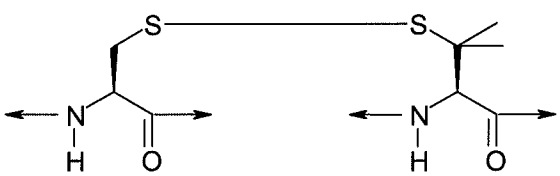


The designation "NH_2" in e.g., Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:7), indicates that the C-terminus of the peptide is amidated. Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys) (SEQ ID NO:36), or alternatively Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)- OH (SEQ ID NO:36), indicates that the C-terminus is the free acid.

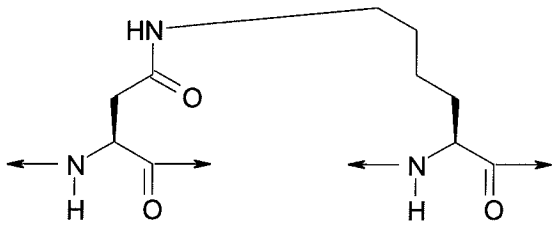
"-c(Cys-Cys)-" or "-cyclo(Cys-Cys)-" denotes the structure:



"-c(Cys-Pen)-" or "-cyclo(Cys-Pen)-" denotes the structure:

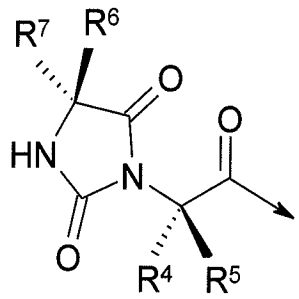


"-c(Asp-Lys)-" or "-cyclo(Asp-Lys)-" denotes the structure:

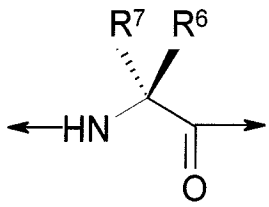


Applicants have devised the following shorthand used in naming the specific embodiments and/or species:

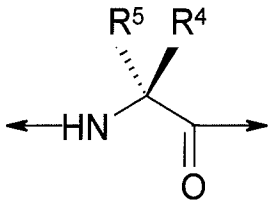
"HydantoinC(O)-(A^a-A^b)" denotes the structure:



wherein amino acid "A^a" has the structure:

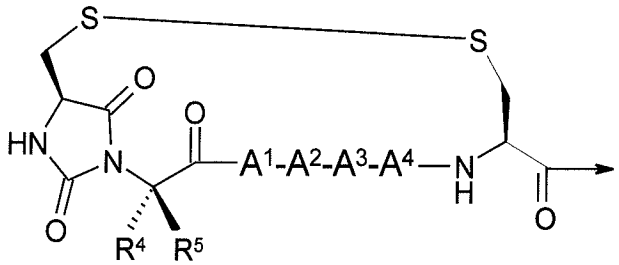


and amino acid "A^b" the structure:



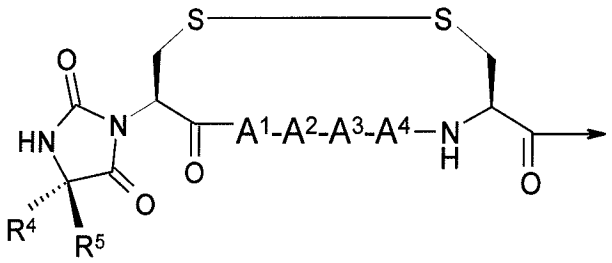
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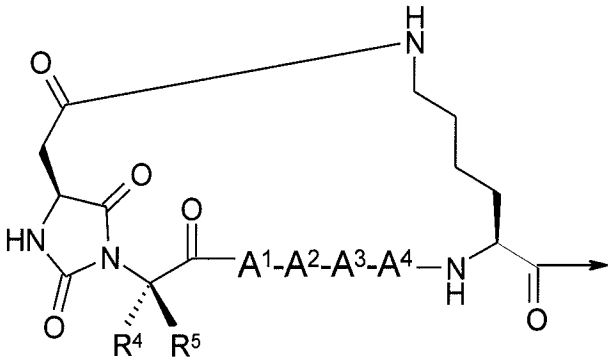
For example, a compound represented as "c[Hydantoin(C(O)-(Cys-A^b))-A^1-A^2-A^3-A^4-Cys]-" would have the following the structure:

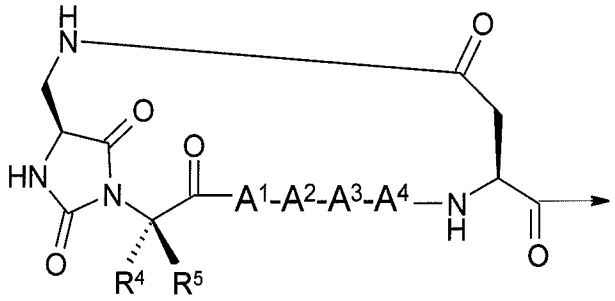


,

whereas a compound represented as "c[Hydantoin(C(O)-(A^b-Cys))-A^1-A^2-A^3-A^4-Cys]-" would have the structure:



For further guidance, "c[Hydantoin(C(O)-(Asp-A^b))-A^1-A^2-A^3-A^4-Lys]-" represents the following compound:  , whereas "c[Hydantoin(C(O)-(Dap-A^b))-A^1-A^2-A^3-A^4-Asp]-" has the following formula:



"Acyl" refers to R"-C(O)-, where R" is H, alkyl, substituted alkyl, heteroalkyl, substituted heteroalkyl, alkenyl, substituted alkenyl, aryl, alkylaryl, or substituted alklyaryl, and is indicated in the general formula of a particular embodiment as "Ac".

"Alkyl" refers to a hydrocarbon group containing one or more carbon atoms, where multiple carbon atoms if present are joined by single bonds. The alkyl hydrocarbon group may be straight-chain or contain one or more branches or cyclic groups.

"Hydroxyalkyl" refers to an alkyl group wherein one or more hydrogen atoms of the hydrocarbon group are substituted with one or more hydroxy radicals, such as hydroxymethyl, hydroxyethyl, hydroxypropyl, hydroxybutyl, hydroxypentyl, hydroxyhexyl and the like.

"Substituted alkyl" refers to an alkyl wherein one or more hydrogen atoms of the hydrocarbon group are replaced with one or more substituents selected from the group consisting of halogen, (i.e., fluorine, chlorine, bromine, and iodine), -OH, -CN, -SH, $-NH_2$, $-NHCH_3$, $-NO_2$, and $-C_{1\text{-}20}$ alkyl, wherein said $-C_{1\text{-}20}$ alkyl optionally may be substituted with one or more substituents selected, independently for each occurrence, from the group consisting of halogens, $-CF_3$, $-OCH_3$, $-OCF_3$, and $-(CH_2)_{0\text{-}20}$-COOH. In different embodiments 1, 2, 3 or 4 substituents are present. The presence of $-(CH_2)_{0\text{-}20}$-COOH results in the production of an alkyl acid. Non-limiting examples of alkyl acids containing, or consisting of, $-(CH_2)_{0\text{-}20}$-COOH include 2-norbornane acetic acid, tert-butyric acid, 3-cyclopentyl propionic acid, and the like.

The term "halo" encompasses fluoro, chloro, bromo and iodo.

"Heteroalkyl" refers to an alkyl wherein one of more of the carbon atoms in the hydrocarbon group is replaced with one or more of the following groups: amino, amido, -O-, -S- or carbonyl. In different embodiments 1 or 2 heteroatoms are present.

"Substituted heteroalkyl" refers to a heteroalkyl wherein one or more hydrogen atoms of the hydrocarbon group are replaced with one or more substituents selected from the group consisting of halogen, (i.e., fluorine, chlorine, bromine, and iodine), -OH, -CN, -SH, $-NH_2$, $-NHCH_3$, $-NO_2$, and $-C_{1\text{-}20}$ alkyl, wherein said $-C_{1\text{-}20}$ alkyl optionally may be substituted with one or more substituents selected, independently for each occurrence, from the group consisting of halogens, $-CF_3$, $-OCH_3$, $-OCF_3$, and $-(CH_2)_{0\text{-}20}$-COOH. In different embodiments 1, 2, 3 or 4 substituents are present.

"Alkenyl" refers to a hydrocarbon group made up of two or more carbons where one or more carbon-carbon double bonds are present. The alkenyl hydrocarbon group may be straight-chain or contain one or more branches or cyclic groups.

"Substituted alkenyl" refers to an alkenyl wherein one or more hydrogens are replaced with one or more substituents selected from the group consisting of halogen (i.e., fluorine, chlorine, bromine, and iodine), -OH, -CN, -SH, $-NH_2$, $-NHCH_3$, $-NO_2$, and $-C_{1\text{-}20}$ alkyl, wherein said $-C_{1\text{-}20}$ alkyl optionally may be substituted with one or more substituents selected, independently for each occurrence, from the group

consisting of halogens, $-CF_3$, $-OCH_3$, $-OCF_3$, and $-(CH_2)_{0-20}-COOH$. In different embodiments 1, 2, 3 or 4 substituents are present.

"Aryl" refers to an optionally substituted aromatic group with at least one ring having a conjugated pi-electron system, containing up to three conjugated or fused ring systems. Aryl includes carbocyclic aryl, heterocyclic aryl and biaryl groups. Preferably, the aryl is a 5- or 6-membered ring. Preferred atoms for a heterocyclic aryl are one or more sulfur, oxygen, and/or nitrogen. Non-limiting examples of aryl include phenyl, 1-naphthyl, 2-naphthyl, indole, quinoline, 2-imidazole, 9-anthracene, and the like. Aryl substituents are selected from the group consisting of $-C_{1-20}$ alkyl, $-C_{1-20}$ alkoxy, halogen (i.e., fluorine, chlorine, bromine, and iodine), -OH, -CN, -SH, $-NH_2$, $-NO_2$, $-C_{1-20}$ alkyl substituted with halogens, $-CF_3$, $-OCF_3$, and $-(CH_2)_{0-20}-COOH$. In different embodiments the aryl contains 0, 1, 2, 3, or 4 substituents.

"Alkylaryl" refers to an "alkyl" joined to an "aryl".

The term "(C_1-C_{12})hydrocarbon moiety" encompasses alkyl, alkenyl and alkynyl and in the case of alkenyl and alkynyl there is C_2-C_{12}.

For the avoidance of doubt, unless otherwise indicated, the term substituted means substituted by one or more defined groups. In the case where groups may be selected from a number of alternative groups, the selected groups may be the same or different. For the avoidance of doubt, the term independently means that where more than one substituent is selected from a number of possible substituents, those substituents may be the same or different.

The pharmaceutically acceptable salts of the compounds of the invention which contain a basic centre are, for example, non-toxic acid addition salts formed with inorganic acids such as hydrochloric, hydrobromic, hydroiodic, sulfuric and phosphoric acid, with carboxylic acids or with organo-sulfonic acids. Examples include the HCl, HBr, HI, sulfate or bisulfate, nitrate, phosphate or hydrogen phosphate, acetate, benzoate, succinate, saccharate, fumarate, maleate, lactate, citrate, tartrate, gluconate, camsylate, methanesulfonate, ethanesulfonate, benzenesulfonate, p-toluenesulfonate and pamoate salts. Compounds of the invention can also provide pharmaceutically acceptable metal salts, in particular non-toxic alkali and alkaline

earth metal salts, with bases. Examples include the sodium, potassium, aluminum, calcium, magnesium, zinc and diethanolamine salts (Berge, S. M. *et al., J. Pharm. Sci.*, 66:1-19 (1977); Gould, P.L., *Int'l J. Pharmaceutics*, 33:201-17 (1986); and Bighley, L.D. *et al., Encyclo. Pharma. Tech.*, Marcel Dekker Inc, New York, 13:453-97 (1996).

The pharmaceutically acceptable solvates of the compounds of the invention include the hydrates thereof. Also included within the scope of the invention and various salts of the invention are polymorphs thereof. Hereinafter, compounds their pharmaceutically acceptable salts, their solvates or polymorphs, defined in any aspect of the invention (except intermediate compounds in chemical processes) are referred to as "compounds of the invention".

***In vitro* studies**

Compounds of the present invention can be and were tested for activity as ligands of one or more of the melanocortin receptors according to the following procedures. One skilled in the art would know that procedures similar to those described herein may be used to assay the binding activities of the compounds of the invention to melanocortin receptor molecules.

Radioligand Binding Assays

Cellular membranes used for the *in vitro* receptor binding assays were obtained from transgenic CHO-K1 cells stably expressing hMC-R receptor subtypes 1, 3, 4 or 5. The CHO-K1 cells expressing the desired hMC-R receptor type were sonicated (Branson® setting 7, approximately 30 sec) in ice-cold 50 mM Tris-HCl at pH 7.4 and then centrifuged at 39,000 g for 10 minutes at approximately 4°C. The pellets were resuspended in the same buffer and centrifuged at 50,000 g for 10 minutes at approximately 4°C. The washed pellets containing the cellular membranes were stored at approximately - 80°C.

