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(54) Title: SKINCARE COMPOSITIONS

(57) Abstract: The present invention is directed to a skincare composition comprising benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent.



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SKINCARE COMPOSITIONS

This invention relates to skincare compositions, in particular compositions effective in the treatment of acne vulgaris, and to methods of treatment of the skin that involve the application of such compositions.

Acne vulgaris (acne) is a chronic inflammatory condition of the pilosebaceous units of the skin, which is particularly prevalent in adolescents. The condition generally causes the formation, on the skin, of comedones, red papules, pustules and sometimes cysts. This is unsightly and furthermore, if untreated, acne can lead to scarring of the skin. The major causes of acne are thought to be an increase in sebum production, an increased presence of propionibacterium acne (*P. acne*), blockage of the pilosebaceous duct and the production of inflammation.

Benzoyl Peroxide is known to be effective in the treatment of acne. It is a topical antibacterial agent that works in combination with the sebum on the skin's surface to create reactive oxygen species removing the anaerobic environment in the pore hence stopping the proliferation of *P. Acnes* bacteria.. Benzoyl peroxide is used in a variety of over-the-counter acne remedies.

In order to improve the efficacy of topical acne treatments, it is desired to formulate benzoyl peroxide with further agents from each of the two following groups to regulate the inflammatory effects sometimes observed, such as local skin peeling and discomfort such as burning and skin reddening .

The invention therefore relates to skincare compositions comprising benzoyl peroxide and at least two or more chosen actives. The compositions have improved therapeutic efficacy in the treatment of acne. Said skincare compositions have both the ability to treat acne and reduce the appearance of redness on the skin as they are effective in the three key areas of inflammatory acne formation, i.e. antibacterial activity, sebum regulation and keratolytic behaviour.

According to a first aspect of the invention there is provided a skincare composition comprising benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent.

- 5 The keratolytic agent can be selected from the group consisting of lactic acid or a salt thereof, glycolic acid or a salt thereof, gluconic acid or a salt thereof, lactobionic acid or a salt thereof, Bakuchiol and Vigna Aconitifolia Seed extract and combinations thereof.
- 10 The sebum reducing agent can be selected from the group consisting of Argania Spinosa Extract, Serenoa Serrulata Fruit Extract, Sesamum Indicum (Sesame) Seed Extract, Saw palmetto, Curcumin, Linoleic acid, Azeliac acid, Butyl avocadate, butylene glycol, Enantia chlorantha bark extract and oleaniolic acid and combinations thereof. Preferably the sebum reducing
- 15 agent can be selected from Argania Spinosas Extract, Serenoa Serrulata Fruit Extract, Sesamum Indicum (Sesame) Seed Extract, Saw Palmetto, Azeliac Acid, Butyl avocadate, Enantia chlorantha bark extract and combinations thereof. Typically, Argania Spinosa Extract, Serenoa Serrulata Fruit Extract, Sesamum Indicum (Sesame) Seed Extract are used in combination. Typically,
- 20 butylene glycol, Enantia chlorantha bark extract and oleaniolic acid are used in combination.

The sebum reducing agents which are suitable for use in the compositions of the present invention not only remove sebum from the skin, but they also

25 reduce sebum production.

Benzoyl peroxide is preferably in a micronized form in a dispersion

The concentration of benzoyl peroxide in the composition according to the

30 invention is preferably at least 0.5 percent by weight, more preferably at least 1.0 percent, most preferably at least 2.5 percent. The concentration of benzoyl peroxide is preferably less than 15 percent, more preferably less than 12.5 percent, and most preferably less than 10 percent by weight. The concentration of benzoyl peroxide may therefore fall in the range 0.5 percent

to 12.5 percent by weight, more preferably 1 percent to 10 percent by weight. A particularly preferred concentration of salicylic acid is 2.5 percent by weight.

- 5 When the keratolytic agent is selected to be lactic acid or salt thereof, the concentration of the lactic acid is at least 0.01 percent by weight, more preferably at least 0.1 percent by weight and most preferably at least 1 percent by weight; and is less than 10 percent by weight, more preferably less than 5 percent by weight, and most preferably less than 3 percent by weight.
- 10 A preferred amount of lactic acid is 2 percent by weight.

- When the keratolytic agent is selected to be gluconic acid or salt thereof, the concentration of the gluconic acid is at least 1 percent by weight, more preferably at least 2 percent by weight and most preferably at least 3 percent
- 15 by weight; and is less than 15 percent by weight, more preferably less than 10 percent by weight, and most preferably less than 7.5 percent by weight. A preferred amount of gluconic acid is 5 percent by weight.

