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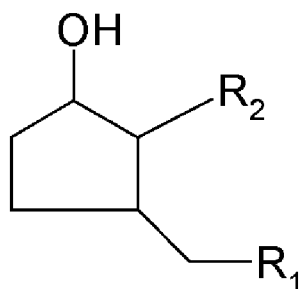
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(54) Title: COSMETIC COMPOSITION COMPRISING A CUCURBIC ACID COMPOUND AND A BLEND OF ACRYLIC POLYMERS



(I)

(57) Abstract: The invention relates to a cosmetic composition comprising, in a physiologically acceptable aqueous medium, a cucurbic acid compound of formula (I) in which R₁ represents a radical COOR₃, R₃ denoting H or a C₁-C₄ alkyl radical, optionally substituted with one or more hydroxyl groups; R₂ represents a hydrocarbon-based radical containing from 1 to 18 carbon atoms; a partially or totally salified acrylamide/acrylic acid copolymer; and a cross-linked acrylic acid homopolymer. Use for caring for and making up keratin materials.



Cosmetic composition comprising a cucurbitic acid compound and a blend of acrylic polymers

The present invention relates to compositions, in particular cosmetic
5 compositions, comprising a cucurbitic acid compound and a blend of acrylamide and acrylic polymers, and also to the use of these compositions in a process for treating human keratin materials.

More particularly, the compositions of the invention are intended for caring for and/or making up keratin materials.

10

For the purposes of the invention, the term "keratin materials" is intended to denote, for example, the skin, mucous membranes, the lips, the scalp, the eyelashes, the eyebrows and the hair.

15 Patent application EP-A-1 333 021 discloses hydrogenated cucurbitic acid compounds such as 3-hydroxy-2-pentylcyclopentaneacetic acid for promoting desquamation of the skin and stimulating epidermal renewal, combating the signs of ageing of the skin, improving the radiance of the complexion and/or making facial skin smooth. In patent application FR-A-62921255, these
20 compounds are also described for their use as depigmenting agents.

However, the introduction of the hydrogenated cucurbitic acid compounds previously mentioned into an aqueous cosmetic formulation can result in a not insignificant decrease in viscosity, thus inducing substantial fluidization of the
25 composition and consequently destabilisation of the composition.

A composition which is too fluid is difficult to apply to keratin materials. Such a composition runs on keratin materials, in particular on the skin, onto which it is applied. Its application to the keratin materials that it is desired to treat lacks
30 precision and therefore makes it relatively unattractive to use.

In addition, the presence of a hydrogenated cucurbitic acid compound is found to affect the thickening capacity of certain conventional gelling agents. In particular, this compound destabilises aqueous gels of partially or totally salified acrylamide/acrylic acid copolymer owing to very substantial fluidization
5 of the gel.

Thus, there is a need to have cosmetic compositions comprising a cucurbitic acid compound and a partially or totally salified acrylamide/acrylic acid copolymer, which do not spontaneously exhibit substantial fluidization (no
10 substantial drop in viscosity) and which have good cosmetic properties, in particular no tacky sensation nor any pilling during application to keratin materials, in particular to the skin.

Surprisingly, the inventors have observed that the addition of a cross-linked
15 acrylic acid homopolymer as described hereinafter makes it possible to obtain a composition of which the viscosity remains stable, without substantial fluidization. In particular, the composition exhibits good stability over time, in particular after storage for 2 months at ambient temperature (25 °C).

20 The object of the present invention is, precisely, to satisfy these needs.

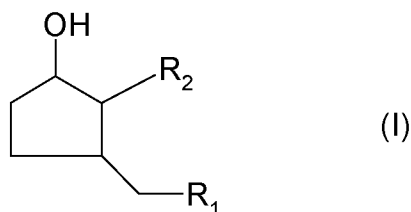
More specifically, the present invention relates to a composition comprising, in a physiologically acceptable medium containing an aqueous medium, at least one cucurbitic acid compound of formula (I), a partially or totally salified
25 acrylamide/acrylic acid copolymer and a cross-linked acrylic acid homopolymer, as described hereinafter.

The composition according to the invention is in particular a cosmetic composition.

The present invention also relates to a non-therapeutic treatment process for caring for or making up keratin materials, comprising the application to the said keratin materials of a composition in accordance with the invention. Advantageously, such a process is intended for caring for making up the skin.