Competitive inhibition of [^{125}I](Tyr^2)-(Nle^4-D-Phe^7)α-MSH ([^{125}I]-NDP-α-MSH, Amersham Biosciences®) binding was carried out in polypropylene 96 well plates. Cell membranes (1-10 μg protein/well) prepared as described above were incubated in 50 mM Tris-HCl at pH 7.4 containing 0.2% bovine serum albumin (BSA), 5 mM $MgCl_2$, 1 mM $CaCl_2$ and 0.1 mg/mL bacitracin, with increasing concentrations of the test compound and 0.1-0.3 nM [^{125}I]-NDP-α-MSH for approximately 90-120 minutes at

approximately 37°C. Bound [^{125}I]-NDP-α-MSH ligand was separated from free [^{125}I]-NDP-α-MSH by filtration through GF/C glass fiber filter plates (Unifilter®; Packard) presoaked with 0.1 % (w/v) polyethylenimine (PEI), using a Packard Filtermate® harvester. Filters were washed three times with 50 mM Tris-HCl at pH 7.4 at a temperature of approximately 0-4°C and then assayed for radioactivity using a Packard Topcount® scintillation counter. Binding data were analyzed by computer-assisted non-linear regression analysis (XL fit; IDBS). A selection of the preferred embodiments was tested using the above-discussed assay and the binding constants (Ki in nM) are reported in Tables 5, 6, 7 and 8.

TABLE 5 - Radioligand Binding Assay Data for Selected Compounds

Table 5A

Compound	Ki hMC 1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC5-R	Ki hMC1-R/ MC4-R	SEQ ID NO:
Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	3.87	10.1	2.09	430	1.9	SEQ ID NO:50
Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	4.01	12.1	1.76	352	2.3	SEQ ID NO:50
Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2	8.29	13.3	2.78	816	3.0	SEQ ID NO:51
Ac-D-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	3.93	172	11.0	538	0.36	SEQ ID NO:52
Ac-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	1.81	20.5	4.57	502	0.4	SEQ ID NO:52
Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2	9.67	22.0	4.2	1900	2.3	SEQ ID NO:51
Ac-D-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2	0.79	45.5	1.21	493	0.6	SEQ ID NO:53
Ac-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2	0.68	20.7	1.01	783	0.7	SEQ ID NO:53

Table 5B

Compound	Ki hMC1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC 5-R	Ki hMC1-R /MC4-R	SEQ ID NO:
Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-NH_2	114	63.9	3.07	1657	37.1	SEQ ID NO:16
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	11	26	7.6	1800	1.4	SEQ ID NO:7

Compound	Ki hMC1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC 5-R	Ki hMC1-R /MC4-R	SEQ ID NO:
D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-β-Ala-D-Cys)-Thr-NH_2	0.05	9.3	1.1	2.9	0.0	SEQ ID NO:24
Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2	0.07	4.1	0.85	8.8	0.1	SEQ ID NO:27
Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	0.12	10	0.43	0.42	0.3	SEQ ID NO:32
Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.05	1.3	0.47	0.2	0.1	SEQ ID NO:34
Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-β-Ala-Lys)-NH_2	0.0996	9318	0.617	10.9	0.16	SEQ ID NO:1
Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-NH_2	.0132	16.1	1.23	0.359	0.11	SEQ ID NO:2
D-Phe-c(Cys-His-D-Phe-Arg-Trp-β-Ala-D-Cys)-Thr-NH_2	0.207	43.2	2.58	344	0.08	SEQ ID NO:3
D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-NH_2	0.420	106	4.75	1260	0.09	SEQ ID NO:3
Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2	0.0951	9.33	0.894	13.4	0.11	SEQ ID NO:2
Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-NH_2	0.999	300	11.1	431	0.09	SEQ ID NO:4
Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	0.106	11.8	1.49	110	0.07	SEQ ID NO:6
Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	0.0506	9.89	1.04	16.3	0.05	SEQ ID NO:6
Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	0.884	223	22.5	609	0.04	SEQ ID NO:11
Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	0.721	93.5	56.0	747	0.01	SEQ ID NO:11
Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	0.227	14.5	2.99	164	0.08	SEQ ID NO:11
Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	0.277	25.2	3.37	203	0.08	SEQ ID NO:11
Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-β-Ala-Cys)-NH_2	0.323	14.1	1.96	24.0	0.16	SEQ ID NO:15
Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	34.1	118	17.0	5560	2.01	SEQ ID NO:21
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2	29.1	22.8	3.84	2550	7.58	SEQ ID NO:22

Compound	Ki hMC1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC 5-R	Ki hMC1-R /MC4-R	SEQ ID NO:
D-Phe-c(Cys-His-D-Phe-hArg-Trp-β-Ala-D-Cys)-Thr-NH_2	0.442	123	10.3	521	0.04	SEQ ID NO:23
D-Phe-c(Cys-His-D-Phe-Arg-Bip-β-Ala-D-Cys)-Thr-NH_2	5.80	3370	583	1130	0.01	SEQ ID NO:25
D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-β-Ala-D-Cys)-Thr-NH_2	0.0567	31.4	14.7	9.27	0	SEQ ID NO:24
D-Phe-c(Cys-His-D-Phe-hArg-Bip-β-Ala-D-Cys)-Thr-NH_2	1.68	1260	172	1220	0.01	SEQ ID NO:26
D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-β-Ala-D-Cys)-Thr-NH_2	0.128	85.6	36.9	38.0	0	SEQ ID NO:26
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-NH_2	0.352	149	3.01	339	0.12	SEQ ID NO:54
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Ala-Cys)-NH_2	3.93	876	48.0	4940	0.08	SEQ ID NO:54
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-β-Ala-Cys)-NH_2	0.995	287	4.80	766	0.21	SEQ ID NO:54
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.848	184	3.76	956	0.23	SEQ ID NO:54
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2	1.10	228	7.58	859	0.15	SEQ ID NO:54
Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Trp-Lys)-NH_2	0.659	98.9	2.55	4.19	0.26	SEQ ID NO:28
Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Lys)-NH_2	4.12	445	50.6	4300	0.08	SEQ ID NO:28
Ac-c(Cys-Glu-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2	111	1710	47.7	694	2.33	SEQ ID NO:55
Ac-c(Cys-Glu-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2	262	2500	96.4	1460	2.72	SEQ ID NO:55
Ac-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2	199	5990	96.7	> 10000	2.06	SEQ ID NO:56
Ac-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2	132	4560	40.7	8810	3.24	SEQ ID NO:56
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2	9.12	1130	22.1	2860	0.41	SEQ ID NO:57

Compound	Ki hMC1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC 5-R	Ki hMC1-R /MC4-R	SEQ ID NO:
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-β-Ala-Cys)-NH_2	1.00	227	5.55	496	0.18	SEQ ID NO:57
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.536	169	3.12	358	0.17	SEQ ID NO:57
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-OH	32.1	330	17.4	165	1.84	SEQ ID NO:29
Ac-Nle-c(Cys-D-Abu-His-D-Phe-Arg-Trp-Cys)-NH_2	10.6	41.1	7.69	54.9	1.38	SEQ ID NO:30
Ac-Nle-c(Cys-D-Val-His-D-Phe-Arg-Trp-Cys)-NH_2	13.0	104	10.1	40	1.29	SEQ ID NO:30
Ac-Nle-c(Cys-D-Ile-His-D-Phe-Arg-Trp-Cys)-NH_2	4.28	38.5	9.0	12.5	0.48	SEQ ID NO:30
Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-NH_2	1.60	6.82	4.13	5.57	0.39	SEQ ID NO:30
Ac-Nle-c(Cys-D-Tle-His-D-Phe-Arg-Trp-Cys)-NH_2	12.0	85.8	11.2	40	1.07	SEQ ID NO:30
Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-NH_2	0.353	2.08	1.41	0.857	0.25	SEQ ID NO:30
Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.537	86.1	5.89	2.56	0.09	SEQ ID NO:31
Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	0.744	178	3.51	2.69	0.21	SEQ ID NO:32
Ac-Leu-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.216	17.4	0.995	0.486	0.22	SEQ ID NO:33
Ac-Cha-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.107	9.11	0.884	0.354	0.12	SEQ ID NO:33
Ac-Ile-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.148	13.9	1.06	0.423	0.14	SEQ ID NO:33
Ac-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.254	18.5	2.13	0.714	0.12	SEQ ID NO:33
Ac-Val-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.256	29.9	1.98	0.864	0.13	SEQ ID NO:33
Ac-2-Nal-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.560	39.2	2.94	2.73	0.19	SEQ ID NO:33
Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.186	15.2	4.93	0.537	0.04	SEQ ID NO:34
Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	21.1	151	10.4	92.6	2.03	SEQ ID NO:35
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH	30.7	152	15.6	114	1.97	SEQ ID NO:36

Compound	Ki hMC1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC 5-R	Ki hMC1-R /MC4-R	SEQ ID NO:
Ac-Nle-c(Cys-His-Phe-Arg-D-Trp-Gaba-Cys)-NH_2	5.20	150	138	20.3	0.04	SEQ ID NO:37
Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Ala-Lys)-NH_2	4.89	290	21.3	11.1	0.23	SEQ ID NO:58
Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2	25.5	3.82	7.61	102	3.35	SEQ ID NO:16
Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-NH_2	32.5	5.85	2.53	94.6	12.85	SEQ ID NO:16
Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-NH_2	22.2	12.7	16.6	125	1.34	SEQ ID NO:20
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Ala-Lys)-NH_2	1.17	1.56	0.277	3.24	4.22	SEQ ID NO:38
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-β-Ala-Lys)-NH_2	0.648	2.78	0.329	1.4	1.97	SEQ ID NO:38
Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Gaba-Cys)-NH_2	0.393	1.86	0.375	1.11	1.05	SEQ ID NO:39
Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Ahx-Cys)-NH_2	0.333	2.91	0.998	0.366	0.33	SEQ ID NO:39
Ac-hPhe-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2	0.461	2.45	0.931	1.37	0.50	SEQ ID NO:40
Ac-Cha-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2	0.576	3.98	2.82	3.91	0.20	SEQ ID NO:40

Table 5C

Compound	Ki hMC1-R	Ki hMC 3-R	Ki hMC4-R	Ki hMC 5-R	Ki hMC1-R /MC4-R	SEQ ID NO:
Ac-Arg-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2	17.9	1.68	0.256	23.4	69.9	SEQ ID NO:49

TABLE 6 - Radioligand Binding Assay Data for Selected Compounds

Table 6A

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	49.9	9.00	0.569	218
Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2 (SEQ ID NO:60)	11.9	38.1	5.70	11.8

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-Doc-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2 (SEQ ID NO:61)	3.46	16.6	6.65	4.88
Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:62)	0.614	5.09	2.31	3.23
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:62)	1.56	14.1	5.17	7.12
H-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Doc-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:63)	1.10	1.58	6.00	0.629
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Pro-Pro-Lys-Asp-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:64)	0.0868	0.751	0.0944	0.147
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-Pro-Pro-Lys-Asp-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:65)	1.66	4.80	0.250	9.62
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:66)	0.0452	0.298	0.169	0.386
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Pro-Pro-Lys-Asp-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:67)	0.0808	0.396	0.0747	0.311
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-Pro-Pro-Lys-Asp-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:68)	4.41	4.23	0.455	12.9
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	1.25	0.661	0.292	5.94
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	1.89	0.546	0.166	6.06
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	87.8	9.08	1.20	359
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	124	17.8	1.11	348

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	163	23.0	0.586	844
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Doc-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:701)	0.144	0.352	0.0845	0.415
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	1.74	0.590	0.170	4.38
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:83)	3.86	4.97	0.192	38.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:73)	12.8	15.9	0.950	165
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:74)	3.07	4.05	0.498	31.1
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-βAla-Tyr-Gly-Arg-Lys-Lys-Arg-Gln-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:75)	0.792	0.570	0.162	4.18
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Gln-Arg-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:76)	0.726	0.474	0.209	5.12
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Gln-Lys-Arg-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:77)	0.857	0.580	0.209	4.42
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Arg-Arg-Gln-Arg-NH_2 (SEQ ID NO:78)	0.813	0.675	0.269	4.20
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Aib-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:79)	7.84	10.2	0.783	91.8

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:80)	2.93	9.07	0.293	59.0
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:80)	2.42	6.56	0.238	41.7
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:81)	6.66	19.3	0.819	88.8
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:82)	2.63	2.09	0.0737	11.6
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:82)	2.48	1.21	0.209	9.17
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:81)	3.65	2.26	0.261	12.1
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:83)	7.32	11.0	0.659	78.0
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:84)	4.11	7.26	0.302	48.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:283)	6.77	14.3	0.781	84.0
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Arg-Gln-Arg-Arg-NH_2 (SEQ ID NO:2685)	3.04	3.22	0.230	3.85
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Gln-Lys-Lys-Arg-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:86)	3.24	2.66	0.208	5.96

