

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
20 April 2023 (20.04.2023)



(10) International Publication Number
WO 2023/060387 A1

(51) International Patent Classification:

A61K 8/02 (2006.01)

(21) International Application Number:

PCT/CN2021/123045

(22) International Filing Date:

11 October 2021 (11.10.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant (for all designated States except AL): **L'OREAL**

[FR/FR]; 14, Rue Royale, Paris 75008 (FR).

(72) Inventor; and

(71) Applicant (for AL only): **MA, Yuan** [CN/CN]; 550 Jinyu Road, Pudong New Area, Shanghai 201206 (CN).

(74) Agent: **CHINA PATENT AGENT (H.K.) LTD.**; 22/F.,

Great Eagle Center, 23 Harbor Road, Wanchai, Hong Kong (CN).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: COMPOSITION FOR CARING FOR KERATIN MATERIALS

(57) Abstract: A composition for caring for keratin materials in form of hydrous gel, comprising: a) at least one water insoluble active ingredient; b) from 0.05wt. % to 0.3wt. % of at least one crosslinked acrylic acid homopolymer; c) from 0.05wt. % to 0.2wt. % of at least one xanthan gum; and d) from 0.02wt. % to 0.2wt. % of at least one polymer selected from alginic acid and alginates, wherein the content is calculated based on the total weight of the composition. A non-therapeutic process for caring for keratin materials, comprising the step of applying the composition as described above to the keratin materials.



WO 2023/060387 A1

COMPOSITION FOR CARING FOR KERATIN MATERIALS

TECHNICAL FIELD

5 The present invention relates to a cosmetic composition, in particular, a composition for caring for keratin materials such as the skin and/or the lips, in particular the face. The present invention also relates to a cosmetic process for caring for keratin materials using said composition.

BACKGROUND ART

10 Over time, it appears that keratin materials, such as the skin, lips, eyelashes, eyebrows, nails and hair are subject to ageing, reflected especially by a modification of their structures and their functions.

Endogenously, keratin materials are subject to attacks by superoxide ions, naturally produced during physiological cellular metabolic processes.

15 Exogenously, keratin materials are in the firing line for exposure to environmental factors which take part in their ageing, such as, for example, sunlight, especially via ultraviolet radiation, or else pollution.

The extrinsic ageing of the skin influenced by the environment supplements the intrinsic ageing linked to age, giving rise to characteristic skin damage and
20 changes which are well described in the literature.

From a cellular and molecular perspective, skin ageing is reflected by a loss in the ability of keratinocytes and fibroblasts to proliferate; a reduction in differentiation markers such as, for example, transglutaminases (TGMs), and in particular transglutaminase 3; an imbalance between the production of the
25 constituents of the dermis, such as, for example, collagen and fibrillin, and their destruction by different metalloproteases (MMPs), causing the scales to tip in the favor of degradation of the extracellular matrix and tissue destruction; the loss of molecules whose function is to participate in junctions and in anchoring the epidermis to the dermis, such as, for example, fibronectin and integrin, which leads
30 to weakening of the dermoepidermal junction.

From a macroscopic perspective, skin ageing is apparent with the appearance of wrinkles and of slackness. The aged skin is finer and more fragile than a young skin. Finally, aged skin tends to lose its elasticity, its barrier function against external attacks, and its ability for repair.

35 Several compositions or methods for preventing and/or treating the signs of skin ageing are known in the prior art.

However, some active ingredients, for example, vitreosilla ferment, are not soluble in water. Thus, it is not easy for them to suspend in hydrous gel-like product stably.

5 Additionally, some cosmetic products in the market are easily to result in noodles upon application, which is not preferred for consumers.

Thus, it is desired to have a cosmetic product comprising a water insoluble active ingredient without the risk of noodles.

Meanwhile, it is desired to have a cosmetic product with a low viscosity to deliver a fresh sensory.

10 Therefore, there is a need for a composition for caring for keratin materials with a low viscosity, which can stably suspend a water insoluble active ingredient in the system and does not result in noodles upon application.