- When the keratolytic agent is selected to be glycolic acid or salt thereof, the
- 20 concentration of the glycolic acid is at least 1 percent by weight, more preferably at least 2 percent by weight and most preferably at least 3 percent by weight; and is less than 15 percent by weight, more preferably less than 10 percent by weight, and most preferably less than 7.5 percent by weight. A preferred amount of glycolic acid is 5 percent by weight.

- 25 When the keratolytic agent is selected to be lactobionic acid or salt thereof, the concentration of the lactobionic acid is at least 1 percent by weight, more preferably at least 2 percent by weight and most preferably at least 3 percent by weight; and is less than 15 percent by weight, more preferably less than 10
- 30 percent by weight, and most preferably less than 7.5 percent by weight. A preferred amount of lactobionic acid is 5 percent by weight.

When the keratolytic agent is selected to be Bakuchiol, the concentration of the Bakuchiol is at least 0.01 percent by weight, and more preferably at least

0.1 percent by weight; and is less than 5 percent by weight, more preferably less than 3 percent by weight, and most preferably less than 2 percent by weight. A preferred amount of Bakuchiol is 1 percent by weight.

- 5 When the keratolytic agent is selected to be *Vigna Aconitifolia*, (seed extract) the concentration of the *Vigna Aconitifolia* is at least 0.5 percent by weight, more preferably at least 1 percent by weight and most preferably at least 2 percent by weight; and is less than 10 percent by weight, more preferably less than 7.5 percent by weight, and most preferably less than 5 percent by weight.
- 10 A preferred amount of *Vigna Aconitifolia* is 3 percent by weight.

- When the sebum reducing agent is selected to be a combination of *Argania Spinosa* Extract, *Serenoa Serrulata* Fruit Extract and *Sesamum Indicum* (Sesame) Seed Extract, the concentration of the combination is at least 0.01
- 15 percent by weight, more preferably at least 0.1 percent by weight and most preferably at least 1 percent by weight; and is less than 10 percent by weight, more preferably less than 5 percent by weight, and most preferably less than 3 percent by weight. A preferred amount of the combination is 2 percent by weight.

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- When the sebum reducing agent is selected to be saw palmetto, the concentration of the Saw palmetto is at least 0.01 percent by weight, more preferably at least 0.1 percent by weight and most preferably at least 1 percent by weight; and is less than 10 percent by weight, more preferably less
- 25 than 5 percent by weight, and most preferably less than 3 percent by weight. A preferred amount of Saw palmetto is 2 percent by weight.

- When the sebum reducing agent is selected to be curcumin, the concentration of the curcumin is at least 0.01 percent by weight, and more preferably at
- 30 least 0.1 percent by weight; and is less than 5 percent by weight, more preferably less than 3 percent by weight, and most preferably less than 2 percent by weight. A preferred amount of curcumin is 1 percent by weight.

When the sebum reducing agent is selected to be linoleic acid, the concentration of linoleic acid is at least 0.01 percent by weight, more preferably at least 0.1 percent by weight and most preferably at least 1 percent by weight; and is less than 10 percent by weight, more preferably less than 5 percent by weight, and most preferably less than 3 percent by weight. A preferred amount of linoleic acid is 2 percent by weight.

When the sebum reducing agent is selected to be azeliac acid, the concentration of azeliac acid is at least 0.01 percent by weight, more preferably at least 0.1 percent by weight and most preferably at least 1 percent by weight; and is less than 10 percent by weight, more preferably less than 5 percent by weight, and most preferably less than 3 percent by weight. A preferred amount of azeliac acid is 2 percent by weight.

When the sebum reducing agent is selected to be butyl avocadate, the concentration of the butyl avocadate is at least 0.01 percent by weight, and more preferably at least 0.1 percent by weight; and is less than 5 percent by weight, more preferably less than 3 percent by weight, and most preferably less than 2 percent by weight. A preferred amount of butyl avocadate is 1 percent by weight.

When the sebum reducing agent is selected to be a combination of butylene glycol, Enantia chlorantha bark extract and oleanolic acid, the concentration of the combination is at least 0.01 percent by weight, more preferably at least 0.1 percent by weight and most preferably at least 1 percent by weight; and is less than 10 percent by weight, more preferably less than 5 percent by weight, and most preferably less than 3 percent by weight. A preferred amount of the combination is 2 percent by weight.