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Arg-Arg-Arg-Gln-NH_2 (SEQ ID NO:87)	1.58	1.43	0.275	2.97
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	4.59	6.28	0.588	22.6
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	6.46	5.22	0.380	15.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:88)	4.62	5.68	0.505	45.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:89)	2.12	3.99	0.352	27.5
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:88)	3.41	0.975	0.549	11.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:90)	4.18	1.12	0.223	15.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:91)	2.71	0.732	0.202	5.53
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:92)	5.66	1.40	0.446	6.23
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(Doc)2-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:136)	0.211	0.665	0.635	118
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Gln-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:137)	0.351	0.891	0.503	102

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:136)	0.209	0.699	0.596	137
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:138)	0.439	1.52	0.476	115
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:138)	0.821	2.50	0.700	148
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:139)	0.406	1.11	0.602	131
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:139)	1.27	4.63	1.51	220

Table 6B

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-ß-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:270)	2058	113	10.7	239
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Aib-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:270)	1818	306	5.87	979
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:95)	1.75	1.74	0.15	16.8
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:96)	1.50	1.61	0.301	10.4
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:97)	1.81	2.08	0.305	19.3
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:92)	2.69	2.59	0.243	19.2

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:99)	2.25	0.62	0.303	2.77
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:101)	1.49	0.604	0.865	3.13
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:105)	3.28	1.95	0.575	15.5
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:100)	2.24	1.57	0.437	16.4
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:101)	2.14	1.12	0.624	11.9
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:102)	2.50	1.59	0.573	15.7
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:104)	3.00	1.70	0.442	15.5
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:103)	4.29	2.15	0.425	15.5
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:141)	0.410	0.837	0.246	56.3
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:142)	0.572	1.07	0.210	63.6
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:141)	0.475	0.800	0.196	53.8
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:142)	0.779	1.21	0.293	56.0

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:143)	0.212	1.23	0.484	58.5
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:144)	0.778	1.22	0.468	47.0

TABLE 7 - Binding Constants for Formula (V) Examples

Table 7A

Formula (V) Compounds	Ki hMC1	Ki hMC3	Ki hMC4	Ki hMC5
c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:271)	230	7590	126	7020
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Lys]-NH_2 (SEQ ID NO:276)	72.6	1920	45.2	>10000
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2 (SEQ ID NO:276)	60.4	2840	52.4	>10000
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2 (SEQ ID NO:276)	28	90.5	12.7	877
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2 (SEQ ID NO:276)	16.4	863	4.97	>10000
c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2 (SEQ ID NO:273)	37.7	576	7.81	6400
c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2 (SEQ ID NO:273)	66.6	1820	19.9	>10000
c[Hydantoin(C(O)-(Asp-His))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)	200	68.8	6.63	142
c[Hydantoin(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)	9028	2628	35.8	1156
c[Hydantoin(C(O)-(Asp-A5c))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)	9938	2390	44.6	1103
c[Hydantoin(C(O)-(Asp-A6c))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)	2170	1479	16.5	451
c[Hydantoin(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)	1276	2756	266	1096
c[Hydantoin(C(O)-(Asp-A3c))-D-2-Nal-Arg-Trp-Lys]-NH_2 (SEQ ID NO:275)	7567	1922	420	2879

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TABLE 7B - Binding Constants for Formula (VI) Examples

Formula (VI) Compounds	Ki hMC1	Ki hMC3	Ki hMC4	Ki hMC5
Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	14.3	198	5.76	67.8
Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	11.9	311	5.41	73.9
Hydantoin(C(O)-(A6c-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	31.6	224	19.6	2500
Hydantoin(C(O)-(D-Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	16.0	63.9	8.64	1820
Hydantoin(C(O)-(Val-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	33.7	132	40.2	3210
Hydantoin(C(O)-(Leu-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	48.3	534	74.1	3290
Hydantoin(C(O)-(Cha-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	40.8	870	137	3560
Hydantoin(C(O)-(Aib-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	17.7	73.6	8.40	2120
Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	7.92	46.4	6.70	21.3
Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	20.9	69.7	8.32	50.0
Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2 (SEQ ID NO:280)	12.9	38.5	3.53	27.1
Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2 (SEQ ID NO:280)	127	811	10.4	381
Hydantoin(C(O)-(Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	13.9	38.4	5.73	18.9
Hydantoin(C(O)-(D-Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	11.7	73.1	4.28	34.7
Hydantoin(C(O)-(Aib-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	36.8	290	13.7	133
Hydantoin(C(O)-(Val-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	15.3	160	8.66	33.4
Hydantoin(C(O)-(Ile-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	11.6	194	11.5	28.9
Hydantoin(C(O)-(Leu-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	19.3	331	26.7	44.6
Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	9.49	124	2.95	2260
Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:287)	4.30	78.0	1.77	4540

Formula (VI) Compounds	Ki hMC1	Ki hMC3	Ki hMC4	Ki hMC5
Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	8.59	94.1	2.44	7760
Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:285)	5.68	55.5	2.44	4220
Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	2.65	41.3	4.17	650
Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	3.52	48.7	5.78	872
Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO288)	3.51	29.2	6.04	914
Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:286)	1.14	01.7	4.53	783
Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2 (SEQ ID NO:282)	11.9	7.43	0.195	14.6

TABLE 7C - Binding Constants for Formula (VII) Examples

Formula (VII) Compounds	Ki hMC1	Ki hMC3	Ki hMC4	Ki hMC5
c[Hydantoin(C(O)-(Aib-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	47.6	1100	47.1	>10000
c[Hydantoin(C(O)-(Val-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	21.2	730	34.5	>10000
c[Hydantoin(C(O)-(Leu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	47.4	1550	27.9	>10000
c[Hydantoin(C(O)-(Ile-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	53.4	1760	41.6	>10000
c[Hydantoin(C(O)-(A6c-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	38.5	1760	53.2	9270
c[Hydantoin(C(O)-(Gly-Cys))-Glu-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:291)	15.6	305	8.92	3070

TABLE 8-Radioligand Binding Assay Data for Selected Compounds

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-Tyr-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	8.53	21.2	3.72	714
Ac-2-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	6.09	34.9	2.02	864
Ac-1-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	6.27	36.4	1.53	888
Ac-Phe-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	1.48	14.8	2.34	491

Compound	Ki hMC1-R	Ki hMC3-R	Ki hMC4-R	Ki hMC5-R
Ac-Trp-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	4.7	42	2.25	1470
Ac-Pff-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	0.323	1.33	1.95	786

Melanocortin Functional Activity and Selectivity

The compounds of the present invention will interact preferentially (i.e., selectively) to MC-4 relative to the other melanocortin receptors. Selectivity is particularly important when the compounds are administered to humans or other animals to minimize the number of side effects associated with their administration. MC-4 selectivity of a compound is defined herein as the ratio of the EC_{50} of the compound for an MC-1 receptor (EC_{50} -MC-1) over the EC_{50} of the compound for the MC-3 (EC_{50} -MC-3)/MC-4 (EC_{50} -MC-4) receptor, the EC_{50} values being measured as described above. The formulas are as follows:

$$MC\text{-}3\ selectivity = [EC_{50}\text{-}MC\text{-}1]/[EC_{50}\text{-}MC\text{-}3]$$

$$MC\text{-}4\ selectivity = [EC_{50}\text{-}MC\text{-}1]/[EC_{50}\text{-}MC\text{-}4]$$

A compound is defined herein as being "selective for the MC-3 receptor" when the above mentioned ratio "MC-3-selectivity" is at least about 10, preferably at least about 100, and more preferably at least about 500.

A compound is defined herein as being "selective for the MC-4 receptor" when the above mentioned ratio "MC-4-selectivity" is at least about 10, preferably at least about 100, and more preferably at least about 500.

One skilled in the art would know that procedures similar to those described herein may be used to assay the binding activities of the compounds of the invention to melanocortin receptor molecules.

cyclic AMP Bioassay

Intracellular cyclic AMP (cAMP) levels were determined by an electrochemiluminescence (ECL) assay (Meso Scale Discovery ®, Gaithersburg, MD; referred to hereinafter as MSD). CHO-K1 cells stably expressing the hMC receptor subtypes were suspended in RMPI 1640 ® assay buffer (RMPI 1640 buffer contains 0.5 mM isobutylmethylxanthine (IBMX), and 0.2% protein cocktail (MSD blocker A)).

Transgenic CHO-K1 cells stably expressing hMC receptor subtypes 1, 3, 4 or 5 were dispensed at a density of approximately 7,000 cells/well in 384-well Multi-Array® plates (MSD) containing integrated carbon electrodes and coated with anti-cAMP antibody. Increasing concentrations of the test compounds were added and the cells were incubated for approximately 40 minutes at approximately 37°C. Following this incubation, lysis buffer (HEPES-buffered saline solution with $MgCl_2$ and Triton X-100® at ph 7.3) containing 0.2% protein cocktail and 2.5 nM TAG™ ruthenium-labeled cAMP (MSD) was added and the cells were incubated for approximately 90 minutes at room temperature. At the end of the second incubation period read buffer (Tris-buffered solution containing an ECL co-reactant and Triton X-100 at ph 7.8) was added and the cAMP levels in the cell lysates were immediately determined by ECL detection with a Sector Imager 6000 reader® (MSD). Data were analyzed using a computer-assisted non-linear regression analysis (XL fit; IDBS) and reported as either an EC_{50} value or a Kb value.

EC_{50} represents the concentration of an agonist compound needed to obtain 50% of the maximum reaction response, *e.g.*, 50% of the maximum level of cAMP as determined using the assay described above. The Kb value reflects the potency of an antagonist and is determined by Schild analysis. In brief, concentration-response curves of an agonist are carried out in the presence of increasing concentrations of an antagonist. The Kb value is the concentration of antagonist which would produce a 2-fold shift in the concentration-response curve for an agonist. It is calculated by extrapolating the line on a Schild plot to zero on the y-axis.

A selection of compounds was tested using the above-discussed assays and the results are reported in Tables 9, 10, 11, and 12.

TABLE 9 - cAMP Bioassay Data for Selected Compounds

Table 9A

Compound	EC_{50} hMC1-R	EC_{50} hMC3-R	EC_{50} hMC4-R	EC_{50} hMC5-R	EC_{50} hMC1-R /MC4-R	SEQ ID NO:
Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	5.79	5.25	0.313	1630	18.0	SEQ ID NO:50

Compound	EC_{50} hMC1-R	EC_{50} hMC3-R	EC_{50} hMC4-R	EC_{50} hMC5-R	EC_{50} hMC1-R /MC4-R	SEQ ID NO:
Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	6.17	5.6	0.397	1020	16.0	SEQ ID NO:50
Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2	26.5	10.5	0.493	2440	54.0	SEQ ID NO:51
Ac-D-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	8.43	32.4	0.959	2140	9.0	SEQ ID NO:52
Ac-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	4.23	8.09	0.719	23.2	6.0	SEQ ID NO:52
Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2	48.3	13.3	0.79	10000	61.0	SEQ ID NO:51
Ac-D-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2	1.48	5.76	0.078	297	19.0	SEQ ID NO:53
Ac-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2	1.39	2.89	0.055	467	25.0	SEQ ID NO:53

ND = not determined

Table 9B

Compound	EC_{50} hMC 1-R	EC_{50} hMC 3-R	EC_{50} hMC4-R	EC_{50} hMC5-R	EC_{50} hMC1-R /MC4-R	SEQ ID NO:
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	2.4	0.33	0.078	420	31	SEQ ID NO:7
D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-β-Ala-D-Cys)-Thr-NH_2	0.35	1.1	0.11	0.37	3	SEQ ID NO:24
Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2	0.31	0.27	0.018	3.1	17	SEQ ID NO:27
Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2	0.28	0.24	0.028	3.9	10	SEQ ID NO:32
Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2	0.37	0.1	0.021	1.7	18	SEQ ID NO:34
Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-β-Ala-Lys)-NH_2	0.834	0.145	0.128	2.79	6.52	SEQ ID NO:1

Compound	EC_{50} hMC 1-R	EC_{50} hMC 3-R	EC_{50} hMC4-R	EC_{50} hMC5-R	EC_{50} hMC1-R /MC4-R	SEQ ID NO:
Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2	0.76	0.199	0.0492	1.73	15.45	SEQ ID NO:2
Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	3.26	0.189	0.0949	30.2	34.35	SEQ ID NO:6
Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	1.37	0.628	0.131	3.48	10.46	SEQ ID NO:6
Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2	2.27	3.32	7.24	415	0.31	SEQ ID NO:11
Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2	ND	1.89	0.531	ND	ND	SEQ ID NO:21
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2	14.3	2.03	0.183	2240	78.14	SEQ ID NO:22
D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-β-Ala-D-Cys)-Thr-NH_2	0.345	2.71	5376	2.38	0.06	SEQ ID NO:24
D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-β-Ala-D-Cys)-Thr-NH_2	0.685	81.8	86.9	31.8	0.01	SEQ ID NO:26
Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Lys)-NH_2	0.931	3.22	1.65	>10000	0.56	SEQ ID NO:28
Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-NH_2	3.24	0.465	0.0915	78.5	35.41	SEQ ID NO:30
Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-NH_2	0.819	0.541	0.453	45.3	1.81	SEQ ID NO:30