5

The cucurbic acid-based compound is a compound chosen from those corresponding to formula (I) below:



in which:

- 10 R_1 represents a radical COOR_3 , R_3 denoting a hydrogen atom or a C_1 - C_4 alkyl radical, optionally substituted with one or more hydroxyl groups;
 R_2 represents a saturated or unsaturated linear hydrocarbon-based radical containing from 1 to 18 carbon atoms or a saturated or unsaturated branched or cyclic hydrocarbon-based radical containing from 3 to 18 carbon atoms;
 15 and also the optical isomers thereof, and corresponding salts.

Preferably, R_1 denotes a radical chosen from $-\text{COOH}$, $-\text{COOMe}$, $-\text{COO}-\text{CH}_2-\text{CH}_3$, $-\text{COO}-\text{CH}_2-\text{CH}(\text{OH})-\text{CH}_2\text{OH}$, $-\text{COOCH}_2-\text{CH}_2-\text{CH}_2\text{OH}$ and $-\text{COOCH}_2-\text{CH}(\text{OH})-\text{CH}_3$. Preferentially, R_1 denotes a radical $-\text{COOH}$.

20

Preferentially, R_2 denotes a saturated or unsaturated linear hydrocarbon-based radical, preferably containing from 2 to 7 carbon atoms. In particular, R_2 may be a pentyl, pentenyl, hexyl or heptyl radical.

- 25 According to one embodiment, the compound of formula (I) is chosen from 3-hydroxy-2-[(2Z)-2-pentenyl]cyclopentaneacetic acid and 3-hydroxy-2-pentylcyclopentaneacetic acid and salts thereof. Preferably, compound (I) is 3-

hydroxy-2-pentylcyclopentaneacetic acid and salts thereof; this compound may especially be in the form of the sodium salt.

The salts of the compounds that may be used according to the invention are
5 chosen in particular from salts of alkali metals, for example sodium or potassium; salts of alkaline-earth metals, for example calcium, magnesium or strontium; metal salts, for example zinc aluminium, manganese or copper; ammonium salts of formula NH_4^+ ; quaternary ammonium salts; salts of organic amines, for instance salts of methylamine, dimethylamine, trimethylamine,
10 triethylamine, ethylamine, 2-hydroxyethylamine, bis(2-hydroxyethyl)amine or tris(2-hydroxyethyl)amine; lysine or arginine salts. Salts chosen from sodium, potassium, magnesium, strontium, copper, manganese and zinc salts are preferably used. The sodium salt is preferentially used.

15 The compound of formula (I) defined previously may be present in the composition according to the invention in a content ranging from 1% to 10% by weight, and preferably from 1.5% to 5% by weight, relative to the total weight of the composition.

20 The composition according to the invention comprises a partially or totally salified acrylamide/acrylic acid copolymer.

The copolymer may be salified with a salt chosen from salts of alkali metals, such as sodium or potassium salts, salts of nitrogenous bases, such as the ammonium salt or the monoethanolamine salt. An ammonium or sodium salt is
25 preferably used. A sodium salt is preferentially used.

The copolymer may be linear or cross-linked.

When the copolymer is cross-linked, it may be cross-linked with a cross-linking
30 agent chosen from diethylene or polyethylene compounds.

The cross-linking agent may, for example, be ethylene glycol dimethacrylate, diethylene glycol diacrylate, sodium diallyloxyacetate, ethylene glycol diacrylate, diallylurea or methylenebis(acrylamide).

- 5 Such copolymers are described especially in Patent Application WO 2005/040230.

As copolymers of this type, mention may be made in particular of the copolymer of acrylamide and ammonium acrylate, such as that sold as an invert emulsion
10 at 60% in polyisobutene - stabilized with polysorbate 20 sold by the company SEPPIC under the trade name "Sepiplus[®] 265" (CTFA name: ACRYLAMIDE/AMMONIUM ACRYLATE COPOLYMER (and) POLYISOBUTENE (and) POLYSORBATE 20).

- 15 The partially or totally salified acrylamide/acrylic acid copolymer may be present in the composition according to the invention in an active material content ranging, for example, from 0.01% to 5% by weight, preferably ranging from 0.1% to 5% by weight, preferentially ranging from 0.1% to 2% by weight, relative to the total weight of the composition.

20

Advantageously, the cucurbitic acid compound of formula (I) (referred to as A) and the partially or totally salified acrylamide/acrylic acid copolymer (referred to as B) previously described may be present in the composition according to the invention in an A/B weight ratio ranging from 3 to 4.5.