In a preferred embodiment of the present invention, there is provided a skincare composition comprising:

- 0.1 to 5 wt% benzoyl peroxide; in combination with at least 1 of the following :

- 0.1 to 5 wt% lactic acid or a salt thereof;
 - 1 to 10 wt% glycolic acid or a salt thereof;
 - 1 to 10 wt% gluconic acid or a salt thereof;
 - 1 to 10 wt% lactobionic acid or a salt thereof;
 - 5 • 0.1 to 2 wt% Bakuchiol; and,
 - 0.1 to 5 wt% Vigna aconitifolia seed extract
- and at least one of the following:
- 0.1 to 1wt% Argania Spinosa Extract
 - 0.1 to 1wt% Serenoa Serrulata Fruit Extract
 - 10 • 0.1 to 1wt% Sesamum Indicum (Sesame) Seed Extract
 - 0.5 to 5wt% Saw palmetto
 - 0.1 to 2wt% Curcumin
 - 0.5 to 5wt% Linoleic acid
 - 0.5 to 5wt% Azeliac acid
 - 15 • 0.1 to 2wt% Butyl avocadate
 - 0.1 to 1wt% Enantia chlorantha bark extract;
 - 0.1 to 5wt% butylene glycol; and
 - 0.1 to 1wt% Oleanolic acid
- 20 In a further particularly preferred embodiment of the present invention, there is provided a skincare composition comprising:
- 2.5wt% benzoyl peroxide; in combination with at least 1 of the following:
 - 1 to 3 wt% lactic acid or a salt thereof;
 - 3 to 7 wt% glycolic acid or a salt thereof;
 - 25 • 3 to 7 wt% gluconic acid or a salt thereof;
 - 3 to 7 wt% lactobionic acid or a salt thereof;
 - 0.5 to 1.5 wt% Bakuchiol; and,
 - 1 to 4 wt% Vigna aconitifolia seed extract
- and at least one of the following:
- 30 • 0.1 to 1wt% Argania Spinosa Extract
 - 0.1 to 1wt% Serenoa Serrulata Fruit Extract
 - 0.1 to 1wt% Sesamum Indicum (Sesame) Seed Extract

- 1 to 2wt% Saw palmetto
 - 0.5 to 1wt% Curcumin
 - 1 to 3wt% Linoleic acid
 - 1 to 3wt% Azeliac acid
- 5 • 0.5 to 1.5wt% Butyl avocadate
- 0.1 to 1wt% Enantia chlorantha bark extract;
 - 1 to 3 wt% butylene glycol and
 - 0.1 to 1wt% Oleanolic acid
- 10 The composition is preferably prepared with a pH in the range 2.5 to 8.0, more preferably 3.0 to 7.0, and particularly a pH in the range 3.5 to 6.0, eg about pH 4.5 or pH 5.5.

A composition according to the invention may comprise one or more further
 15 topically active ingredients useful in skincare. Such active ingredients may include one or more of the following:

antiviral compounds, for example selected from acyclovir, tamvir, and
 penciclovir; antifungal compounds, for example selected from the following:
 20 farnesol, clotrimazole, ketoconazole, econazole, fluconazole, calcium or zinc
 undecylenate, undecylenic acid, butenafine hydrochloride, ciclopirox olamine,
 miconazole nitrate, nystatin, sulconazole, and terbinafine hydrochloride; anti-
 inflammatory compounds, for example selected from the following: steroidal
 agents selected from hydrocortisone, fluocinolone acetonide, halcinonide,
 25 halobetasol propionate, clobetasol propionate, betamethasone dipropionate,
 betamethasone valerate, and triamcinolone acetonide, and non-steroidal anti-
 inflammatory agents selected from aspirin, ibuprofen, ketoprofen, naproxen,
 aloe vera gel, aloe vera, licorice extract, pilewort, , zinc,
 30 anthelmintic compounds, for example metronidazole.

The composition according to the invention may be formulated in numerous forms. However, the composition may often take the form of an aqueous or

oily solution or surfactant wash or dispersion or emulsion or a gel. An emulsion may be an oil-in- water emulsion or a water-in-oil emulsion or microemulsion..

- 5 Emulsifiers used may be any emulsifiers known in the art for use in water-in-oil or oil-in-water emulsions or microemulsions. Known cosmetically acceptable emulsifiers may include: a) sesquioleates such as sorbitan sesquioleate, available commercially for example under the trade name Arlacel 83 (ICI), or polyglyceryl-2- sesquioleate; b) ethoxylated esters of
10 derivatives of natural oils such as the polyethoxylated ester of hydrogenated castor oil available commercially for example under the trade name Arlacel 989 (ICI); c) silicone emulsifiers such as silicone polyols available commercially for example under the trade name ABIL WS08 (Th. Goldschmidt AG), or silicone oils such as dimethicone, cyclomethicone or cetyldimethicone;
15 d) anionic emulsifiers such as fatty acid soaps e.g. potassium stearate and fatty acid sulphates e.g. sodium cetostearyl sulphate available commercially under the trade name Dehydag (Henkel); e) ethoxylated fatty alcohols, for example the emulsifiers available commercially under the trade name Brij (ICI); f) sorbitan esters, for example the emulsifiers available commercially
20 under the trade name Span (ICI); g) ethoxylated sorbitan esters, for example the emulsifiers available commercially under the trade name Tween (ICI); h) ethoxylated fatty acid esters such as ethoxylated stearates, glyceryl monostearates for example the emulsifiers available commercially under the trade name Myrj (ICI); i) ethoxylated mono-, di-, and tri-glycerides, for
25 example the emulsifiers available commercially under the trade name Labrafil (Alfa Chem.); j) non-ionic self-emulsifying waxes, for example the wax available commercially under the trade name Polawax (Croda); k) ethoxylated fatty acids, for example, the emulsifiers available commercially under the trade name Tefose (Alfa Chem.); l) methylglucose esters such as
30 polyglycerol-3 methyl glucose distearate available commercially under the name Tegocare 450 (Degussa Goldschmidt); m) as well as polyacrylamide emulsifier systems for examples cream gel emulsifier under trade name Sepigel 305 (Seppic) n) mixtures thereof, o) hydrocarbon oils such as paraffin or mineral oils; p) waxes such as beeswax or paraffin wax; q) fatty