ND = not determined

Table 9C

Compound	EC50 hMC 1-R	Kb hMC3-R	Kb MC4-R	EC50 hMC5-R	SEQ ID NO:
Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2	17.6	12.4	38.8	11.8	SEQ ID NO:16
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Ala-Lys)-NH_2	0.619	2.98	0.109	0.189	SEQ ID NO:38

Compound	EC50 hMC 1-R	Kb hMC3-R	Kb MC4-R	EC50 hMC5-R	SEQ ID NO:
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-β-Ala-Lys)-NH_2	0.913	0.536	0.346	0.489	SEQ ID NO:38
Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Gaba-Cys)-NH_2	0.231	18.4	0.782	0.153	SEQ ID NO:39
Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Ahx-Cys)-NH_2	0.581	10.8	0.967	0.126	SEQ ID NO:39
Ac-hPhe-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2	0.413	9.32	0.824	0.307	SEQ ID NO:40
Ac-Cha-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH2	1.27	3.02	0.442	0.736	SEQ ID NO:40
Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-NH_2	383	61.5	53.6	2842	SEQ ID NO:16

Table 9D

Compound	EC50 hMC 1-R	Kb hMC3-R	Kb MC4-R	EC50 hMC5-R	SEQ ID NO:
Ac-Arg-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2	193	5.72	1.58	1111	SEQ ID NO:49

Table 10A

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	66.1	33.4	0.687	6.84
Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2 (SEQ ID NO:60)	ND	4500	105	ND
Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-Doc-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2 (SEQ ID NO:61)	ND	395	16.8	ND
Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:62)	ND	207	18.5	ND
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:62)	ND	220	4.07	ND
H-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Doc-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:63)	ND	261	3.11	ND

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Pro-Pro-Lys-Asp-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:64)	ND	14.1	22.8	ND
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-Pro-Pro-Lys-Asp-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:65)	ND	233	26.0	ND
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:66)	1.39	16.2	7.94	0.839
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Pro-Pro-Lys-Asp-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:67)	3.65	19.4	3.73	1.61
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-Pro-Pro-Lys-Asp-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:68)	ND	17.7	1.49	ND
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:69)	6.3	70.0	1.66	38.2
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:69)	12.1	30.3	1.81	70.0
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	33.6	140	12.2	66.9
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	269	105	5.92	104
Ac-c Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:269)	690	70.7	4.56	177
Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-Doc-Doc-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:70)	3.23	8.97	4.61	2.86
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:72)	52.0	170	6.14	328

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:73)	146	104	32.0	1400
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:74)	114	44.6	28.4	879
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Aib-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:79)	67.1	439	46.5	582
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:80)	144	116	8.93	819
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:80)	36.0	46.5	11.4	56.1
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:81)	93.0	71	15.9	> 10000
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:82)	39.7	30.9	6.66	501
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:82)	35.2	22.9	12.6	199
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:81)	29.1	13.6	13.4	204
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:83)	86.1	41.7	19.4	2360

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Arg-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:84)	38.3	20.2	21.2	> 10000
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:83)	68.6	153	33.2	> 10000
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:88)	70.4	286	18.6	> 10000
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:89)	33.1	65.1	15.3	1720
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:88)	88.2	10.6	17.4	514
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:90)	58.7	39.3	10.3	460
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:91)	45.4	12.7	12.7	162
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:92)	309	22.8	17.1	570
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:139)	7.86	10.5	0.843	4900
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	29.7	25.6	7.37	82.9
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-βAla-Tyr-Gly-Arg-Lys-Lys-Arg-Gln-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:75)	15.2	14.6	4.52	36.8

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Gln-Arg-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:76)	6.7	9.38	11.7	46.2
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Gln-Lys-Arg-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:77)	7.9	41.7	10.9	62.4
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Arg-Arg-Gln-Arg-NH_2 (SEQ ID NO:78)	16.9	36.0	7.12	58.9
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Arg-Gln-Arg-Arg-NH_2 (SEQ ID NO:85)	16.4	20.8	7.31	44.2
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Gln-Lys-Lys-Arg-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:86)	12.0	13.7	9.38	54.2
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Arg-Arg-Arg-Gln-NH_2(SEQ ID NO:87)	7.5	12.2	7.61	51.7
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	43.3	215	5.87	1286
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:71)	37.9	112	41.1	1798

ND = not determined

Table 10B

Compound	**EC50 hMC1-R**	**EC50 hMC3-R**	**EC50 hMC4-R**	**EC50 hMC5-R**
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(Doc)2-Tyr-Gly-Arg-Lys-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:136)	4.70	4.56	0.634	147

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-Lys-Arg-Gln-Arg-Arg-Arg-Arg-NH_2 (SEQ ID NO:137)	5.90	7.73	1.02	2890
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:136)	0.481	7.32	0.964	2010
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Arg-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:138)	7.15	9.37	1.25	1570

Table 10C

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-ß-Ala-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:270)	ND	ND	ND	ND
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Aib-Cys)-Pro-Pro-Lys-Asp-NH_2 (SEQ ID NO:270)	770	221	4.52	869
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:95)	29	22.6	16.7	173
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:96)	102	26.3	14.6	261
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:97)	26.6	101	9.34	351
Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:92)	45.5	181	6.35	149
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:99)	23.7	9.22	5.87	39.7
Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:101)	34.7	15.0	8.68	28.2

Compound	EC_{50} hMC1-R	Kb hMC3-R	Kb hMC4-R	EC_{50} hMC5-R
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:105)	19.1	106	4.59	100
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:100)	19.8	37.8	8.43	158
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:101)	11.2	52.1	9.45	95.7
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:102)	33.8	93.6	4.42	89.5
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2(SEQ ID NO:104)	232	68.8	10.0	250
Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-Pro-Pro-Lys-Asp-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:103)	32.2	98.3	5.23	194

ND = not determined

Table 10D

Compound	EC50 hMC1-R	EC50 hMC3-R	EC50 hMC4-R	EC50 hMC5-R
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:141)	5.66	4.70	0.422	1551
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:142)	7.57	4.18	0.600	1792
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:141)	2.36	2.74	0.260	500
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:142)	2.81	3.29	0.298	566

Compound	EC50 hMC1-R	EC50 hMC3-R	EC50 hMC4-R	EC50 hMC5-R
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:143)	1.86	1.39	0.367	165
Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Lys-Arg-Arg-Arg-Gln-Arg-Arg-Arg-NH_2 (SEQ ID NO:144)	2.06	1.61	0.394	199

TABLE 11 - Intracellular Cyclic AMP (cAMP) Levels for Formula (I) Examples

Table 11A

Formula (V) Compounds	EC_{50} hMC1	EC_{50} hMC3	EC_{50} hMC4	EC_{50} hMC5
c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:271)	-	218	5.42	-
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Lys]-NH_2 (SEQ ID NO:276)	-	22.3	3.62	-
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2 (SEQ ID NO:276)	-	39.2	4.94	-
c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2 (SEQ ID NO:276)	56.7	18.2	0.182	>10000
c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2 (SEQ ID NO:273)	56.6	88.6	4.50	9300
c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2 (SEQ ID NO:273)	-	49.3	2.12	-

TABLE 11B -

Formula (VI) Compounds	EC_{50} hMC1	EC_{50} hMC3	EC_{50} hMC4	EC_{50} hMC5
Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	54.3	12.2	0.177	>10000
Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	124	8.05	0.214	>10000
Hydantoin(C(O)-(A6c-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	-	4.89	1.80	-
Hydantoin(C(O)-(D-Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	-	2.56	1.47	-
Hydantoin(C(O)-(Val-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	-	4.61	0.977	-

Formula (VI) Compounds	EC_{50} hMC1	EC_{50} hMC3	EC_{50} hMC4	EC_{50} hMC5
Hydantoin(C(O)-(Leu-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	-	9.68	1.83	-
Hydantoin(C(O)-(Cha-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:284)	-	9.97	13.9	-
Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	14.2	2.46	0.336	201
Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2 (SEQ ID NO:280)	17.0	21.5	0.584	352
Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2 (SEQ ID NO:280)	40.2	8.90	0.495	8300
Hydantoin(C(O)-(Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	17.6	2.23	0.241	516
Hydantoin(C(O)-(D-Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	4.70	2.22	0.309	355
Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	18.0	17.1	0.160	2710
Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:287)	12.9	10.3	0.125	7440
Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)	8.83	7.86	0.0979	4010
Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:285)	9.97	3.63	0.0687	335
Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	8.81	18.2	0.503	3560
Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:279)	11.5	23.2	0.513	3950
Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:288)	7.53	11.6	0.435	9840
Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:286)	8.85	5.17	0.599	3610

Formula (VI) Compounds	EC_{50} hMC1	EC_{50} hMC3	EC_{50} hMC4	EC_{50} hMC5
Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2 (SEQ ID NO:282)	96.6	13.1	21.2	103

TABLE 11C

Formula (VII) Compounds	EC_{50} hMC1	EC_{50} hMC3	EC_{50} hMC4	EC_{50} hMC5
c[Hydantoin(C(O)-(Aib-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	-	6.28	0.407	-
c[Hydantoin(C(O)-(Val-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	-	3.77	0.214	-
c[Hydantoin(C(O)-(Leu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	-	4.72	0.428	-
c[Hydantoin(C(O)-(Ile-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	-	8.51	1.85	-
c[Hydantoin(C(O)-(A6c-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:290)	-	5.66	1.72	-
c[Hydantoin(C(O)-(Gly-Cys))-Glu-His-D-Phe-Arg-Trp-Cys]-NH_2 (SEQ ID NO:291)	14.5	21.8	0.576	1780

TABLE 12-cAMP Bioassay Data for Selected Compounds

Compound	EC_{50} hMC1-R	EC_{50} hMC3-R	EC_{50} hMC4-R	EC_{50} hMC5-R
Ac-Tyr-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	6.42	2.39	0.194	1540
Ac-2-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	9.66	6.11	0.275	1730
Ac-1-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	8.67	4.21	0.363	1320
Ac-Trp-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:292)	5.78	3.95	0.219	2580

***In vivo* studies**

Compounds of the present invention can be and were tested for an effect upon insulin resistance and/or body weight according to the following procedures.

One skilled in the art would know that procedures similar to those described herein may be used to assay the effect of the compounds of the invention upon insulin resistance and/or body weight.

Ligand compounds activating melanocortin receptors tested in the *in vivo* studies were as follows (Table 13):

Table 13

Ligand Code	Structure
Compound A	Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 SEQ ID NO:50
Compound B	Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)

Acute feeding experiments (fasting)

Male Sprague Dawley rats (250g) were housed in individual cages and maintained under 12:12 hour light:dark conditions. The rats were fasted for 18 hours prior to the start of the experiment with water available *ad libitum*. At time 0, the rats were injected subcutaneously (sc) with selected compounds at doses of 100 nmole/kg, or with vehicle, and were provided with food. Individual food consumption was measured at about 2, 4 and 6 hours after injection. Data for selected compounds of the invention are reported in Figure 1.

Chronic feeding experiments

Male, Sprague Dawley rats that had been fed either a normal diet (300g; Research Diets 12450) or a high fat diet (400g; Research Diets 12451) for 10 weeks prior to the start of the experiment were housed in individual cages and maintained under 12:12 hour light:dark conditions with both food and water available ad libitum. The rats were anesthetized and implanted subcutaneously with an osmotic mini pump (Alzet, Cupertino, CA). The pumps delivered either Compound A or Compound B at doses of 75, 300 or 1200 nmole/kg/day, or vehicle for 7 days. Individual body weight and food consumption were measured daily.

On day 7 rats were anesthetized and fit with a jugular-right atrial cannula. On day 8 an iv glucose tolerance test was performed and blood samples were withdrawn into heparinized syringes at time -10 and 0. Immediately after the time 0 blood sample, the rats were injected with glucose (1g/kg) via the indwelling cannula. Subsequent blood samples were withdrawn at 2.5, 5, 10, 20 and 40 minutes later. Plasma levels of glucose (Diagnostic Chemicals Limited) and insulin (Alpco) were determined by commercially available kits. Results are showin in Figures 2A-D and 3A-D.

Glucose tolerance tests

Male, C57BL/6 mice that had been fed either a normal diet (30g; Research Diets 12450) or a high fat diet (45g; Research Diets 12452) for 12 weeks prior to the start of the experiment were housed in individual cages and maintained under 12:12 hour light:dark conditions with both food and water available ad libitum. The mice were anesthetized and implanted subcutaneously with an osmotic mini pump (Alzet,

Cupertino, CA). The pumps delivered Compound A at doses of 200, 600 or 1800 nmole/kg/day, or vehicle for 14 days. On day 14 the mice were fasted for 18 hours or overnight. On day 15 an glucose tolerance test was performed by injecting the mice with glucose (2g/kg) ip. Blood samples were taken by tail stick at 0, 15, 30, 60 and 180 minutes after the glucose injection and blood glucose level was measured using an Accu-Chek glucometer. Results are shown in Figure 4.