25

The composition according to the invention contains a cross-linked acrylic acid homopolymer.

The homopolymer may be cross-linked with a cross-linking agent, in particular chosen from pentaerythritol allyl ether, sucrose allyl ether, or propylene allyl
30 ether.

Such polymers have the INCI name: Carbomer

Use may, for example, be made of the polymers sold by the company Lubrizol under the names Carbopol 980 or 981, or Carbopol Ultrez 10, or by the company 3V under the name Synthalen K or Synthalen L or Synthalen M.

5

The acrylic acid homopolymer may be present in the composition according to the invention in an amount ranging from 0.01% to 5% by weight, and preferably from 0.1% to 3% by weight, relative to the total weight of the composition.

10 Advantageously, the cucurbitic acid compound of formula (I) (referred to as A) and the acrylic acid homopolymer (referred to as C) described previously may be present in the composition according to the invention in an A/C weight ratio ranging from 5 to 6.

15 The viscosity of a composition of the invention may be measured via any process known to those skilled in the art, and especially according to the following conventional process. Thus, the measurement can be carried out at 25°C using a Rheomat 180 viscometer equipped with a spindle rotating at 200 rpm. Those skilled in the art may select the spindle for measuring the viscosity
20 from the spindles M1, M2, M3 and M4 on the basis of their general knowledge, so as to be able to perform the measurement.

The composition according to the invention comprises a physiologically acceptable aqueous medium.

25 The term "physiologically acceptable medium" is intended to denote a medium that is compatible with human keratin materials and/or fibres, for instance, in a non-limiting manner, the skin, the mucous membranes, the nails, the scalp and/or the hair.

This physiologically acceptable aqueous medium comprises an aqueous
30 phase, optionally as a mixture, or not, with one or more organic solvents, such

as a C₁-C₈ alcohol, in particular ethanol, isopropanol, tert-butanol, n-butanol, polyols such as glycerol, propylene glycol, butylene glycol, and polyol ethers.

A composition according to the invention may also comprise a fatty phase,
5 which may comprise oils, gums and waxes normally used in the field of application under consideration.

Thus, according to one embodiment, a composition according to the invention may also comprise at least one fatty phase chosen from a fatty phase which is
10 solid at ambient temperature (20-25°C) and atmospheric pressure and/or a fatty phase which is liquid at ambient temperature (20-25°C) and atmospheric pressure.

A liquid fatty phase suitable for implementing the invention may comprise a
15 volatile oil, a non-volatile oil, and a mixture thereof. A volatile or non-volatile oil may be a hydrocarbon-based oil, in particular of animal or plant origin, a synthetic oil, a silicone-based oil, a fluorinated oil or a mixture thereof.

A solid fatty phase suitable for implementing the invention may be, for example,
20 chosen from pasty fatty substances, gums, and mixtures thereof.

As oils that can be used in the invention, mention may be made of mineral oils (liquid petroleum jelly), plant oils (liquid fraction of shea butter, sunflower oil), synthetic oils (Purcellin oil), silicone-based oils or waxes (cyclomethicone) and
25 fluorinated oils (perfluoropolyethers). Fatty alcohols and fatty acids (stearic acid) may be added to these oils.

When a composition is an emulsion, the proportion of the fatty phase may range from 5% to 80% by weight and preferably from 5% to 50% by weight
30 relative to the total weight of the composition. The oils, waxes, emulsifiers and

co-emulsifiers used in the composition in emulsion form are chosen from those conventionally used in the cosmetics field.

One or more emulsifiers may be present in a composition of the invention in a proportion ranging from 0.3% to 30% by weight and in particular from 0.5% to 20% by weight relative to the total weight of the composition.

The composition according to the invention may also contain cosmetic adjuvants in particular chosen from emulsifiers, gelling agents, oils, waxes, preservatives, antioxidants, water, fragrances, fillers, UV screens, pigments, fibres, chelating agents, odour absorbers and colorants.

The amounts of these various adjuvants are those conventionally used in the cosmetics field, and may range, for example, from 0.01% to 30% of the total weight of the composition. In general, the amounts are adjusted as a function of the formulation prepared. Depending on their nature, these adjuvants may be introduced into the fatty phase, into the aqueous phase and/or into lipid spherules.