acid esters such as isopropyl palmitate, isopropyl myristate, dioctylmaleate, glyceryl oleate and cetostearyl isononanoate; r) fatty alcohols such as cetyl alcohol or stearyl alcohol and mixtures thereof (eg cetearyl alcohol); or s) mixtures thereof, for example, the blend of emulsion components available
5 commercially under the trade name Cutina, Lipomulse lux, Abil Care XL80, or Arlatone.

Gels provided according to the invention may be aqueous or non-aqueous. Aqueous gels are preferred. The gel will contain a gelling agents in order to
10 give sufficient viscosity to the gel. Suitable gelling agents may be hydroxypropyl guar or a copolymer of acryloyl dimethyl tauric acid (or a salt thereof), especially a copolymer of that monomer with another vinylic monomer. The salt may be a salt of a Group I alkali metal, but is more preferably an ammonium salt. Examples of suitable copolymer gelling agents
15 are ammonium acryloyl dimethyl taurate / vinyl pyrrolidone copolymer, ammonium acryloyl dimethyl taurate / Beheneth-25 methacrylate copolymer, ammonium acryloyldimethyltaurate / vinyl formamide copolymer. These materials are available from Clariant GmbH in the range of products under the trade name Aristoflex.

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A variety of thickening agents may also be used according to the nature of the liquid carrier and the viscosity required. Thickeners that are water-soluble or hydrophilic are preferred, and examples include acrylic acid polymers, eg those available commercially under the trade name Carbopol (B.F. Goodrich),
25 modified celluloses, eg hydroxypropylmethylcellulose or hydroxyethylcellulose available commercially under the trade name Natrosol (Hercules), alkylgalactomanans available under the trade name N-Hance, xanthan gum, cetyl alcohol and sodium chloride.

30 The amount of gelling and/or thickening agent in the composition will each preferably lie in the range 0.1 to 5 percent w/w, more preferably 0.5 to 5 percent w/w. Typically, the amount of gelling and/or thickening agent will each be less than 3 percent w/w, eg about 1 percent w/w or about 2 percent w/w.

The composition according to the invention preferably has a viscosity of from about 10,000 mPa.s to about 200,000 mPa.s, Viscosity may be measured using a Brookfield RVT viscometer equipped with a T bar C rotating at 5rpm for 1 minute.

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In the case of solutions or dispersions, and gels, the composition will generally contain a solvent system or other continuous liquid phase. Such a system is preferably aqueous. However, mixed solvent systems may often be used with advantage. Such a mixed solvent system most preferably comprises water, in
10 admixture with a co-solvent, most preferably a lower (eg C₁₋₆) alcohol, in particular ethanol and t-butyl alcohol.

Preferred aqueous systems comprise water in an amount of at least 25 percent by weight, more preferably at least 35 percent by weight, The upper
15 limit of water will depend on the amounts of other ingredients incorporated in the composition so that the water may form the remainder of the composition up to 100 percent of the composition.

The composition may additionally comprise other components which will be
20 well known to those skilled in the art. These include, for example:

a) Emollients - ingredients that help to maintain the soft, smooth and pliable appearance of skin. Such ingredients may function by their ability to remain on the surface of the skin or in the stratum corneum, and to act as lubricants, reducing or preventing flaking of the skin and improving the skin's
25 appearance. Examples of emollients are isopropyl myristate, triglycerides of fatty acids eg lauric triglyceride or capric/caprylic triglyceride, such as the triglyceride available commercially under the trade name Miglyol 810 (Huls UK), and the polypropylene glycol ether of stearyl alcohol known as PPF-15 Stearyl Ether. Particularly preferred emollients are octyldodecanol and
30 polysiloxane compounds, in particular those known as dimethicones

b) Humectants or Moisturisers - ingredients intended to increase the water content of the top layers of the skin. Examples of such ingredients are glycerin, sorbitol, 1,3-butylene glycol and propylene glycol.