Male, Lep^{ob}/Lep^{ob} mice (50g) were group housed maintained under 12:12 hour light:dark conditions with both food and water available ad libitum. The mice were fasted for 18 hours or overnight and an ip glucose tolerance test was performed. Mice were injected with Compound A ip at a dose of 6.4μmole/kg at -15 minutes and a blood sample was taken by tail stick. At time 0 mice were injected ip with glucose (1g/kg) and blood samples were taken by tail stick at 0, 15, 30, 60 and 90 minutes later and blood glucose level was measured using Glucometer Elite XL (Bayer Corporation). Results are shown in Figure 5.

Administration and Use

The peptides of this invention can be provided in the form of pharmaceutically acceptable salts. Examples of such salts include, but are not limited to, those formed with organic acids (e.g., acetic, lactic, maleic, citric, malic, ascorbic, succinic, benzoic, methanesulfonic, toluenesulfonic, or pamoic acid), inorganic acids (e.g., hydrochloric acid, sulfuric acid, or phosphoric acid), and polymeric acids (e.g., tannic acid, carboxymethyl cellulose, polylactic, polyglycolic, or copolymers of polylactic-glycolic acids). A typical method of making a salt of a peptide of the present invention is well known in the art and can be accomplished by standard methods of salt exchange. Accordingly, the TFA salt of a peptide of the present invention (the TFA salt results from the purification of the peptide by using preparative HPLC, eluting with TFA containing buffer solutions) can be converted into another salt, such as an acetate salt, by dissolving the peptide in a small amount of 0.25 N acetic acid aqueous solution. The resulting solution is applied to a semi-prep HPLC column (Zorbax®, 300 SB, C-8). The column is eluted with: (1) 0.1N ammonium acetate aqueous solution for 0.5 hours; (2) 0.25N acetic acid aqueous

solution for 0.5 hours; and (3) a linear gradient (20% to 100% of solution B over 30 minutes) at a flow rate of 4 ml/min (solution A is 0.25N acetic acid aqueous solution; solution B is 0.25N acetic acid in acetonitrile/water, 80:20). The fractions containing the peptide are collected and lyophilized to dryness.

As is well known to those skilled in the art, the known and potential uses of peptides with melanocortin receptor (MC-R) agonist or antagonist activity is varied and multitudinous, thus the administration of the compounds of this invention for purposes of eliciting an agonist effect can have the same effects and uses as melanocortin itself.

Accordingly, the present invention includes within its scope pharmaceutical compositions comprising, as an active ingredient, at least one of the compounds of formula (I) in association with a pharmaceutically acceptable carrier.

The dosage of active ingredient in the compositions of this invention may be varied; however, it is necessary that the amount of the active ingredient be such that a suitable dosage form is obtained. The selected dosage depends upon the desired therapeutic effect, on the route of administration, and on the duration of the treatment. In general, an effective dosage for the activities of this invention is in the range of $1x10^{-7}$ to 200 mg/kg/day, preferably $1x10^{-4}$ to 100 mg/kg/day which can be administered as a single dose or divided into multiple doses.

The compounds of this invention can be administered by oral, parenteral (e.g., intramuscular, intraperitoneal, intravenous or subcutaneous injection, or implant), nasal, vaginal, rectal, sublingual or topical routes of administration and can be formulated with pharmaceutically acceptable carriers to provide dosage forms appropriate for each route of administration.

Solid dosage forms for oral administration include capsules, tablets, pills, powders and granules. In such solid dosage forms, the active compound is admixed with at least one inert pharmaceutically acceptable carrier such as sucrose, lactose, or starch. Such dosage forms can also comprise, as is normal practice, additional substances other than such inert diluents, e.g., lubricating agents such as magnesium stearate. In the case of capsules, tablets and pills, the dosage forms may also

comprise buffering agents. Tablets and pills can additionally be prepared with enteric coatings.

Liquid dosage forms for oral administration include pharmaceutically acceptable emulsions, solutions, suspensions, syrups, the elixirs containing inert diluents commonly used in the art, such as water. Besides such inert diluents, compositions can also include adjuvants, such as wetting agents, emulsifying and suspending agents, and sweetening, flavoring and perfuming agents.

Preparations according to this invention for parenteral administration include sterile aqueous or non-aqueous solutions, suspensions, or emulsions. Examples of non-aqueous solvents or vehicles are propylene glycol, polyethylene glycol, vegetable oils, such as olive oil and corn oil, gelatin, and injectable organic esters such as ethyl oleate. Such dosage forms may also contain adjuvants such as preserving, wetting, emulsifying, and dispersing agents. Preparations may be sterilized by, for example, filtration through a bacteria-retaining filter, by incorporating sterilizing agents into the compositions, by irradiating the compositions, or by heating the compositions. Preparations can also be manufactured in the form of sterile solid compositions which can be dissolved in sterile water or some other sterile injectable medium immediately before use.

Compositions for rectal or vaginal administration are preferably suppositories which may contain, in addition to the active substance, excipients such as cocoa butter or a suppository wax.

Compositions for nasal or sublingual administration are also prepared with standard excipients well known in the art.

Further, a compound of this invention can be administered in a sustained release composition such as those described in the following patents and patent applications. U.S. Patent No. 5,672,659 teaches sustained release compositions comprising a bioactive agent and a polyester. U.S. Patent No. 5,595,760 teaches sustained release compositions comprising a bioactive agent in a gelable form. U.S. Patent No. 5,821,221 teaches polymeric sustained release compositions comprising a bioactive agent and chitosan. U.S. Patent No. 5,916,883 teaches sustained release

compositions comprising a bioactive agent and cyclodextrin. The teachings of the foregoing patents and applications are incorporated herein by reference.

What is claimed is:

1. A therapeutically effective amount of a melanocortin receptor 4 agonist for the manufacture of a peripherally administered medicament useful for treating insulin resistance in a subject in need thereof, wherein said melanocortin receptor-4 agonist is selected from the group consisting of:

Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:50)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trpß-Ala-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-A6c-Lys)-NH_2; SEQ ID NO:1

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:2

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:3

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-NH_2; SEQ ID NO:3

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:2

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-NH_2; SEQ ID NO:4

Ac-A6c-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:5

Ac-D-2-Nal-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:6

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-ß-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Gaba-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Aib-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(Cys-Gly-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:7

Ac-Nle-c(D-Cys-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-ß-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Gaba-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Aib-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(D-Cys-Gly-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:8

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-ß-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Gaba-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Aib-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(Cys-Gly-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:9

Ac-Nle-c(D-Cys-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-D-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-ß-Ala-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-Gaba-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Nle-c(D-Cys-Aib-His-D-Phe-Arg-Trp-D-Cys)-NH_2; SEQ ID NO:10

Ac-Oic-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Nip-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hPro-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-hLeu-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Phe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Phe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

n-butanoyl-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:12

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-ß-hMet-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Gaba-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:11

Ac-Cha-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-hCha-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Leu-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-hLeu-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Phe-c(Asp-His-D-Phe-Arg-D-Trp-Ala-Lys)-NH_2; SEQ ID NO:13

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-D-Ala-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Gaba-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Aha-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Asp-His-D-Phe-Arg-D-Trp-Apn-Lys)-NH_2; SEQ ID NO:14

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-D-Ala-Cys)-NH_2; SEQ ID NO:15

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:16

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-NH_2; SEQ ID NO:16

n-butanoyl-Nle-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:17

n-butanoyl-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:17

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-1-Nal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Bal-Cys)-NH_2; SEQ ID NO:18

Ac-Nle-c(Cys-D-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:59

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-D-Ala-Lys)-NH_2; SEQ ID NO:19

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-NH_2; SEQ ID NO:20

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:21

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:22

D-Phe-c(Cys-His-D-Phe-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:23

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-Arg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:25

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:24

D-Phe-c(Cys-His-D-Phe-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-NH_2; SEQ ID NO:26

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:27

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Trp-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Lys)-NH_2; SEQ ID NO:28

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-OH; SEQ ID NO:29

Ac-Nle-c(Cys-D-Abu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Val-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Ile-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Tle-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:30

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:31

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Nle-c(Pen-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:32

Ac-Leu-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Cha-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Ile-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-Val-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Ac-2-Nal-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:33

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:34

Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:35

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:36

Ac-Nle-c(Cys-His-Phe-Arg-D-Trp-Gaba-Cys)-NH_2; SEQ ID NO:37

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-ß-Ala-Lys)-NH_2; SEQ ID NO:38

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:39

Ac-Nle-c(Cys-His-D-2-Nal-Arg-Trp-Ahx-Cys)-NH_2; SEQ ID NO:39

Ac-hPhe-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Cha-c(Asp-His-D-2-Nal-Arg-Trp-Gaba-Lys)-NH_2; SEQ ID NO:40

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-OH; SEQ ID NO:41

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-OH; SEQ ID NO:42

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Ala-D-Cys)-Thr-OH; SEQ ID NO:43

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-OH; SEQ ID NO:43

D-Phe-c(Cys-His-D-Phe-Arg-Trp-Gaba-D-Cys)-Thr-OH; SEQ ID NO:43

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-OH; SEQ ID NO:42

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Apn-Lys)-OH; SEQ ID NO:41

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-D-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-OH; SEQ ID NO:44

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Gaba-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-D-Ala-Cys)-OH; SEQ ID NO:45

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-2-Nal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-1-Nal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Cys-D-Ala-His-D-2-Nal-Arg-Bal-Cys)-OH; SEQ ID NO:46

Ac-Nle-c(Pen-D-Ala-His-D-Phe-Arg-Trp-Cys)-OH; SEQ ID NO:47

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-OH; SEQ ID NO:48

Ac-Arg-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; SEQ ID NO:49

Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; SEQ ID NO:50

Ac-D-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:51

Ac-D-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:52

Ac-Arg-c(Cys-His-D-Phe-Arg-Trp-Gaba-Pen)-NH_2; SEQ ID NO:52

Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; SEQ ID NO:51

Ac-D-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:53

Ac-Arg-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-NH_2; SEQ ID NO:53

Ac-Nle-c(Cys-3-Pal-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:35

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-D-Ala-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-ß-Ala-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gaba-Cys)-NH_2; SEQ ID NO:54

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Apn-Cys)-NH_2; SEQ ID NO:54

Ac-c(Cys-Glu-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:55

Ac-c(Cys-Glu-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2; SEQ ID NO:55

Ac-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:56

Ac-c(Cys-D-Ala-His-D-Phe-Arg-2-Nal-Ala-Cys)-NH_2; SEQ ID NO:56

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Ala-Cys)-NH_2; SEQ ID NO:57

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-β-Ala-Cys)-NH_2; SEQ ID NO:57

Ac-Nle-c(Asp-D-Ala-His-D-Phe-Arg-Bal-Ala-Lys)-NH_2; SEQ ID NO:58

Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2; (SEQ ID NO:60)

Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-Doc-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-NH_2; (SEQ ID NO:61)

Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:62)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:62)

Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:63)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Pro)_2$-Lys-Asp-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:64)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:65)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(ß\text{-Ala})_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:66)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:67)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:68)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:69)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:69)

Ac-Nle-c(Asp-His-D-2-Nal-Arg-Trp-Lys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:70)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:72)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:73)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:74)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:75)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Gln-$(Arg)_5$-NH_2; (SEQ ID NO:76)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-Gln-Lys-$(Arg)_5$-NH_2; (SEQ ID NO:77)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_4$-Gln-Arg-NH_2; (SEQ ID NO:78)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Aib-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:79)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:80)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:80)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:81)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:82)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:82)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:81)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:83)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:84)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:83)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_3$-Gln-$(Arg)_2$-NH_2; (SEQ ID NO:85)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Gln-$(Lys)_2$-$(Arg)_5$-NH_2; (SEQ ID NO:86)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_5$-Gln-NH_2; (SEQ ID NO:87)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:71)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:88)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:89)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:88)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:90)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:91)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:92)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:95)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:96)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:97)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:92)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:98)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:99)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:101)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:104)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:105)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:100)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:101)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:102)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:103)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:113)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:113)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:114)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:114)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:115)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:115)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:116)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:116)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:118)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:118)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:119)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:120)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:120)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:121)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:121)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:122)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:122)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:124)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:125)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:125)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:126)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:126)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:127)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:127)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:128)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:128)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:130)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:130)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:133)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:134)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:134)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:135)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Arg-Asp-ß-Ala-Tyr-Gly-$(Arg)_6$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:135)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:136)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-$(Lys)_2$-Arg-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:137)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-Arg-$(Lys)_2$-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:136)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:138)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:139)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:140)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:141)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:142)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:141)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Gly-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:142)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_2$-Lys-$(Arg)_2$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:143)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Arg-Lys-$(Arg)_3$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:144)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:148)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:148)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:149);

