and the one adopted will depend on the character, area and amount of hair growth, as well as on the patient's age, underlying disease or condition and their personal preference as well as possible side effects of the treatment of choice.

Of course, it is also recognised that healthy individual may wish to inhibit hair growth on selected areas of their body for purely cosmetic reasons.

Treatment options for removing excess hair are limited and can vary in effectiveness, the degree of discomfort, and cost. Current methods for removing this unwanted hair include such over-the-counter methods as plucking, waxing (including the sugar forms), depilatories, shaving, and home electrolysis. Hair removal methods that could take place in a doctor's office include laser removal and intense pulsed light (IPL). An additional modality is a topical cream that inhibits hair growth: eflornithine 13.9% cream (*Vaniqa*®, Shire Pharmaceuticals).

These methods are temporary with the time of regrowth ranging from a few days to a few months. For hirsutism associated with PCOS, treatments include oral contraceptives and/or anti-androgens, such as spironolactone, cyproterone acetate, flutamide and finasteride.

Accordingly, there is a need for new treatments for inhibiting hair growth, suitable for use in both medical and cosmetic applications.

Summary ~~of Invention~~

In one aspect of the present disclosure, there is provided a composition for use in inhibiting hair production in a mammal comprising:

(a) a polypeptide comprising or consisting of an amino acid sequence of SEQ ID NO:1

VDTYDGDISVVYGLR **SEQ ID NO:1**

or a fragment or variant thereof which retains an inhibitory activity on mammalian hair production; and

(b) a pharmaceutically acceptable and/or cosmetically acceptable excipient, carrier, adjuvant or diluent

wherein the polypeptide is between 5 and 50 amino acids in length.

In another aspect of the present disclosure, there is provided a composition for use in inhibiting hair production as defined herein for treating or preventing a disease or disorder associated with unwanted and/or excessive hair growth in a mammal.

In yet another aspect of the present disclosure, there is provided a use of a composition as defined herein in the preparation of a medicament for treating or preventing a disease or disorder associated with unwanted and/or excessive hair production in a mammal in a mammal.

In a further aspect of the present disclosure, there is provided a use of a composition as defined herein for cosmetic hair removal in a human.

In another aspect of the present disclosure, there is provided a method for cosmetic hair removal in a human comprising administering to the human an effective amount of a composition as defined herein.

In yet another aspect of the present disclosure, there is provided a use of a polypeptide as defined herein *ex vivo* or *in vitro* for inhibiting hair production.

Description

A first aspect of the invention provides a composition for use in inhibiting hair production in a mammal comprising:

(a) a polypeptide comprising or consisting of an amino acid sequence of SEQ ID NO:1

VDTYDGDISVVYGLR **SEQ ID NO:1** ["FOL-005"]

or a fragment or variant thereof which retains an inhibitory activity on mammalian hair production; and

obesity, porphyria cutanea tarda, side effects of medication (such as tetrahydrogestrinone, phenytoin, minoxidil), hormonal treatment and hormonal disorders.

68. A composition for use in inhibiting hair production according to Claim 65 for treating or preventing ingrown hair in a mammal.

69. A composition for use in inhibiting hair production according to Claim 68 wherein the ingrown hair is associated with shaving, waxing and/or acne.

70. Use of a composition according to any one of Claims 1 to 64 in the preparation of a medicament for treating or preventing a disease or disorder associated with unwanted and/or excessive hair production in a mammal in a mammal.

71. The use according to Claim 70 wherein the disease or disorder associated with unwanted and/or excessive hair production is hirsutism.

72. The use according to Claim 70 or 71 wherein the disease or disorder associated with unwanted and/or excessive hair production is selected from the groups consisting of polycystic ovary syndrome (PCOS), the most common cause, congenital adrenal hyperplasia, Cushing's disease, growth hormone excess (acromegaly), tumours in the ovaries, adrenal gland cancer, Von Hippel–Lindau disease, insulin resistance, stromal hyperthecosis (SH), obesity, porphyria cutanea tarda, side effects of medication (such as tetrahydrogestrinone, phenytoin, minoxidil), hormonal treatment and hormonal disorders.