- c) Surfactants - Surfactants may be used in compositions according to the invention as solubilisers, or as cleansing agents or foam boosters. Many different classes of surfactant may be suitable for inclusion in the composition according to the invention, and these will be readily apparent to those skilled in the art. Examples of suitable surfactants include anionic surfactants (eg sodium C14-16 olefin sulfonate , non ionic surfactants (eg cocoglucoside) cationic surfactants and / or amphoteric surfactants (eg cocoamidopropyl betaine).
- f) Abrasives - ingredients used to assist in the removal of unwanted tissue or foreign materials from the skin during application of the composition. Abrasives commonly comprise fine solid particles. Examples of suitable abrasives are polyethylene beads and aluminium oxide
- g) opacifying agents such as clays (eg kaolin and bentonite) as well as titanium dioxide.
- h) pH adjusters - Ingredients used to control the pH of the composition. Examples of pH adjusters are inorganic salts such as sodium hydroxide, and organic bases such as triethanolamine and arginine.
- i) Conditioning agents, for example distearyldimonium chloride.
- j) Perfumes and colourings.

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The composition according to the invention may be applied and left on the skin to have the desired therapeutic effect or it may be applied and then rinsed off, for example with water for surfactant based formulations. The composition may be applied with the aid of a fibrous material, for example a pad or a wipe.

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According to another aspect of the invention, there is provided an article comprising a fibrous substrate, for example a material in the form of a pad or a wipe, impregnated with a skincare composition comprising benzoyl peroxide and at least one keratolytic agent and at least one sebum reducing agent.

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Preferred keratolytic agents and sebum reducing agents are the same as those described in the first aspect of the present invention.

Preferred combinations of benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent for impregnation of the article are the same as those described in the first aspect of the present invention.

- 5 Suitable fibrous materials include cellulose or cotton fibres or a mixture thereof. The fibrous material may be impregnated with the composition as a wet wipe which is arranged for immediate use to apply the skincare composition of the present invention to the skin of the user. Alternatively, the fibrous material may be impregnated with the skincare composition and dried
10 to form a dry wipe which requires to be wetted, for example with water, before it can be used.

- According to a further aspect of the invention, there is provided a method for the prophylactic or remedial treatment of acne, which method comprises the
15 topical application to the skin of a patient of a skincare composition comprising benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent.

- Preferred keratolytic agents and sebum reducing agents are the same as
20 those described in the first aspect of the present invention.

- Preferred combinations of benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent for use in a method for the prophylactic or remedial treatment of acne are the same as those described in the first
25 aspect of the present invention.

- It will be appreciated that the method according to this aspect of the invention may be a therapeutic method, but will often be a primarily cosmetic method, the objective of which is to reduce or eliminate externally visible, and often
30 unsightly, symptoms of acne vulgaris.

In a yet further aspect of the invention, there is provided the use of benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing

agent in the manufacture of a composition for the prophylactic or remedial treatment of acne by topical application of the composition to the skin.

Preferred keratolytic agents and sebum reducing agents are the same as those described in the first aspect of the present invention.

Preferred combinations of benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent for use in the manufacture of a composition for the prophylactic or remedial treatment of acne by topical application of the composition to the skin are the same as those described in the first aspect of the present invention.

The invention will now be described in greater detail, by way of illustration only, with reference to the following Example.

Component	% w/w in final formula
Aqua	62.92
Glycerin	5
Sodium Gluconate	5
Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.3
<i>Benzoyl Peroxide Gel</i>	6.375
Cetyl Alcohol	3
Stearyl Alcohol	2
Steareth-21	0.6
Steareth-2	0.15
Sodium Cocoyl Isethionate	8.5
Coconut acid	1
Sodium Lauroyl Sarcosinate	1.86
Coco-Glucoside	0.52
Cocamidopropyl Betaine	0.775
Butylene Glycol	1.8994
Enantia Chlorantha Bark Extract	0.1
Oleanolic Acid	0.0006
	100

The above example is in the form of a cream wash.

The composition may also be supplied as a serum, a clear gel scrub, pearlised gel scrub, a hydro alcoholic gel, a cream scrub, a foaming cream scrub, an impregnated wipe or any other suitable format.

- 5 It has been found that this treatment provides advantages over existing acne treatments, particularly in tolerance of the acne treatment by the skin. It is believed that the composition is effective in reducing the severity of the acne and hence any associated marks or scarring that can occur. In addition, further cutaneous irritation may be reduced. Other advantages are a reduction
- 10 in inflammation in the affected skin and /or a soothing effect. It is further believed that a synergistic association between the chosen combination of ingredients allows for lesser amounts of each individual ingredient to be needed in the composition.
- 15 Further modifications and improvements can be made without departing from the scope of the invention described herein.