SUMMARY OF THE INVENTION

15 The inventors have found that such a need can be achieved by the present invention.

Thus, in a first aspect, the present invention provides a composition for caring for keratin materials in form of hydrous gel, comprising:

- a) at least one water insoluble active ingredient;
- 20 b) from 0.05 wt.% to 0.3 wt.% of at least one crosslinked acrylic acid homopolymer;
- c) from 0.05 wt.% to 0.2 wt.% of at least one xanthan gum; and
- d) from 0.02 wt.% to 0.2 wt.% of at least one polymer selected from alginic acid and alginates,
- 25 wherein the content is calculated based on the total weight of the composition.

The water insoluble active ingredient can stably suspend in the composition.

In addition, the composition according to the present invention also provides a fresh skin feeling after application, meanwhile, there is no risk for noodles.

30 The composition according to the present invention may be used for caring for keratin materials, in particular, the skin.

In a second aspect, the present invention provides a non-therapeutic process for caring for keratin materials, in particular the skin, comprising the step of applying the composition as described above to the keratin material.

Other subjects and characteristics, aspects and advantages of the invention will emerge even more clearly on reading the description and the examples that follow.

5 DETAILED DESCRIPTION OF THE INVENTION

Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by those skilled in the art the present invention belongs to. When the definition of a term in the present description conflicts with the meaning as commonly understood by those skilled in the art the present invention belongs to, the definition described herein shall apply.

10 In that which follows and unless otherwise indicated, the limits of a range of values are included within this range, in particular in the expressions "between...and..." and "from ... to ...".

Moreover, the expression "at least one" used in the present description is equivalent to the expression "one or more".

Throughout the instant application, the term "comprising" is to be interpreted as encompassing all specifically mentioned features as well optional, additional, unspecified ones. As used herein, the use of the term "comprising" also discloses the embodiment wherein no features other than the specifically mentioned features are present (*i.e.* "consisting of").

20 Unless otherwise specified, all numerical values expressing amount of ingredients and the like which are used in the description and claims are to be understood as being modified by the term "about". Accordingly, unless indicated to the contrary, the numerical values and parameters described herein are approximate values which are capable of being changed according to the desired purpose as required.

For the purposes of the present invention, the term "keratin material" is intended to cover human skin. The face, the lips and the eyes are most particularly considered according to the present invention.

30 All percentages in the present invention refer to weight percentage, unless otherwise specified.

According to the first aspect, the composition according to the present invention comprises:

- a) at least one water insoluble active ingredient;
- 35 b) from 0.05 wt.% to 0.3 wt.% of at least one crosslinked acrylic acid homopolymer;

c) from 0.05 wt.% to 0.2 wt.% of at least one xanthan gum; and
d) from 0.02 wt.% to 0.2 wt.% of at least one polymer selected from alginic acid and alginates,

5 wherein the content is calculated based on the total weight of the composition.

Water insoluble active ingredient

The composition according to the invention comprises at least one water insoluble active ingredient.

10 In the context of the present application, the term "water insoluble active ingredient" means that the solubility of the active ingredient in water is no more than 10 g.

As examples of water insoluble active ingredients, mention can be made of vitreoscilla ferment, silica, boron nitride, and a mixture thereof

15 In recent years, studies have shown that the fermentation product of vitreoscilla has a good effect on antioxidants, which can increase the use of oxygen by the skin, promote cell growth and product synthesis, and make the skin younger.

In some embodiments, the water insoluble active ingredient is vitreoscilla ferment.

20 As a commercial product of vitreoscilla ferment, mention can be made of MEXORYL[®] SCW from the company NOVEAL.

The skilled in the art can select the amount of the water insoluble active ingredient based on the intended use.

25 Advantageously, the water insoluble active ingredient is present in an amount ranging from 0.01 wt.% to 0.2 wt.%, preferably from 0.05 wt.% to 0.1 wt.%, relative to the total weight of the composition.

Crosslinked acrylic acid homopolymer

30 The composition according to the invention comprises at least one crosslinked acrylic acid homopolymer.

Among the crosslinked acrylic acid homopolymers that may be mentioned are those crosslinked with an allylic alcohol ether of the sugar series. Mention may be made of carbomer, which is a homopolymer of acrylic acid crosslinked with an allyl ether of pentaerythritol, an allyl ether of sucrose, or an allyl ether of propylene, such as the products sold under the names Carbopol 980, 981, 954, 2984, and 5984 by the company Lubrizol or the products sold under the names Synthalen M and Synthalen K

35

by the company 3 VSA. Advantageously, the crosslinked acrylic acid homopolymer is present in an amount ranging from 0.05 wt.% to 0.3 wt.%, preferably from 0.07 wt.% to 0.3 wt.%, more preferably from 0.08 wt.% to 0.15 wt.%, relative to the total weight of the composition.