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:149)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:151)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:150)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:150)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:151)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:152)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:152)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:154)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:153)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:154)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:155)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:155)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:157)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:156)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:156)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:157)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:158)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:158)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:159)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:160)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:161)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Ala-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:162)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:164)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:163)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:163)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:164)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:165)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:165)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:166)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:166)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:168)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:167)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:167)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:168)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:170)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:169)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:169)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:170)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:171)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:171)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:173)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:172)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:172)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:173)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:174)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Lys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:174)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:175)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-ß-Ala-Lys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:176)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:177)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Ahx-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:178)

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:179)

D-Phe-c(Cys-His-D-Phe-Arg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:180)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:181)

Ac-Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:182)

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:183)

Ac-Cha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:184)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:183)

Ac-Nle-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:185)

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:186)

Ac-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:185)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:186)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:188)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:187)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:188)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:189)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:190)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:189)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:190)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:191)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:192)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:191)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:192)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:193)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:194)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:193)

Ac-hCha-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:194)

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:195)

Ac-D-Chg-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:196)

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:197)

Ac-hPhe-c(Asp-His-D-Phe-Arg-Trp-Gaba-Lys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:198)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:199)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:200)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:199)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-Ahx-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:200)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:201)

Ac-Nle-c(Cys-His-D-Phe-Arg-D-Trp-ß-Ala-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:202)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:203)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:203)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:205)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:204)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:204)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:205)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:207)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:206)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:206)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:207)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:208)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:208)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:209)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:210)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:209)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:211)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:212)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:213)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(ß-Ala)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:213)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:267)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:214)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:216)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:214)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:217)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:215)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:216)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(Doc)$_2$-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:215)

D-Phe-c(Cys-His-D-(Et)Tyr-Arg-Trp-ß-Ala-D-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:217)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:218)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:219)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:218)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:219)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:221)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:220)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH_2; (SEQ ID NO:221)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:222)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-ß-Ala-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:223)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:222)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:223)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:224)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:225)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:224)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Trp-ß-Ala-D-Cys)-Thr-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH_2; (SEQ ID NO:225)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:227)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:226)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:228)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:227)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:228)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:229)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:230)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:232)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:231)

D-Phe-c(Cys-His-D-(Et)Tyr-hArg-Bip-ß-Ala-D-Cys)-Thr-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:232)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:233)

Ac-Nle-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Gly-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:234)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:235)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:236)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:235)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:236)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:237)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:238)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:237)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:238)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:239)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:240)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:239)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:240)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:241)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:242)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:241)

Nle-c(Cys-His-D-Phe-Arg-Trp-Apn-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:242)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:243)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:244)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:243)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:244)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:245)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:246)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:245)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:246)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:247)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:248)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:247)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:248)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:249)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:250)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:249)

Ac-Nle-c(Cys-D-Leu-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_4$-NH$_2$; (SEQ ID NO:250)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:251)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:252)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:251)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(ß-Ala)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:252)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:253)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:254)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-Tyr-Gly-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:253)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-(Doc)$_2$-(Arg)$_5$-Gln-(Arg)$_3$-NH$_2$; (SEQ ID NO:254)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:255)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:256)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:255)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:256)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:257)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:258)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:257)

Ac-Nle-c(Cys-D-Cha-His-D-Phe-Arg-Trp-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:258)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:259)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:260)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(ß\text{-Ala})_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:259)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(ß\text{-Ala})_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:260)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:261)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-ß-Ala-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:262)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(ß\text{-}Ala)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:261)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(ß\text{-}Ala)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:262)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:263)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:264)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:263)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_3$-NH_2; (SEQ ID NO:264)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:265)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-Doc-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:266)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-Tyr-Gly-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:265)

Nle-c(Cys-His-D-Phe-Arg-Trp-Gaba-Cys)-$(Doc)_2$-$(Arg)_5$-Gln-$(Arg)_4$-NH_2; (SEQ ID NO:266)

Ac-c(Cys-Glu-His-D-4-Br-Phe-Arg-Trp-Gly-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:268)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-1-Nal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:269)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-Bal-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:210)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-ß-Ala-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:270)

Ac-c(Cys-Glu-His-D-2-Nal-Arg-2-Nal-Aib-Cys)-$(Pro)_2$-Lys-Asp-NH_2; (SEQ ID NO:270)

c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:271)

c[Hydantoin(C(O)-(hCys-D-Ala))-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:271)

c[Hydantoin(C(O)-(Cys-D-Ala))-His-D-2-Nal-Arg-Trp-Cys]-NH_2; (SEQ ID NO:272)

c[Hydantoin(C(O)-(hCys-D-Ala))-His-D-2-Nal-Arg-Trp-Cys]-NH_2; (SEQ ID NO:272)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:273)

c[Hydantoin(C(O)-(Asp-His))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-His))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A3c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A5c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A6c))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-A3c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-A5c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-A6c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin (C(O)-(Asp-A5c))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-Aic))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-Apc))-D-Phe-Arg-Trp-Lys]-NH_2; (SEQ ID NO:274)

c[Hydantoin(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin-(C(O)-(Asp-Aic))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin-(C(O)-(Asp-Apc))-D-2-Nal-Arg-Trp-Lys]-NH_2; (SEQ ID NO:275)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Orn]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dab]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-D-Ala))-His-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:276)

c[Hydantoin(C(O)-(Glu-His))-D-Phe-Arg-Trp-Dap]-NH_2; (SEQ ID NO:277)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Pen)-NH_2; (SEQ ID NO:280)

Hydantoin(C(O)-(Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Ala-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Aib-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Val-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Ile-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Leu-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Gly-Gly))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:281)

Hydantoin(C(O)-(Nle-Gly))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:281)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:278)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:279)

Hydantoin(C(O)-(D-Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:282)

Hydantoin(C(O)-(Arg-Gly))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:282)

Hydantoin(C(O)-(Ala-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(Val-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(Gly-Nle))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:283)

Hydantoin(C(O)-(A6c-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Gly-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(D-Ala-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Val-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Leu-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Cha-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Aib-Nle))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:284)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:285)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-Glu-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:285)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:286)

Hydantoin(C(O)-(Gly-Arg))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:286)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:287)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:288)

Hydantoin(C(O)-(Gly-D-Arg))-c(Cys-D-Ala-His-D-2-Nal-Arg-Trp-Cys)-NH_2; (SEQ ID NO:288)

Hydantoin(C(O)-(Nle-Ala))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:289)

c[Hydantoin(C(O)-(Ala-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2, (SEQ ID NO:290)

c[Hydantoin(C(O)-(Nle-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(D-Ala-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Aib-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Val-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Abu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Leu-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Ile-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Cha-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(A6c-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Phe-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Gly-Cys))-D-Ala-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:290)

c[Hydantoin(C(O)-(Gly-Cys))-Glu-His-D-Phe-Arg-Trp-Cys]-NH_2; (SEQ ID NO:291)

Ac-Tyr-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-2-Nal-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-1-Nal-Arg-c(Cys-D-Ala-His-DPhe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Phe-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Trp-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

Ac-Pff-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

H-His-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:293) or

Ac-His-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2; (SEQ ID NO:292)

or a pharmaceutically acceptable salt thereof.

2. The use according to claim 1, wherein said compound is Ac-Arg-c(Cys-D-Ala-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:50) or a pharmaceutically acceptable salt thereof.

3. The use according to claim 2, wherein said compound is Hydantoin(C(O)-(Arg-Gly))-c(Cys-Glu-His-D-Phe-Arg-Trp-Cys)-NH_2 (SEQ ID NO:278) or a pharmaceutically acceptable salt thereof.

4. The use according to any one of claims 1-4, wherein said subject is obese or overweight.

5. The use according to any one of claims 1-4, wherein said subject is normal weight or lean.

6. The use according to either of claims 5 or 6, wherein said obese, overweight, normal weight or lean subject suffers from type II diabetes.

7. The use according to any one of claims 1-7, wherein said peripheral administration is oral, subcutaneous, intraperitoneal, intramuscular, intravenous, rectal, transdermal or intranasal.

8. The use according to claim 8, wherein said administration is continuous, hourly, four times daily, three time daily, twice daily, once daily, once every other day, twice weekly, once weekly, once every two weeks, once a month, or once every two months.

9. The use according to claim 9, wherein said administration is continuous.

10. The use according to claim 9, wherein said administration is once daily.

11. The use according to claim 9, wherein said administration is once weekly.

12. The use according to claim 9, wherein said administration is once every two weeks.

13. The use according to claim 9, wherein said administration is once a month or once every two months.

14. The use according to any one of claims 1-14, wherein said peripheral administration of an effective amount of a melanocortin receptor 4 agonist to treat said insulin resistance in a subject need thereof also reduces the body weight of said subject in need thereof.

SEQUENCE LISTING

<110> SOCIETE DE CONSEILS DE RECHERCHES ET D'APPLICATIONS SCIENTIFIQUES S.A.S.
BOARD OF SUPERVISORS OF LOUISIANA STATE UNIVERSITY AND AGRICULTURE AND MECHANICAL COLLEGE
Halem, Heather
Culler, Michael
Butler, Andrew

<120> USE OF MELANOCORTINS TO TREAT INSULIN SENSITIVITY

<130> 183P/PCT2

<150> US 61/001933
<151> 2007-11-05

<160> 293

<170> PatentIn version 3.5

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<223> Cyclic

<220>
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<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = homo-Arg (hArg)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala

<220>
<221> MISC_FEATURE

<222> (8)..(8)
<223> Xaa = D-Cys

<220>
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<222> (9)..(9)
<223> AMIDATION

<400> 23

Xaa Cys His Xaa Xaa Trp Xaa Xaa Thr
1 5

<210> 24
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Phe

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-(Et)Tyr

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = Arg or homo-Arg (hArg)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = D-Cys

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 24

Xaa Cys His Xaa Xaa Trp Xaa Xaa Thr
1 5

<210> 25
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Phe

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = 4,4'-biphenylAla (Bip)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = D-Cys

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 25

Xaa Cys His Xaa Arg Xaa Xaa Xaa Thr
1 5

<210> 26
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Phe

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)

<223> Xaa = D-Phe or D-(Et)Tyr

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = homo-Arg (hArg)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = 4,4'-biphenylAla (Bip)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = D-Cys

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 26

Xaa Cys His Xaa Xaa Xaa Xaa Xaa Thr
1 5

<210> 27
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
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<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 5-aminopentanoic acid (Apn)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 27

Xaa Cys His Xaa Arg Trp Xaa Cys
1 5

<210> 28
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Trp or 3-benzothienylAla (Bal)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 28

Xaa Asp Xaa His Xaa Arg Xaa Lys
1 5

<210> 29
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = penicillamine (Pen) or Cys

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 29

Xaa Cys Xaa His Xaa Arg Trp Xaa
1 5

<210> 30
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-alpha-aminobutyric acid (D-Abu), D-Val, D-Ile, D-Leu,
D-tert-Leu (D-Tle) or D-beta-cyclohexylAla (D-Cha)

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 30

Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 31
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = penicillamine (Pen)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 31

Xaa Xaa His Xaa Arg Trp Xaa Cys
1 5

<210> 32
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Cys or penicillamine (Pen)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = penicillamine (Pen)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 32

Xaa Xaa His Xaa Arg Trp Xaa Xaa
1 5

<210> 33
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Leu, beta-cyclohexylAla (Cha), Ile, Phe, Val or beta-(2-naphthyl)Ala (2-Nal), all modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 33

Xaa Cys His Xaa Arg Trp Xaa Cys
1 5

<210> 34
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle or Phe

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 34

Xaa Cys His Xaa Arg Trp Xaa Cys
1 5

<210> 35
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = beta-(3-pyridiyl)Ala (3-Pal)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 35

Xaa Cys Xaa Xaa Arg Trp Xaa Cys
1 5

<210> 36
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 36

Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 37
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE

<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Trp

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 37

Xaa Cys His Phe Arg Xaa Xaa Cys
1 5

<210> 38
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Ala or beta-Ala

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 38

Xaa Asp His Xaa Arg Trp Xaa Lys
1 5

<210> 39
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba) or 6-aminohexanoic acid (Ahx)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 39

Xaa Cys His Xaa Arg Trp Xaa Cys
1 5

<210> 40
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = homo-Phe (hPhe) or beta-cyclohexylAla (Cha), both modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE

<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 40

Xaa Asp His Xaa Arg Trp Xaa Lys
1 5

<210> 41
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala or 5-aminopentanoic acid (Apn)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 41

Xaa Asp His Xaa Arg Trp Xaa Lys
1 5

<210> 42
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 6-aminohexanoic acid (Ahx) or 5-aminopentanoic acid (Apn)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 42