Claims:

- 5 1. A skincare composition comprising benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent.
- 10 2. A skincare composition as claimed in Claim 1 wherein the keratolytic agent is selected from the group consisting of lactic acid or a salt thereof, glycolic acid or a salt thereof, gluconic acid or a salt thereof, lactobionic acid or a salt thereof, Bakuchiol and Vigna Aconitifolia Seed extract and combinations thereof.
- 15 3. A skincare composition as claimed in Claim 1 wherein the sebum reducing agent can be selected from the group consisting of Argania Spinosa Extract, Serenoa Serrulata Fruit Extract, Sesamum Indicum (Sesame) Seed Extract, Saw palmetto, Curcumin, Linoleic acid, Azeliac acid, Butyl avocadate, butylene glycol, Enantia chlorantha bark extract and oleaniolic acid and combinations thereof.
- 20 4. A skincare composition as claimed in Claim 3 wherein Argania Spinosa Extract, Serenoa Serrulata Fruit Extract, Sesamum Indicum (Sesame) Seed Extract are used in combination.
- 25 5. A skincare composition as claimed in Claim 3 wherein butylene glycol, Enantia chlorantha bark extract and oleaniolic acid are used in combination.
- 30 6. A skincare composition as claimed in any of the preceding Claims wherein the benzoyl peroxide is in a micronized form in a dispersion.
- 35 7. A skincare composition as claimed in any of the preceding Claims wherein the concentration of benzoyl peroxide in the composition is at least 0.5 percent by weight, preferably at least 1.0 percent, more preferably at least 2.5 percent.

8. A skincare composition as claimed in any of the preceding Claims wherein the concentration of benzoyl peroxide in the composition is less than 15 percent, preferably less than 12.5 percent, and more preferably less than 10 percent by weight.

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9. A skincare composition as claimed in any of the preceding Claims wherein the concentration of benzoyl peroxide in the composition falls in the range 0.5 percent to 12.5 percent by weight, preferably 1 percent to 10 percent by weight, and more preferably is 2.5 percent by weight.

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10. A skincare composition as claimed in any of the preceding Claims wherein when the keratolytic agent is selected to be lactic acid or salt thereof, the concentration of the lactic acid is at least 0.01 percent by weight, preferably at least 0.1 percent by weight and more preferably at least 1 percent by weight.

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11. A skincare composition as claimed in Claim 10 wherein the concentration of the lactic acid is less than 10 percent by weight, preferably less than 5 percent by weight, and more preferably less than 3 percent by weight.

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12. A skincare composition as claimed in Claim 10 or Claim 11 wherein the concentration of the lactic acid is 2 percent by weight.

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13. A skincare composition as claimed in any of Claims 1 – 9 wherein when the keratolytic agent is selected to be gluconic acid or salt thereof, the concentration of the gluconic acid is at least 1 percent by weight, preferably at least 2 percent by weight and more preferably at least 3 percent by weight.

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14. A skincare composition as claimed in Claim 13 wherein the concentration of the gluconic acid is less than 15 percent by weight, preferably less than 10 percent by weight, and more preferably less than 7.5 percent by weight.

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15. A skincare composition as claimed in Claim 13 or Claim 14 wherein the amount of gluconic acid is 5 percent by weight.
- 5 16. A skincare composition as claimed in any of Claims 1 – 9 wherein when the keratolytic agent is selected to be glycolic acid or salt thereof, the concentration of the glycolic acid is at least 1 percent by weight, preferably at least 2 percent by weight and more preferably at least 3 percent by weight.
- 10 17. A skincare composition as claimed in Claim 16 wherein the concentration is selected to be less than 15 percent by weight, preferably less than 10 percent by weight, and more preferably less than 7.5 percent by weight.
- 15 18. A skincare composition as claimed in Claim 16 or Claim 17 wherein the amount of glycolic acid is 5 percent by weight.
- 20 19. A skincare composition as claimed in any of Claims 1 – 9 wherein when the keratolytic agent is selected to be lactobionic acid or salt thereof, the concentration of the lactobionic acid is at least 1 percent by weight, preferably at least 2 percent by weight and more preferably at least 3 percent by weight.
- 25 20. A skincare composition as claimed in Claim 19 wherein the concentration of the lactobionic acid is less than 15 percent by weight, preferably less than 10 percent by weight, and more preferably less than 7.5 percent by weight.
- 30 21. A skincare composition as claimed in Claim 19 or Claim 20 wherein the concentration of the lactobionic acid is 5 percent by weight.
- 35 22. A skincare composition as claimed in any of Claims 1 – 9 wherein when the keratolytic agent is selected to be Bakuchiol, the concentration of the Bakuchiol is at least 0.01 percent by weight, and preferably at least 0.1 percent by weight.