5

Xanthan gum

The composition according to the invention comprises at least one xanthan gum.

10 Xanthan gum may be, for example, synthesized by fermentation of sugars with the bacterium *xanthomonas campestris* and mutants or variants thereof.

Xanthan gum may comprise in their structure three different monosaccharides, namely mannose, glucose and glucuronic acid, in salt form, such as in the form of the sodium salt.

15 Xanthan gum may have, for example, a viscosity ranging from 0.6 to 1.65 Pa.s (measured at 25 °C. using a Brookfield viscometer, type LVT at 60 rpm). It has a molecular weight ranging, for example, from 1 000 000 to 50 000 000.

Such products may include, for example, Keltrol T sold by the company Keltro, Rhodicare S sold by the company Rhodia, and Kelsan S sold by the company Monsanto Chemical.

20 Advantageously, xanthan gum is present in an amount ranging from 0.05 wt.% to 0.2 wt.%, preferably from 0.08 wt.% to 0.12 wt.%, relative to the total weight of the composition.

Alginates

25 The composition according to the invention comprises at least one polymer selected from alginic acid and alginates.

In particular, the alginate is selected from alkali metal salts or ammonium salts of alginic acid. The alginate is water-soluble.

30 Alginic acid, a natural substance obtained from brown algae or from certain bacteria, is a polyuronic acid composed of two uronic acids linked together via 1, 4-glycoside bonds: β -D-mannuronic acid (M) and α -L-glucuronic acid (G).

Alginic acid is capable of forming water-soluble salts (alginates) with alkali metals such as sodium, potassium or lithium, or ammonia. These alginates are water-soluble in aqueous medium at pH 4 but dissociate into alginic acid at a pH
35 below 4.

Methods for the recovery of these water-soluble salts, especially sodium alginate, from natural sources are well known, and are described, for example, in Green, U.S. Pat. No. 2,036,934, and Le Gloahec, U.S. Pat. No. 2,128,551.

Suitable alginates have a weight-average molecular weight of about 20,000 Daltons to about 500,000 Daltons. The weight-average molecular weight is calculated by first determining the intrinsic viscosity, then using the Mark-Houwink Sakurada Equation, as in Martinsen, et al, "Comparison of Different Methods for Determination of Molecular Weights and Molecular Weight Distribution of Alginates" (Carbohydr. Polym., 15, 171-193, 1991) .

A list of various commercially available alginates, their properties, and their sources is found in Shapiro, U.S. Pat. No. 6,334,968, Table 1, column 16, line 49, to column 17, line 18, incorporated herein by reference.

According to an embodiment of the present invention, the alginate is selected from sodium alginate, ammonium alginate, potassium alginate, and a mixture thereof.

According to an embodiment of the present invention, the composition comprises at least one polymer selected from alginic acid, sodium alginate, ammonium alginate, and potassium alginate, and a mixture thereof.

The polymer selected from alginic acid and alginates that are suitable for use in the present invention may be represented, for example, by the products sold under the names Kelcosol, SatialgineTM, CecalgunTM or AlgogelTM by the company Cargill Products, under the name ProtanalTM by the company FMC Biopolymer, under the name Alginate by the company Danisco, under the name Kimica Algin by the company Kimica, and under the name PROTANAL PH 6160 by the company DUPONT.

Advantageously, the polymer selected from alginic acid and alginates is present in an amount ranging from 0.02 wt.% to 0.2 wt.%, preferably from 0.02 wt.% to 0.15 wt.%, more preferably from 0.03 wt.% to 0.08 wt.%, relative to the total weight of the composition.

Mineral salts

The composition according to the present invention can be stable even in the presence of a mineral salt.

Thus the composition according to the present invention may comprise a mineral salt.

The mineral salt comprises a metal ion M^{n+} . Preferably, M^{n+} is selected from Li^+ , Na^+ , K^+ , Mg^{2+} , and Ca^{2+} .