Xaa Cys His Xaa Arg Trp Xaa Cys
1 5

<210> 43
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Phe

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Ala, beta-Ala or 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = D-Cys

<220>
<221> MOD_RES
<222> (9)..(9)
<223> C-terminus is the free acid

<400> 43

Xaa Cys His Xaa Arg Trp Xaa Xaa Thr

1 5

<210> 44
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = beta-cyclohexylAla (Cha), Nle, cyclohexylGly (Chg), D-Cha, homo-cyclohexylAla (hCha), D-Chg or homo-Phe (hPhe), all modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 44

Xaa Asp His Xaa Arg Trp Xaa Lys
1 5

<210> 45
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Trp

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba), 6-aminohexanoic acid (Ahx), beta-Ala or D-Ala

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 45

Xaa Cys His Xaa Arg Xaa Xaa Cys
1 5

<210> 46
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Trp, beta-(2-naphthyl)Ala (2-Nal), beta-(1-naphthyl)Ala (1-Nal) or 3-benzothienylalanine (Bal)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 46

Xaa Cys Xaa His Xaa Arg Xaa Cys
1 5

<210> 47
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = penicillamine (Pen)

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 47

Xaa Xaa Xaa His Xaa Arg Trp Cys
1 5

<210> 48
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)

<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = penicillamine (Pen)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> C-terminus is the free acid

<400> 48

Xaa Cys His Xaa Arg Trp Xaa Xaa
1 5

<210> 49
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 49

Arg Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 50
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Arg or D-Arg, both modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 50

Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 51
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Arg or Arg, both modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
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<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = penicillamine (Pen)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 51

Xaa Cys Xaa His Xaa Arg Trp Xaa
1 5

<210> 52
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
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<223> Xaa = D-Arg or Arg, both modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = penicillamine (Pen)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 52

Xaa Cys His Xaa Arg Trp Xaa Xaa
1 5

<210> 53
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE

<222> (1)..(1)
<223> Xaa = D-Arg or Arg, both modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
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<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 53

Xaa Asp His Xaa Arg Trp Ala Lys
1 5

<210> 54
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
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<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(9)
<223> Cyclic

<220>
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<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
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<223> Xaa = Gly, D-Ala, beta-Ala, 4-aminobutyric acid (Gaba) or
5-aminopentanoic acid (Apn)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 54

Xaa Cys Xaa His Xaa Arg Trp Xaa Cys
1 5

<210> 55
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (1)..(8)
<223> Cyclic

<220>
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<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Trp or beta-(2-naphthyl)alanine (2-Nal)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 55

Cys Glu His Xaa Arg Xaa Ala Cys
1 5

<210> 56
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
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<223> modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (1)..(8)
<223> Cyclic

<220>
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<222> (2)..(2)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE

<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Trp or beta-(2-naphthyl)Ala (2-Nal)

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 56

Cys Xaa His Xaa Arg Xaa Ala Cys
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(9)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = Ala, beta-Ala or 4-aminobutyric acid (Gaba)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 57

Xaa Cys Xaa His Xaa Arg Trp Xaa Cys
1 5

<210> 58
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(9)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 3-benzothienylAla (Bal)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 58

Xaa Asp Xaa His Xaa Arg Xaa Ala Lys
1 5

<210> 59
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(8)
<223> Cyclic

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Glu

<220>
<221> MISC_FEATURE
<222> (5)..(5)

<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (8)..(8)
<223> AMIDATION

<400> 59

Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 60
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (13)..(18)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MOD_RES
<222> (18)..(18)
<223> AMIDATION

<400> 60

Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Xaa Asp His Xaa Arg
1 5 10 15

Trp Lys

<210> 61
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MISC_FEATURE

<222> (13)..(13)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (14)..(19)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MOD_RES
<222> (19)..(19)
<223> AMIDATION

<400> 61

Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Xaa Xaa Asp His Xaa
1 5 10 15

Arg Trp Lys

<210> 62
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle or Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(7)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (19)..(19)
<223> AMIDATION

<400> 62

Xaa Asp His Xaa Arg Trp Lys Xaa Tyr Gly Arg Lys Lys Arg Arg Gln
1 5 10 15

Arg Arg Arg

<210> 63
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (2)..(7)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (8)..(9)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MOD_RES
<222> (20)..(20)
<223> AMIDATION

<400> 63

Xaa Asp His Xaa Arg Trp Lys Xaa Xaa Tyr Gly Arg Lys Lys Arg Arg
1 5 10 15

Gln Arg Arg Arg
20

<210> 64
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(7)
<223> cyclic

<220>

<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MOD_RES
<222> (22)..(22)
<223> AMIDATION

<400> 64

Xaa Asp His Xaa Arg Trp Lys Pro Pro Lys Asp Tyr Gly Arg Lys Lys
1 5 10 15

Arg Arg Gln Arg Arg Arg
20

<210> 65
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MOD_RES
<222> (23)..(23)
<223> AMIDATION

<400> 65

Cys Glu His Xaa Arg Trp Gly Cys Pro Pro Lys Asp Tyr Gly Arg Lys
1 5 10 15

Lys Arg Arg Gln Arg Arg Arg
20

<210> 66
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>

<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(7)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (8)..(9)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (20)..(20)
<223> AMIDATION

<400> 66

Xaa Asp His Xaa Arg Trp Lys Xaa Xaa Tyr Gly Arg Lys Lys Arg Arg
1 5 10 15

Gln Arg Arg Arg
20

<210> 67
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
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<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(7)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MOD_RES
<222> (23)..(23)
<223> AMIDATION

<400> 67

Xaa Asp His Xaa Arg Trp Lys Pro Pro Lys Asp Xaa Tyr Gly Arg Lys
1 5 10 15

Lys Arg Arg Gln Arg Arg Arg
20

<210> 68
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 68

Cys Glu His Xaa Arg Trp Gly Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Arg Arg Gln Arg Arg Arg
20

<210> 69
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala or 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 69

Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Arg Arg Gln Arg Arg Arg
20

<210> 70
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
<222> (2)..(7)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (8)..(9)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MOD_RES
<222> (20)..(20)
<223> AMIDATION

<400> 70

Xaa Asp His Xaa Arg Trp Lys Xaa Xaa Tyr Gly Arg Lys Lys Arg Arg
1 5 10 15

Gln Arg Arg Arg
20

<210> 71
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = beta-(2-naphthyl)Ala (2-Nal), beta-(1-naphthyl)Ala (1-Nal)
or 3-benzothienylAla (Bal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 71

Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Arg Arg Gln Arg Arg Arg
20

<210> 72
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)

<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = 3-benzothienylAla (Bal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (22)..(22)
<223> AMIDATION

<400> 72

Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp Xaa Arg Arg Arg
1 5 10 15

Arg Arg Gln Arg Arg Arg
20

<210> 73
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = 3-benzothienylAla (Bal)

<220>
<221> MISC_FEATURE

<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (23)..(23)
<223> AMIDATION

<400> 73

Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp Xaa Gly Arg Arg
1 5 10 15

Arg Arg Arg Gln Arg Arg Arg
20

<210> 74
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = 3-benzothienylAla (Bal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 74

Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Arg Arg Arg Arg Gln Arg Arg Arg
20

<210> 75

<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 75

Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Arg Gln Arg Arg Arg Arg
20

<210> 76
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>

<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 76

Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Gln Arg Arg Arg Arg Arg
20

<210> 77
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 77

Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Gln Lys Arg Arg Arg Arg Arg
20

<210> 78
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (24)..(24)
<223> AMIDATION

<400> 78

Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Arg Arg Arg Arg Gln Arg
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<210> 79
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<220>
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<220>
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<223> AMIDATION

<400> 79

Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp Xaa Tyr Xaa Arg
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Lys Lys Arg Arg Gln Arg Arg Arg
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<210> 80
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<220>
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Arg Arg Gln Arg Arg Arg
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<210> 81
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<212> PRT
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Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp Xaa Arg Arg Arg
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Arg Arg Arg Gln Arg Arg Arg
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<210> 82
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Arg Arg Gln Arg Arg Arg
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<210> 83
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Arg Arg Arg Gln Arg Arg Arg
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<210> 84
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Arg Arg Gln Arg Arg Arg
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<222> (24)..(24)
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Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
1 5 10 15

Lys Lys Arg Arg Arg Gln Arg Arg
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Gln Lys Lys Arg Arg Arg Arg Arg
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Lys Arg Arg Gln Arg Arg Arg

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Arg Arg Gln Arg Arg Arg
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Lys Arg Arg Gln Arg Arg Arg
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Lys Arg Arg Arg Gln Arg Arg Arg
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Lys Arg Arg Gln Arg Arg Arg
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Arg Arg Arg Gln Arg Arg Arg
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<210> 104
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<400> 104

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Arg Arg Gln Arg Arg Arg
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<400> 105

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Arg Arg Gln Arg Arg Arg
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<210> 106
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Lys Lys Arg Gln Arg Arg Arg Arg
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Lys Lys Gln Arg Arg Arg Arg Arg
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Gln Lys Lys Arg Arg Arg Arg Arg
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Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Lys Asp Xaa Tyr Gly Arg
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Arg Arg Gln Arg Arg Arg
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Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Xaa Asp Xaa Arg Arg Arg
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Arg Arg Gln Arg Arg Arg Arg
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Cys Glu His Xaa Arg Trp Ala Cys Pro Pro Xaa Asp Xaa Tyr Gly Arg
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Arg Arg Arg Arg Gln Arg Arg Arg Arg
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Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Xaa Asp Xaa Arg Arg Arg
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Arg Arg Gln Arg Arg Arg
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Arg Arg Gln Arg Arg Arg Arg
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Arg Arg Arg Gln Arg Arg Arg
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Arg Arg Arg Arg Gln Arg Arg Arg
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Arg Arg Arg Arg Arg Gln Arg Arg Arg
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Arg Arg Gln Arg Arg Arg
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Arg Arg Arg Gln Arg Arg Arg
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Arg Arg Gln Arg Arg Arg Arg
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Arg Arg Gln Arg Arg Arg
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Arg Arg Arg

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Arg Arg

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Gln Arg Arg Arg
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Arg Arg Arg

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Gln Arg Arg Arg
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Arg Gln Arg Arg Arg
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Gln Arg Arg Arg Arg
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Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Arg Arg Arg Arg Arg Gln Arg
1 5 10 15

Arg Arg

<210> 177
<211> 20
<212> PRT
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<220>
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<220>
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<223> Xaa = Nle modified with acyl (Ac)

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<223> Xaa = D-Phe

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<223> Xaa = 6-aminohexanoic acid (Ahx)

<220>
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<220>
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<400> 177

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Tyr Gly Arg Arg Arg Arg Arg
1 5 10 15

Gln Arg Arg Arg
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<210> 178
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<220>
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<223> Xaa = beta-Ala

<220>
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<400> 178

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1 5 10 15

Arg Arg

<210> 179
<211> 21
<212> PRT
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<220>
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<220>
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<223> Xaa = beta-Ala

<220>
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<223> AMIDATION

<400> 179

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1 5 10 15

Arg Gln Arg Arg Arg
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<210> 180
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<223> cyclic

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<400> 180

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Arg Arg Arg

<210> 181
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<212> PRT
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<220>
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<223> Xaa = Nle modified with acyl (Ac)

<220>
<221> DOMAIN
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<223> cyclic

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<223> Xaa = D-Phe

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<222> (7)..(7)
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<220>
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<223> Xaa = beta-Ala

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<223> AMIDATION

<400> 181

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Tyr Gly Arg Arg Arg Arg Arg
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Gln Arg Arg Arg
20

<210> 182
<211> 18
<212> PRT

<213> Artificial Sequence

<220>
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<220>
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<223> Xaa = Nle modified with acyl (Ac)

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<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (18)..(18)
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<400> 182

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Arg Arg Arg Arg Arg Gln Arg
1 5 10 15

Arg Arg

<210> 183
<211> 20
<212> PRT
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<220>
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<220>
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<223> cyclic

<220>
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<223> Xaa = D-Phe

<220>
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<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
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<223> Xaa = beta-Ala

<220>
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<400> 183

Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Tyr Gly Arg Arg Arg Arg Arg
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Gln Arg Arg Arg
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<220>
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<220>
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<223> Xaa = beta-cyclohexylAla (Cha) or homo-cyclohexylAla (hCha), both modified with acyl (Ac)

<220>
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<222> (2)..(8)
<223> cyclic

<220>
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<223> Xaa = D-Phe

<220>
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<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
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<223> Xaa = beta-Ala

<220>
<221> MOD_RES
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<223> AMIDATION

<400> 184

Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Arg Arg Arg Arg Arg Gln Arg
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Arg Arg

<210> 185
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<220>
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<220>
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<223> Xaa = Nle or cyclohexylGly (Chg), both modified with acyl (Ac)

<220>
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<220>
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<223> Xaa = D-Phe

<220>
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<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
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<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (18)..(18)
<223> AMIDATION