23. A skincare composition as claimed in Claim 22 wherein, the concentration of the Bakuchiol and is less than 5 percent by weight, more preferably less than 3 percent by weight, and most preferably less than 2 percent by weight.
- 5 24. A skincare composition as claimed in Claim 22 or Claim 23 wherein the concentration of the Bakuchiol is 1 percent by weight.
- 10 25. A skincare composition as claimed in any of Claims 1 – 9 wherein when the keratolytic agent is selected to be Vigna Aconitifolia, (seed extract) the concentration of the Vigna Aconitifolia is at least 0.5 percent by weight, preferably at least 1 percent by weight and more preferably at least 2 percent by weight.
- 15 26. A skincare composition as claimed in Claim 25 wherein the concentration of the Vigna Aconitifolia is less than 10 percent by weight, preferably less than 7.5 percent by weight, and more preferably less than 5 percent by weight.
- 20 27. A skincare composition as claimed in Claim 25 or Claim 26 wherein the concentration of the Vigna Aconitifolia is 3 percent by weight.
- 25 28. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be a combination of Argania Spinosa Extract, Serenoa Serrulata Fruit Extract and Sesamum Indicum (Sesame) Seed Extract, the concentration of the combination is at least 0.01 percent by weight, preferably at least 0.1 percent by weight and more preferably at least 1 percent by weight.
- 30 29. A skincare composition as claimed in Claim 28 wherein the concentration of the combination is less than 10 percent by weight, preferably less than 5 percent by weight, and more preferably less than 3 percent by weight.
- 35 30. A skincare composition as claimed in Claim 28 or Claim 29 wherein the concentration of the combination is 2 percent by weight.

31. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be saw palmetto, the concentration of the Saw palmetto is at least 0.01 percent by weight, preferably at least 0.1 percent by weight and more preferably at least 1 percent by weight.

32. A skincare composition as claimed in Claim 31 wherein the concentration of the saw palmetto is less than 10 percent by weight, preferably less than 5 percent by weight, and more preferably less than 3 percent by weight.

33. A skincare composition as claimed in Claim 31 or Claim 32 wherein the concentration of saw palmetto is 2 percent by weight.

34. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be curcumin, the concentration of the curcumin is at least 0.01 percent by weight, and preferably at least 0.1 percent by weight.

35. A skincare composition as claimed in Claim 34 wherein the concentration of curcumin is less than 5 percent by weight, preferably less than 3 percent by weight, and more preferably less than 2 percent by weight.

36. A skincare composition as claimed in Claim 34 or Claim 35 wherein the concentration of curcumin is 1 percent by weight.

37. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be linoleic acid, the concentration of linoleic acid is at least 0.01 percent by weight, preferably at least 0.1 percent by weight and more preferably at least 1 percent by weight.

38. A skincare composition as claimed in Claim 37 wherein the concentration of linoleic acid is less than 10 percent by weight,

preferably less than 5 percent by weight, and more preferably less than 3 percent by weight.

5 39. A skincare composition as claimed in Claim 37 or Claim 38 wherein the concentration of linoleic acid is 2 percent by weight.

40. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be azeliac acid, the concentration of azeliac acid is at least 0.01 percent by weight, preferably at least 0.1 percent by weight and more preferably at least 1 percent by weight.

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41. A skincare composition as claimed in Claim 40 wherein the concentration of azeliac acid is less than 10 percent by weight, preferably less than 5 percent by weight, and more preferably less than 3 percent by weight.

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42. A skincare composition as claimed in Claim 40 or Claim 41 wherein the concentration of azeliac acid is 2 percent by weight.

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43. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be butyl avocadate, the concentration of the butyl avocadate is at least 0.01 percent by weight, and more preferably at least 0.1 percent by weight.

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44. A skincare composition as claimed in Claim 43 wherein the concentration of the butyl avocadate is less than 5 percent by weight, preferably less than 3 percent by weight, and more preferably less than 2 percent by weight.

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45. A skincare composition as claimed in Claim 43 or Claim 44 wherein the concentration of butyl avocadoate is 1 percent by weight.

46. A skincare composition as claimed in any of Claims 1 – 9 wherein when the sebum reducing agent is selected to be a combination of butylene glycol, Enantia chlorantha bark extract and oleaniolic acid, the

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concentration of the combination is at least 0.01 percent by weight, preferably at least 0.1 percent by weight and more preferably at least 1 percent by weight.

5 47. A skincare composition as claimed in Claim 46 wherein the concentration of the combination is less than 10 percent by weight, more preferably less than 5 percent by weight, and most preferably less than 3 percent by weight.

10 48. A skincare composition as claimed in Claim 46 or Claim 47 wherein the amount of the combination is 2 percent by weight.

