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 and comprises a quaternary ammonium group in the backbone.

2. 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.

3. Compound according to claims 1-2, 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.

4. Compound according to claim 1-2, 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.

5. Compound according to claims 1-2, 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.

6. Compound according to claims 1-2, 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.

7. Compound according to claims 1-2, 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.

8. Compound according to claims 1-2, 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.

9. Compound according to claims 1-8 for use in therapy.

10. The use of a compound according to claims 1-8 in the manufacture of a medicament for the treatment of pigmentation disorders and photodermatoses.

11. The use according to claim 10, wherein the pigmentation disorder is a hyperpigmentation disorder or a hypopigmentation disorder.

12. The use according to claim 11, wherein the hypopigmentation disorder is vitiligo.

13. The use according to claim 10, wherein the photodermatoses is selected from a group consisting of erythropoietic photoporphyria, polymorphic light eruption and solar urticarial.

14. The use of a compound according to claims 1-8 in the manufacture of a medicament for the prevention and/or treatment of skin cancer and/or UV irradiation-induced DNA damage.

15. The use according to any of claims 10-14, wherein the medicament is to be applied topically to the skin.

16. Method of preparing compound $R_1R_2R_3$ 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.

17. Method according to claim 16 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).

18. 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.