The mineral salt is selected from metal salts of an inorganic acid.

As example of inorganic acid, mention can be made of sulfuric acid, carbonic acid, hydrochloric acid, nitric acid, etc.

Preferably, the mineral salt is selected from metal chlorides, sulfates, nitrates, carbonates and hydrogen carbonates, and mixtures thereof, wherein the metal is selected from Li, Na, K, Mg, and Ca.

More preferably, the mineral salt is selected from calcium chloride, calcium sulfate, calcium nitrate, calcium carbonate and calcium hydrogen carbonate, sodium chloride, sodium sulfate, sodium nitrate, sodium carbonate and sodium hydrogen carbonate, potassium chloride, potassium sulfate, potassium nitrate, potassium carbonate and potassium hydrogen carbonate, lithium chloride, lithium sulfate, lithium nitrate, lithium carbonate and lithium hydrogen carbonate, magnesium chloride, magnesium sulfate, magnesium nitrate, magnesium carbonate and magnesium hydrogen carbonate, , and mixtures thereof.

If presents, the mineral salt is present in an amount ranging from 0.001 wt.% to 0.6 wt.%, preferably from 0.001 wt.% to 0.5 wt.%, more preferably from 0.001 wt.% to 0.3 wt.%, relative to the total weight of the composition.

Water

The composition according to the present invention is in the form of hydrous gel.

Advantageously, water is present in an amount ranging from 80 wt.% to 95 wt.%, preferably from 82 wt.% to 90 wt.%, relative to the total weight of the composition.

Additional ingredients

The composition according to the present invention may comprise one or more additional ingredients selected from pH adjusting agents (e.g. citric acid), preservatives (e.g. hydroxyacetophenone, chlorphenesin), fragrances (e.g. perfumes, essential oils), humectants (such as, propanediol, hydroxyethyl urea, acetamide MEA, glycerin, propylene glycol, butylene glycol, and pentylene glycol, PEG/PPG/polybutylene glycol-8/5/3 glycerin, methyl gluceth-20, sodium hyaluronate).

A person skilled in the art can adjust the type and amount of additional ingredients present in the compositions according to the present invention by means

of routine operations, so that the desired properties of these compositions are not adversely affected by the additional ingredients.

Viscosity

5 The composition according to the present invention has a low viscosity.

 The viscosity of the composition can be determined at 25 °C, using a Rheomat 100 Plus viscometer equipped with a spindle M1 rotating at 200 rpm.

 Advantageously, the composition has a viscosity ranging from 60 UD to 90 UD, as determined at 25 °C, using a Rheomat 100 Plus viscometer equipped with a
10 spindle M1 rotating at 200 rpm.

 If the viscosity is below 60UD (M1), there will be drop problem, and if the viscosity is higher than 90UD (M1), a desired sensory will cannot be achieved.

 According to a preferred embodiment, the present invention provides a
15 composition for caring for caring for keratin materials in the form of hydrous gel, comprising, relative to the total weight of the composition:

 a) from 0.01 wt.% to 0.2 wt.% of vitreoscilla ferment;

 b) from 0.05 wt.% to 0.3 wt.% of at least one acrylic acid homopolymer crosslinked with an allyl ether of pentaerythritol, an allyl ether of sucrose, or an allyl
20 ether of propylene;

 c) from 0.05 wt.% to 0.2 wt.% of at least one xanthan gum; and

 d) from 0.02 wt.% to 0.15 wt.% of at least one polymer selected from alginic acid, sodium alginate, ammonium alginate, and potassium alginate, and a mixture thereof,

25 wherein the composition has a viscosity in the range 60-90 UD, as determined at 25 °C, using a Rheomat 100 Plus viscometer equipped with a spindle M1 rotating at 200 rpm.

Galenic forms and use

30 The composition according to the present invention is in the form of gel.

 The composition according to the present invention may be used for caring for keratin materials, in particular, the skin, especially the face, the lips and/or the eyes.

 It may be used as a daily skincare.

 Thus, in the second aspect, the present invention provides a non-therapeutic
35 process for caring for keratin materials, in particular the skin, comprising the step of applying the composition as described above to the keratin material.

The composition according to the present invention can deliver a fresh skin feeling after application, meanwhile, there is no risk for noodles.