73. The use according to Claim 70 wherein the medicament is for treating or preventing ingrown hair in a mammal.

74. The use according to Claim 73 wherein the ingrown hair is associated with shaving, waxing and/or acne.

~~75. A method for treating or preventing a disease or disorder associated with unwanted and/or excessive hair growth in a mammal, the method comprising administering to the mammal an effective amount of a composition according to any one of Claims 1 to 64.~~

~~76. A method according to Claim 75 wherein the disease or disorder associated with unwanted and/or excessive hair production is hirsutism.~~

~~77. A method according to Claim 75 or 86 wherein the disease or disorder associated with unwanted and/or excessive hair production is selected from the groups consisting of polycystic ovary syndrome (PCOS), the most common cause, congenital adrenal hyperplasia, Cushing's disease, growth hormone excess (acromegaly), tumours in the ovaries, adrenal gland cancer, Von Hippel–Lindau disease, insulin resistance, stromal hyperthecosis (SH), obesity, porphyria cutanea tarda, side effects of medication (such as tetrahydrogestrinone, phenytoin, minoxidil), hormonal treatment and hormonal disorders.~~

~~78. A method according to Claim 76 for treating or preventing ingrown hair in a mammal.~~

~~79. A method according to Claim 78 wherein the ingrown hair is associated with shaving, waxing and/or acne.~~

~~80.~~75. ~~A method~~The use according to ~~any one of~~ Claim~~s~~ ~~70~~75 to ~~74~~79 wherein the mammal is human.

~~81.~~76. ~~A method~~The use according to ~~any one of~~ Claim~~s~~ ~~70~~75 to ~~74~~80 wherein the mammal is male.

~~82.~~77. ~~A method~~ The use according to ~~any one of~~ Claim~~s~~ ~~70~~75 to ~~74~~80 wherein the mammal is female.

~~83.~~78. Use of a composition according to any one of Claims 1 to 64 for cosmetic hair removal in a human.

~~84.~~79. The use according to Claim ~~83~~ 78 wherein the human is male.

~~85.~~80. The use according to Claim ~~84~~ 79 wherein the hair is removed from an area of the body selected from the group consisting of face (*e.g.* cheeks, chin and above the upper lip), chest, shoulders, neck and back.

~~86.~~81. The use according to Claim ~~83~~ 78 wherein the human is female.

~~87.~~82. The use according to Claim ~~86~~ 81 wherein the hair is removed from an area of the body selected from the group consisting of face (*e.g.* cheeks, chin and above the upper lip), back, legs, arms, fingers, feet, toes and pubis.

~~88.~~83. A method for cosmetic hair removal in a human comprising administering to the human an effective amount of a composition according to any one of Claims 1 to 64.

~~89.~~84. A method according to Claim ~~88~~ 83 wherein the human is male.

~~90.~~85. A method according to Claim ~~88~~ 83 or ~~89~~ 84 wherein the hair is removed from an area of the body selected from the group consisting of face (*e.g.* cheeks, chin and above the upper lip), chest, shoulders, neck and back.

~~91.~~86. A method according to Claim ~~88~~ 83 wherein the human is female.

~~92.~~87. A method according to Claim ~~91~~ 86 wherein the hair is removed from an area of the body selected from the group consisting of face (*e.g.* cheeks, chin and above the upper lip), back, legs, arms, fingers, feet, toes and pubis.

~~93.~~88. Use of a polypeptide as defined in any one of Claims 1 to 64 *ex vivo* or *in vitro* for inhibiting hair production.

~~94.~~89. A use according to Claim ~~93~~ 88 for inhibiting hair growth on a skin explant prior to grafting of the explant on to a mammal.

~~95.~~90. A use according to Claim ~~93~~ 88 for inhibiting hair growth follicles (or stem cell precursors of the same) *in vitro*.

~~96. A composition for use in the inhibition of hair production in mammals substantially as defined herein with reference to the description and figures.~~

~~97. A use substantially as defined herein with reference to the description.~~

~~98. A method substantially as defined herein with reference to the description.~~