49. A skincare composition as claimed in any of Claims 1 – 48 comprising:

- 15 • 0.1 to 5 wt% benzoyl peroxide; in combination with at least 1 of the following :
- 0.1 to 5 wt% lactic acid or a salt thereof;
- 1 to 10 wt% glycolic acid or a salt thereof;
- 1 to 10 wt% gluconic acid or a salt thereof;
- 1 to 10 wt% lactobionic acid or a salt thereof;
- 20 • 0.1 to 2 wt% Bakuchiol; and,
- 0.1 to 5 wt% Vigna aconitifolia seed extract
- and at least one of the following:
- 0.1 to 1wt% Argania Spinosa Extract
- 0.1 to 1wt% Serenoa Serrulata Fruit Extract
- 25 • 0.1 to 1wt% Sesamum Indicum (Sesame) Seed Extract
- 0.5 to 5wt% Saw palmetto
- 0.1 to 2wt% Curcumin
- 0.5 to 5wt% Linoleic acid
- 0.5 to 5wt% Azeliac acid
- 30 • 0.1 to 2wt% Butyl avocadate
- 0.1 to 1wt% Enantia chlorantha bark extract;
- 0.1 to 5wt% butylene glycol; and
- 0.1 to 1wt% Oleaniolic acid.

50. A skincare composition as claimed in Claim 49 comprising

• 2.5wt% benzoyl peroxide; in combination with at least 1 of the following:

- 5 • 1 to 3 wt% lactic acid or a salt thereof;
- 3 to 7 wt% glycolic acid or a salt or thereof;
- 3 to 7 wt% gluconic acid or a salt thereof;
- 3 to 7 wt% lactobionic acid or a salt thereof;
- 0.5 to 1.5 wt% Bakuchiol; and,

10 • 1 to 4 wt% Vigna aconitifolia seed extract
and at least one of the following:

- 0.1 to 1wt% Argania Spinosa Extract
- 0.1 to 1wt% Serenoa Serrulata Fruit Extract
- 0.1 to 1wt% Sesamum Indicum (Sesame) Seed Extract
- 15 • 1 to 2wt% Saw palmetto
- 0.5 to 1wt% Curcumin
- 1 to 3wt% Linoleic acid
- 1 to 3wt% Azeliac acid
- 0.5 to 1.5wt% Butyl avocadate
- 20 • 0.1 to 1wt% Enantia chlorantha bark extract;
- 1 to 3 wt% butylene glycol and
- 0.1 to 1wt% Oleanolic acid

25 51. A skincare composition as claimed in any of the preceding Claims wherein the the composition is prepared with a pH in the range 2.5 to 8.0, more preferably 3.0 to 7.0.

52. A skincare composition as claimed in Claim 51 wherein the pH is in the range 3.5 to 6.0, eg about pH 4.5 or pH 5.5.

30 53. A skincare composition as claimed in any of the preceding Claims wherein the composition is in the form of an aqueous or oily solution or surfactant wash or dispersion or emulsion or a gel.

54. An article comprising a fibrous substrate, for example a material in the form of a pad or a wipe, impregnated with a skincare composition comprising benzoyl peroxide and at least one keratolytic agent and at least one sebum reducing agent.
55. An article as claimed in Claim 54 comprising a skincare composition as claimed in any of Claims 1 – 53.
56. A method for the prophylactic or remedial treatment of acne, which method comprises the topical application to the skin of a patient of a skincare composition comprising benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent.
57. A method as claimed in Claim 56 wherein the method uses a composition as claimed in any of Claims 1 – 53.
58. The use of benzoyl peroxide, at least one keratolytic agent and at least one sebum reducing agent in the manufacture of a composition for the prophylactic or remedial treatment of acne by topical application of the composition to the skin.
59. The use as claimed in Claim 58 wherein for the manufacture of a composition as claimed in any of Claims 1 – 53.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/050962

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K8/38 A61K31/327 A61Q19/10 A61Q19/00 A61P17/10
A61P17/12 A61P17/08

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K A61Q A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/027382 A1 (MODI PANKAJ [CA]) 3 February 2011 (2011-02-03)	1,3,6-9, 49,50, 53-59
Y	page 9; example 5 -----	1-59
X	WO 2010/101934 A1 (MEDICIS PHARMACEUTICAL CORP [US]; JITPRAPHAI WARANUSH [US]; GANS EUGEN) 10 September 2010 (2010-09-10) pages 18-33 -----	1,2,6-9, 49-59
Y	US 2010/303854 A1 (HINES MICHELLE [US] ET AL) 2 December 2010 (2010-12-02) claims 1,3,9,27 paragraph [0067] example 2; table 4 -----	1-59
Y	EP 1 915 982 A1 (SYMRISE GMBH & CO KG [DE]) 30 April 2008 (2008-04-30) the whole document -----	1-59



Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2014/050962

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