The present invention is illustrated in greater detail by the examples described below, which are given as non-limiting illustrations.

5

EXAMPLES

Main raw materials used, trade names and supplier thereof are listed in Table

1.

Table 1

RM code	Trade Name	Supplier
HYDROXYACETOPHENONE	SYMSAVE H O	SYMRISE
PEG/PPG/POLYBUTYLENE GLYCOL-8/5/3 GLYCERIN	WILBRIDE S-753L	NOF CORPORATION
METHYL GLUCETH-20	GLUCAM™ E-20 HUMECTANT	LUBRIZOL
SODIUM HYALURONATE	CRISTALHYAL LO	SOLIANCE (GIVAUDAN)
CARBOMER	ACRYPOL® 980	COREL PHARMA CHEM
XANTHAN GUM	KELTROL® CG-T	CP KELCO
CITRIC ACID	CITRIC ACID MONOHYDRATE GRANULAR	CITRIQUE BELGE
SODIUM CITRATE	TRISODIUM CITRATE DIHYDRATE FINE GRANULAR	CITRIQUE BELGE
VITREOSCILLA FERMENT	MEXORYL® SCW	NOVEAL
WATER	PREMIX VICHY	VICHY
MINERAL SALTS	SEL DE VICHY	COMPAGNIE DE VICHY
ALGIN	PROTANAL PH 6160	DUPONT

10

Comparative Examples 1-8 and Invention Examples 1-3

Compositions of comparative examples (CE.) 1-8 and invention examples (IE.) 1-3 were prepared according to the amounts given in Table 2. The amount of each component is given in % by weight of the total weight of the composition.

Table 2

Components	IE.1	IE.2	IE.3	CE.1	CE.2	CE.3	CE.4	CE.5	CE.6	CE.7	CE.8
WATER	QS100	QS100	QS100	QS100	QS100	QS100	QS100	QS100	QS100	QS100	QS100
PROPANEDIOL	3	3	3	3	3	3	3	3	3	3	3
HYDROXYACETOPHENONE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
GLYCERIN	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PEG/PPG/POLYBUTYLENE GLYCOL-8/5/3 GLYCERIN	2	2	2	2	2	2	2	2	2	2	2
METHYL GLUCETH-20	1	1	1	1	1	1	1	1	1	1	1
SODIUM HYALURONATE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CARBOMER	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
XANTHAN GUM	0.05	0.05	0.1	/	/	/	/	/	0.05	0.1	/
ALGIN	0.05	0.1	0.1	/	0.05	0.1	/	/	/	/	0.1
HYDROXYETHYLCELLULOSE	/	/	/	/	/	/	0.05	0.1	/	0.1	0.1
CITRIC ACID	0.1	0.1	0.1	0.15	0.15	0.15	0.18	0.12	0.12	0.12	0.2
SODIUM CITRATE	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.35	0.5	0.5	0.6
VITREOSCILLA FERMENT	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MINERAL SALTS	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089	0.0089

Preparation process

The compositions were prepared as follows, taking the composition according to invention example 1 as an example:

- 1). 40 wt.% of water was heated to 80 °C, then carbomer, glycerin, hydroxyacetophenone, sodium hyaluronate, and a premix phase (including propanediol, algin, PEG/PPG/polybutylene glycol-8/5/3 glycerin) were added with stirring,
- 2). 40 wt.% of water was added with stirring,
- 3). sodium citrate and citric acid were added,
- 4). mineral salt and vitreoscilla ferment were added to obtain the composition.

Evaluation of compositions

The compositions prepared above were evaluated.

Stability

The stability of each composition was evaluated as follows:

- 1) filling 40 mL of the sample into a 60 mL glass bottle and preparing six bottles for each composition to be tested;
- 2) putting one bottle under the sunlight, one bottle at room temperature, one bottle into a refrigerator at 4°C, one bottle into an oven at 37 °C and one bottle into an oven at 45 °C (for stability tests at different temperatures), and one bottle into an oven with the temperature cycling from -20 °C to 20 °C (for cycle stability); and
- 3) observing the samples' appearance after 2 months for stability tests at different temperatures, 10 days for cycle stability, 24 hours for sunlight stability.

The stability will be evaluated as PASS if its appearance does not change after all of the stability tests at different temperature and that cycle stability test, otherwise, it will be evaluated as FAILED.

