Claims

1. Alpha-MSH analogue compound that is a derivative of alpha-MSH which exhibits agonist activity for the melanocortin-1 receptor (MC1R), the receptor to which alpha-MSH binds to initiate the production of melanin within a melanocyte, wherein the alpha-MSH analogue is a hexapeptide with an Nle unit at position 1 and comprises a quaternary ammonium group that is attached to the Nle unit at position 1 in the backbone.

2. Compound according to claim 1, wherein the hexapeptide is -Nle-Glu-His-D-Phe-X-Trp-NH_2.

3. Compound with formula structure:
$R_1 R_2 R_3 N – (CH_2)_n$ - CO - Nle - Glu - His- D-Phe - X - Trp - NH_2 wherein:
R_1, R_2 and R_3 are independently selected from methyl, ethyl, and propyl;
n is from 1-4; and
X is selected from Arg, norArg and homoArg,
or a pharmaceutically acceptable salt thereof.

4. Compound according to claims 1-3, wherein the compound is
$(C_2H_5)_3 N$ - CH_2 - CO - Nle - Glu - His - D-Phe - Arg - Trp - NH_2 or a pharmaceutically acceptable salt thereof.

5. Compound according to claim 1-3, wherein the compound is
$(CH_3)_3 N$ - $(CH_2)_3$ - CO - Nle - Glu - His - D-Phe - Arg - Trp - NH_2 or a pharmaceutically acceptable salt thereof.

6. Compound according to claims 1-3, wherein the compound is
$(C_2H_5)_3 N$ - CH_2 - CO - Nle - Glu - His - D-Phe - homoArg - Trp - NH_2 or a pharmaceutically acceptable salt thereof.

7. Compound according to claims 1-3, wherein the compound is
$(CH_3)_3 N$ - $(CH_2)_3$ - CO - Nle - Glu - His - D-Phe - homoArg - Trp - NH_2 or a pharmaceutically acceptable salt thereof.

8. Compound according to claims 1-3, wherein the compound is
$(C_2H_5)_3$ N - CH_2 - CO - Nle - Glu - His - D-Phe - norArg - Trp - NH_2 or a pharmaceutically acceptable salt thereof.

9. Compound according to claims 1-3, wherein the compound is
$(CH_3)_3$ N - $(CH_2)_3$ - CO - Nle - Glu - His - D-Phe - norArg - Trp - NH_2 or a pharmaceutically acceptable salt thereof.

10. Compound according to claims 1-9 for use in therapy.

11. The use of a compound according to claims 1-9 in the manufacture of a medicament for the treatment of pigmentation disorders and photodermatoses.

12. The use according to claim 11, wherein the pigmentation disorder is a hyperpigmentation disorder or a hypopigmentation disorder.

13. The use according to claim 12, wherein the hypopigmentation disorder is vitiligo.

14. The use according to claim 11, wherein the photodermatoses is selected from a group consisting of erythropoietic photoporphyria, polymorphic light eruption and solar urticarial.

15. The use of a compound according to claims 1-9 in the manufacture of a medicament for the prevention and/or treatment of skin cancer and/or UV irradiation-induced DNA damage.

16. The use according to any of claims 11-15, wherein the medicament is to be applied topically to the skin.

17. Method of preparing compound $R_1 R_2 R_3$ N - $(CH2)_n$ - CO - Nle - Glu - His – D-Phe - X - Trp - NH_2,
or a pharmaceutically acceptable salt thereof,
wherein
R_1, R_2 and R_3 are independently selected from methyl, ethyl, and propyl;

n is from 1-4; and

X is selected from Arg, homoArg or norArg, by

- providing tripeptide D-Phe – X – Trp (4-6);

- coupling tripeptide (4-6) D-Phe – X – Trp with histidine (3);

- coupling quaternary ammonium compound $R_1 R_2 R_3 N^+ - (CH2)_n – COO^-$ with dipeptide Nle-Glu (1-2); and

- coupling dipeptide Nle-Glu (1-2) carrying the quaternary ammonium group with the tetrapeptide His - D-Phe – X – Trp (3-6) to prepare the $R_1 R_2 R_3 N - (CH2)_n$ - CO - Nle - Glu - His – D-Phe - X - Trp - NH_2.

18. Method according to claim 17 wherein X is homoArg and wherein tripeptide D-Phe - homoArg - Trp (4-6) is prepared from tripeptide D-Phe - Lys - Trp by converting the free amino function of `the Lysine side chain with guanylating reagent benzotriazole-1-carboxamidinium tosylate (BCAT).

19. Method of preparing the compound of claim 1 wherein the quaternary ammonium group is $R_1 R_2 R_3 N^+ - (CH2)_n – CO$ - wherein

R_1, R_2 and R_3 are independently selected from methyl, ethyl and propyl; and

n is from 1-4,

using the acid chloride of quaternary ammonium compound $R_1 R_2 R_3 N^+ - (CH2)_n – COO^-$ and an amino acid based compound comprising a persilylated group, by reacting the acid chloride of quaternary ammonium compound with the persilylated group of the amino acid based compound.