The composition according to the invention may be in the form of an aqueous or aqueous-alcoholic solution; a dispersion; a water-in-oil, oil-in-water or multiple emulsion; a suspension; microcapsules or microparticles; vesicular dispersions of ionic and/or non-ionic type; or an aerosol composition also comprising a pressurised propellant. Preferentially, the composition according to the invention may be an oil-in-water or water-in-oil emulsion. More preferentially, the composition according to the invention is an oil-in-water emulsion.

When the composition comprises an oily phase, the latter may comprise a silicone elastomer. Examples of silicone elastomers are described in patent application WO-A-2009/080 958.

A composition according to the invention may also be in the form of a care product, an antisen or after-sun product, a daily photoprotective care product, a body product, a foundation to be applied to the face or the neck, a concealer
5 product, a complexion corrector, a tinted cream or a makeup base for making up the face, or a body makeup composition.

A composition according to the invention may be used for the purposes of improving the general condition of the epidermis, in particular of the skin, and
10 especially for maintaining or restoring its physiological functions and/or its aesthetic appearance.

Other characteristics and advantages of the invention will emerge more clearly from the examples that follow, which are given as non-limiting illustrations. In
15 the text hereinbelow or hereinabove, the proportions are given as weight percentages, unless otherwise indicated.

Comparative Examples 1 and 2:

20

An aqueous gel (ex 1) according to the invention containing the blend of acrylamide and acrylic polymers, and an aqueous gel not part of the invention (ex 2) which is similar but contains only the acrylamide polymer were prepared; each gel was prepared with or in the absence of the sodium salt of 3-hydroxy-
25 2-pentylcyclopentaneacetic acid.

The viscosity of the aqueous gels obtained was then measured after 24 hours of storage at ambient temperature (viscosity measured at 25°C using a Rheomat 180 viscometer with an M3 spindle after 10 minutes of rotation at 200
rpm).

30

The following results were obtained:

	Example 1A	Example 1B (invention)
Sodium salt of 3-hydroxy-2-pentylcyclopentaneacetic acid at 30% in a water/dipropylene glycol mixture (70/30)	0	6.6%, i.e. 2% AM
Acrylamide/ammonium acrylate copolymer in an invert emulsion at 60% AM (SEPIPLUS [®] 265 from SEPPIC)	0.5 % AM	0.5 % AM
Cross-linked acrylic acid homopolymer (CARBOPOL ULTREZ 10 from LUBRIZOL)	0.5 %	0.5 %
Water	qs 100 %	qs 100 %
Viscosity (Pa.s)	2.62	0.17

	Example 2A	Example 2B CONTROL
Sodium salt of 3-hydroxy-2-pentylcyclopentaneacetic acid at 30% in a water/dipropylene glycol mixture (70/30)	0	6.6%, i.e. 2% AM
Acrylamide/ammonium acrylate copolymer in an invert emulsion at 60% AM (SEPIPLUS [®] 265 from SEPPIC)	1% AM	1% AM

Water	qs 100 %	qs 100 %
Viscosity (Pa.s)	1.36	Non-measurable, too fluid

These tests show that the aqueous gel of acrylamide/ammonium acrylate polymer (Sepiplus 265) in the presence of the sodium salt of 3-hydroxy-2-pentylcyclopentaneacetic acid (ex 2B) undergoes substantial fluidization; the viscosity is no longer measurable since the mixture is much too fluid.

The combination of acrylamide/ammonium acrylate polymer (SEPIPLUS 265) and of cross-linked acrylic polymer (Carbomer Ultrez 10) in the presence of the sodium salt of 3-hydroxy-2-pentylcyclopentaneacetic acid (ex 1B) has a measurable viscosity and thus prevents fluidization of the texture.

Thus, the presence of the blend of the acrylic polymer makes it possible to avoid a very substantial drop in viscosity of the aqueous gel containing the acrylamide/ammonium acrylate polymer in the presence of the sodium salt of 3-hydroxy-2-pentylcyclopentaneacetic acid.