<400> 185

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1 5 10 15

Arg Arg

<210> 186
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<212> PRT
<213> Artificial Sequence

<220>
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<220>
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<223> Xaa = cyclohexylGly (Chg) or homo-cyclohexylAla (hCha), both modified with acyl (Ac)

<220>
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<222> (2)..(8)
<223> cyclic

<220>
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<223> Xaa = D-Phe

<220>
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<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
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<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (20)..(20)
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<400> 186

Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Tyr Gly Arg Arg Arg Arg Arg
1 5 10 15

Gln Arg Arg Arg
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<210> 187
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<212> PRT
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<220>
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<223> Xaa = homo-cyclohexylAla (hCha) modified with acyl (Ac)

<220>
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<223> Xaa = D-Phe

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<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
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<223> Xaa = beta-Ala

<220>
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<222> (21)..(21)
<223> AMIDATION

<400> 187

Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Xaa Tyr Gly Arg Arg Arg Arg
1 5 10 15

Arg Gln Arg Arg Arg
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<210> 188
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<212> PRT
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<400> 188

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1 5 10 15

Arg Arg Arg

<210> 189
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<220>
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<220>
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<220>
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<400> 189

Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Xaa Tyr Gly Arg Arg Arg Arg
1 5 10 15

Arg Gln Arg Arg Arg
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<210> 190
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<220>
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<400> 190

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Arg Arg Arg

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<400> 191

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Arg Gln Arg Arg Arg Arg
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<210> 192
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<212> PRT
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<400> 192

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1 5 10 15

Arg Arg Arg Arg
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<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc) or absent

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Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Xaa Tyr Gly Arg Arg Arg Arg
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Arg Gln Arg Arg Arg Arg
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<400> 194

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Arg Arg Arg Arg
20

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<220>
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<220>
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Gln Arg Arg Arg
20

<210> 196
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<220>
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<223> Xaa = D-cyclohexylGly (D-Chg) modified with acyl (Ac)

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<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
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<223> Xaa = beta-Ala

<220>
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<400> 196

Xaa Asp His Xaa Arg Trp Xaa Lys Xaa Arg Arg Arg Arg Arg Gln Arg
1 5 10 15

Arg Arg

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<211> 20
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<220>
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<220>
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<223> Xaa = homo-phenylAla (hPhe) modified with acyl (Ac)

<220>
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<223> cyclic

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<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
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<223> Xaa = beta-Ala

<220>
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1 5 10 15

Gln Arg Arg Arg

<210> 198
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<220>
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<220>
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<223> cyclic

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<223> Xaa = D-Phe

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<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
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<223> Xaa = beta-Ala

<220>
<221> MOD_RES
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<400> 198

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1 5 10 15

Arg Arg

<210> 199
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<212> PRT
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<220>
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<223> Xaa = Nle modified with acyl (Ac)

<220>
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<223> cyclic

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<222> (6)..(6)
<223> Xaa = D-Trp

<220>
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<223> Xaa = 5-aminopentanoic acid (Apn) or 6-aminohexanoic acid (Ahx)

<220>
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<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (20)..(20)
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<400> 199

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1 5 10 15

Gln Arg Arg Arg
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<210> 200
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<223> Xaa = Nle modified with acyl (Ac)

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Arg Arg

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Arg Arg Arg

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Arg Arg Arg

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Arg Arg Arg Arg
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Arg Gln Arg Arg Arg
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Arg Gln Arg Arg Arg Arg
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Arg Arg Arg Arg
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<210> 243
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Arg Gln Arg Arg Arg
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<400> 246

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Arg Gln Arg Arg Arg Arg
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<400> 256

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Arg Gln Arg Arg Arg Arg
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<400> 258

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Arg Arg Arg Arg
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Arg Gln Arg Arg Arg
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Arg Arg Arg

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Arg Gln Arg Arg Arg Arg
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<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc) or absent

<220>
<221> MOD_RES
<222> (21)..(21)
<223> AMIDATION

<400> 263

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Xaa Tyr Gly Arg Arg Arg Arg
1 5 10 15

Arg Gln Arg Arg Arg
20

<210> 264
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (2)..(8)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MISC_FEATURE

<222> (10)..(10)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc) or absent

<220>
<221> MOD_RES
<222> (19)..(19)
<223> AMIDATION

<400> 264

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Xaa Arg Arg Arg Arg Arg Gln
1 5 10 15

Arg Arg Arg

<210> 265
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (2)..(8)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc) or absent

<220>
<221> MOD_RES
<222> (22)..(22)
<223> AMIDATION

<400> 265

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Xaa Tyr Gly Arg Arg Arg Arg
1 5 10 15

Arg Gln Arg Arg Arg Arg
20

<210> 266
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Nle

<220>
<221> DOMAIN
<222> (2)..(8)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = 4-aminobutyric acid (Gaba)

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc)

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = 8-amino-3,6-dioxaoctanoic acid (Doc) or absent

<220>
<221> MOD_RES
<222> (20)..(20)
<223> AMIDATION

<400> 266

Xaa Cys His Xaa Arg Trp Xaa Cys Xaa Xaa Arg Arg Arg Arg Arg Gln
1 5 10 15

Arg Arg Arg Arg
20

<210> 267
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>

<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Phe

<220>
<221> DOMAIN
<222> (2)..(8)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-(Et)Tyr

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = D-Cys

<220>
<221> MISC_FEATURE
<222> (9)..(10)
<223> Xaa = beta-Ala

<220>
<221> MOD_RES
<222> (20)..(20)
<223> AMIDATION

<400> 267

Xaa Cys His Xaa Arg Trp Xaa Xaa Xaa Xaa Arg Arg Arg Arg Arg Gln
1 5 10 15

Arg Arg Arg Arg
20

<210> 268
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-4-bromo-phenylAla (D-4-Br-Phe)

<220>
<221> MOD_RES
<222> (12)..(12)
<223> AMIDATION

<400> 268

Cys Glu His Xaa Arg Trp Gly Cys Pro Pro Lys Asp
1 5 10

<210> 269
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Trp, beta-(2-naphthyl)Ala (2-Nal), beta-(1-naphthyl)Ala (1-Nal) or 3-benzothienylAla (Bal)

<220>
<221> MOD_RES
<222> (12)..(12)
<223> AMIDATION

<400> 269

Cys Glu His Xaa Arg Xaa Ala Cys Pro Pro Lys Asp
1 5 10

<210> 270
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MOD_RES

<222> (1)..(1)
<223> modified with acyl (Ac)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphthyl)Ala (D-2-Nal)

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = beta-(2-naphthyl)Ala (2-Nal)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = beta-Ala or alpha-aminoisobutyric acid (Aib)

<220>
<221> MOD_RES
<222> (12)..(12)
<223> AMIDATION

<400> 270

Cys Glu His Xaa Arg Xaa Xaa Cys Pro Pro Lys Asp
1 5 10

<210> 271
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(7)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Cys or homocyteine (hCys)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (7)..(7)
<223> AMIDATION

<400> 271

Xaa Xaa His Xaa Arg Trp Cys
1 5

<210> 272
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(7)
<223> Cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Cys or homocysteine (hCys)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>
<221> MOD_RES
<222> (7)..(7)
<223> AMIDATION

<400> 272

Xaa Xaa His Xaa Arg Trp Cys
1 5

<210> 273
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(7)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)

<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Lys, ornithine (Orn), 2,4-diaminobutyric acid (Dab), or
2,3-diaminopropionic acid (Dap)

<220>
<221> MOD_RES
<222> (7)..(7)
<223> AMIDATION

<400> 273

Asp Xaa His Xaa Arg Trp Xaa
1 5

<210> 274
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (1)..(6)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = His, 1-amino-1-cyclopropanecarboxylic acid (A3c),
1-amino-1cyclopentanecarboxylic acid (A5c),
1-amino-1-cyclohexanecarboxylic acid (A6c),
2-aminoindan-2-carboxylic acid (Aic), or Apc

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (6)..(6)
<223> AMIDATION

<400> 274

Asp Xaa Xaa Arg Trp Lys
1 5

<210> 275
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(6)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = His, 1-amino-1-cyclopropanecarboxylic acid (A3c),
1-amino-1cyclopentanecarboxylic acid (A5c),
1-amino-1-cyclohexanecarboxylic acid (A6c),
2-aminoindan-2-carboxylic acid (Aic), or Apc

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>
<221> MOD_RES
<222> (6)..(6)
<223> AMIDATION

<400> 275

Asp Xaa Xaa Arg Trp Lys
1 5

<210> 276
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (1)..(7)
<223> cyclic

<220>
<221> MISC_FEATURE

<222> (2)..(2)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Lys, ornithine (Orn), 2,4-diaminobutyric acid (Dab), or 2,3-diaminopropionic acid (Dap)

<220>
<221> MOD_RES
<222> (7)..(7)
<223> AMIDATION

<400> 276

Glu Xaa His Xaa Arg Trp Xaa
1 5

<210> 277
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(6)
<223> cyclic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (6)..(6)
<223> AMIDATION

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Lys or 2,3-diaminopropionic acid (Dap)

<400> 277

Glu His Xaa Arg Trp Xaa
1 5

<210> 278
<211> 9
<212> PRT

<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Arg, norleucine (Nle), Gly, or D-Arg

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 278

Xaa Gly Cys Glu His Xaa Arg Trp Cys
1 5

<210> 279
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = norleucine (Nle), Gly, Ala, D-Ala, alpha-aminoisobutyric acid (Aib), Val, Ile, Leu, D-Arg, or Arg

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Ala

<220>

<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 279

Xaa Gly Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 280
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = norleucine (Nle) or Gly

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> Xaa = penicillamine (Pen)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 280

Xaa Gly Cys Xaa His Xaa Arg Trp Xaa
1 5

<210> 281
<211> 9
<212> PRT

<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = norleucine (Nle) or Gly

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 281

Xaa Gly Cys Glu His Xaa Arg Trp Cys
1 5

<210> 282
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = D-Arg or Arg

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE

<222> (6)..(6)
<223> Xaa = D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 282

Xaa Gly Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 283
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = Ala, Val, or Gly

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = norleucine (Nle)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 283

Xaa Xaa Cys Glu His Xaa Arg Trp Cys
1 5

<210> 284
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = 1-amino-1-cyclohexanecarboxylic acid (A6c), Gly, Ala, D-Ala, Val, Leu, beta-cyclohexylalanine (Cha), or alpha-aminoisobutyric acid (Aib)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = norleucine (Nle)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 284

Xaa Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 285
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe or D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>

<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 285

Gly Arg Cys Glu His Xaa Arg Trp Cys
1 5

<210> 286
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe or D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 286

Gly Arg Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 287
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = D-Arg

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 287

Gly Xaa Cys Glu His Xaa Arg Trp Cys
1 5

<210> 288
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = D-Arg

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = D-Ala

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe or D-beta-(2-naphythyl)alanine (D-2-Nal)

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 288

Gly Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 289

<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = norleucine (Nle)

<220>
<221> DOMAIN
<222> (3)..(9)
<223> cyclic

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = D-Phe

<220>
<221> MOD_RES
<222> (9)..(9)
<223> AMIDATION

<400> 289

Xaa Ala Cys Glu His Xaa Arg Trp Cys
1 5

<210> 290
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> MOD_RES
<222> (1)..(1)
<223> modified with hydantoin(CO)

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = norleucine (Nle), Ala, D-Ala, alpha-aminoisobutyric acid (Aib), Val, alpha-aminobutyric acid (Abu), Leu, Ile, beta-cyclohexylalanine (Cha), 1-amino-1-cyclohexanecarboxylic acid (A6c), Phe, or Gly

<220>
<221> DOMAIN
<222> (1)..(8)
<223> cyclic

<220>
<221> MISC_FEATURE

<222> (3)..(3)
<223> Xaa = D-Ala

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<222> (5)..(5)
<223> Xaa = D-Phe

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<223> AMIDATION

<400> 290

Xaa Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 291
<211> 8
<212> PRT
<213> Artificial Sequence

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<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
<221> DOMAIN
<222> (1)..(8)
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<223> Xaa = D-Phe

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Gly Cys Glu His Xaa Arg Trp Cys
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<210> 292
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<212> PRT
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<220>
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<222> (1)..(1)
<223> Xaa = Tyr, beta-(2-naphthyl)alanine (2-Nal),
beta-(1-naphthyl)alanine (1-Nal), Phe, Trp,

(S)-pentafluorophenylalanine (Pff), or His, all modified with acyl group (Ac)

<220>
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<400> 292

Xaa Arg Cys Xaa His Xaa Arg Trp Cys
1 5

<210> 293
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<212> PRT
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<220>
<223> Melanocortin receptor ligand to treat insulin sensitivity

<220>
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<223> Xaa = D-Ala

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<223> Xaa = D-Phe

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<223> AMIDATION

<400> 293

His Arg Cys Xaa His Xaa Arg Trp Cys
1 5