Example 3:

A skin care cream having the following composition was prepared:

Example	3
Sodium salt of 3-hydroxy-2-pentylcyclopentaneacetic acid at 30% in a water/dipropylene glycol mixture (70/30)	7.35%, i.e. 2.2% AM
Adenosine	0.04

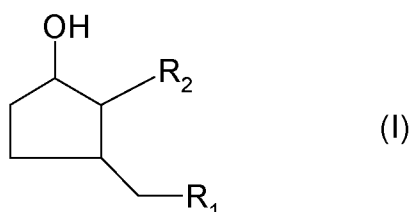
Cross-linked acrylic acid homopolymer (CARBOPOL ULTREZ 10 from LUBRIZOL)	0.4
Acrylamide/ammonium acrylate copolymer in an invert emulsion at 60% AM (SEPIPLUS® 265 from SEPPIC)	1.1
Polydimethylsiloxane 10 cSt	1.5
Hydrogenated polyisobutene (Parleam from NOF Corporation)	1.5
Oxyethylenated (20 EO) sorbitan monolaurate (TEGO SML 20 from EVONIK GOLDSCHMIDT)	0.11
Mixture of α,ω -dihydroxylated polydimethylsiloxane/polydimethylsiloxan e 5 cSt; DOW CORNING 1503 Fluid from DOW CORNING	0.5
Oxyethylenated (20 EO) methyl glucose (GLUCAM E-20 Humectant from LUBRIZOL)	2.2
Cetyl alcohol	1.5
Xanthan gum	0.3
Ethanol	3
Glycerol	10
1,3-Butylene glycol	4
Sodium hydroxide	0.4
Disodium salt of ethylenediaminetetraacetic acid	0.1
Preservative	qs
Water	qs 100

The composition has a satisfactory viscosity.

The composition spreads pleasantly on the skin without any sensation of a tacky effect and without pilling.

CLAIMS

1. Composition comprising, in a physiologically acceptable aqueous medium, a compound of formula (I) below:



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in which:

R_1 represents a radical COOR_3 , R_3 denoting a hydrogen atom or a $\text{C}_1\text{-C}_4$ alkyl radical, optionally substituted with one or more hydroxyl groups;

R_2 represents a saturated or unsaturated linear hydrocarbon-based radical containing from 1 to 18 carbon atoms or a saturated or unsaturated branched or cyclic hydrocarbon-based radical containing from 3 to 18 carbon atoms; and also the optical isomers thereof, and corresponding salts;

a partially or totally salified acrylamide/acrylic acid copolymer; and a cross-linked acrylic acid homopolymer.

15

2. Composition according to Claim 1, characterized in that the compound (I) is such that R_1 denotes a radical chosen from $-\text{COOH}$, $-\text{COOMe}$, $-\text{COO-CH}_2\text{-CH}_3$, $-\text{COO-CH}_2\text{-CH(OH)-CH}_2\text{OH}$, $-\text{COOCH}_2\text{-CH}_2\text{-CH}_2\text{OH}$ and $-\text{COOCH}_2\text{-CH(OH)-CH}_3$;

20 R_2 denotes a saturated or unsaturated linear hydrocarbon-based radical containing from 2 to 6 carbon atoms.

3. Composition according to Claim 1 or 2, characterized in that the compound (I) is chosen from 3-hydroxy-2-pentylcyclopentaneacetic acid and salts thereof.

25

4. Composition according to any one of the preceding claims, characterized in that the compound of formula (I) is present in a content ranging from 1% to

10% by weight and preferably ranging from 1.5% to 5% by weight relative to the total weight of the composition.

5 5. Composition according to any one of the preceding claims, characterised in that the partially or totally salified acrylamide/acrylic acid copolymer is salified with a salt chosen from salts of alkali metals and salts of nitrogenous bases.

10 6. Composition according to any one of the preceding claims, characterised in that the partially or totally salified acrylamide/acrylic acid copolymer is and acrylamide/ammonium acrylate copolymer.

15 7. Composition according to any one of the preceding claims, characterized in that the partially or totally salified acrylamide/acrylic acid copolymer is present in a content ranging from 0.01% to 5% by weight, preferably ranging from 0.1% to 5% by weight, preferentially ranging from 0.1% to 2% by weight, relative to the total weight of the composition.

20 8. Composition according to any one of the preceding claims, characterized in that the acrylic acid homopolymer is present in an amount ranging from 0.01% to 5% by weight and preferably ranging from 0.1% to 3% by weight relative to the total weight of the composition.

25 9. Composition according to any one of the preceding claims, characterized in that it is in the form of an oil-in-water emulsion.

10. Composition according to any one of the preceding claims, characterised in that it comprises a cosmetic additive chosen from emulsifiers, gelling agents, oils, waxes, preservatives, antioxidants, water, fragrances, fillers, UV screens, pigments, fibres, chelating agents, odour absorbers and colorants.

11. Non-therapeutic cosmetic treatment process for keratin materials, comprising the application to the said keratin materials of a cosmetic composition as defined according to any one of the preceding claims.