Viscosity

For each composition, the viscosity was measured at 25 °C by means of the Rheomat RM 180 apparatus, marketed by the company LAMY, equipped with a mobile MS-R1, rotating at 200 rpm. The viscosity values were measured after 10 minutes of shear.

Noodle Prevention performance

The noodle prevention performance was evaluated by one sensory expert through special gesture as below:

- 1) applying 0.3 ml sample on the face;

2) bending the fingers;

3) gliding the knuckles over the subject's skin using slight pressure.

The levels for noodle prevention are as followed:

Excellent: no or very little noodle was found

Good: little noodle was found

OK: some noodles were found

Not good: large amount of noodles were found

The results of above tests are summarized in Table 3.

Table 3

	Viscosity(UD)	Stability	Noodle Prevention
IE.1	80	PASS	Yes
IE.2	75	PASS	Yes
IE.3	90	PASS	Yes
CE.1	60	FAIL	Yes
CE.2	58	FAIL	Yes
CE.3	63	FAIL	Yes
CE.4	70	FAIL	Yes
CE.5	75	FAIL	Yes
CE.6	75	FAIL	Yes
CE.7	95	PASS	Yes
CE.8	87	FAIL	Yes

It can be seen that the composition according to the present invention has a low viscosity in the range of 60-90 UD, as determined at 25 °C, using a Rheomat 100 Plus viscometer equipped with a spindle M1 rotating at 200 rpm, is stable over time, and do not have the risk of resulting in noodles upon application.

CLAIMS

1. A composition for caring for keratin materials in form of hydrous gel,
5 comprising:
a) at least one water insoluble active ingredient;
b) from 0.05 wt.% to 0.3 wt.% of at least one crosslinked acrylic acid
homopolymer;
c) from 0.05 wt.% to 0.2 wt.% of at least one xanthan gum; and
10 d) from 0.02 wt.% to 0.2 wt.% of at least one polymer selected from alginic
acid and alginates,
wherein the content is calculated based on the total weight of the
composition.
- 15 2. The composition according to claim 1, wherein the water insoluble active
ingredient is selected from vitreoscilla ferment, silica, boron nitride, and a mixture
thereof.
- 20 3. The composition according to claim 1 or 2, wherein the water insoluble
active ingredient is present in an amount ranging from 0.01 wt.% to 0.2 wt.%,
preferably from 0.05 wt.% to 0.1 wt.%, relative to the total weight of the
composition.
- 25 4. The composition according to any one of claims 1 to 3, wherein crosslinked
acrylic acid homopolymer is selected from those crosslinked with an allylic alcohol
ether of the sugar series, preferably selected from homopolymer of acrylic acid
crosslinked with an allyl ether of pentaerythritol, an allyl ether of sucrose, or an allyl
ether of propylene.
- 30 5. The composition according to any one of claims 1 to 4, wherein the
crosslinked acrylic acid homopolymer is present in an amount ranging from 0.07
wt.% to 0.3 wt.%, preferably from 0.08 wt.% to 0.15 wt.%, relative to the total
weight of the composition.

6. The composition according to any one of claims 1 to 5, wherein xanthan gum is present in an amount ranging from 0.08 wt.% to 0.12 wt.%, relative to the total weight of the composition.

5 7. The composition according to any of claims 1-6, wherein the alginate is selected from sodium alginate, ammonium alginate, potassium alginate, and a mixture thereof.

10 8. The composition according to any one of claims 1 to 7, wherein the polymer selected from alginic acid and alginates is present in an amount ranging from 0.02 wt.% to 0.15 wt.%, preferably from 0.03 wt.% to 0.08 wt.%, relative to the total weight of the composition.

15 9. The composition according to any one of claims 1 to 8, further comprising a mineral salt comprising a metal ion M^{n+} selected from Li^+ , Na^+ , K^+ , Mg^{2+} , and Ca^{2+} .

20 10. The composition according to claim 9, wherein the mineral salt is selected from calcium chloride, calcium sulfate, calcium nitrate, calcium carbonate and calcium hydrogen carbonate, sodium chloride, sodium sulfate, sodium nitrate, sodium carbonate and sodium hydrogen carbonate, potassium chloride, potassium sulfate, potassium nitrate, potassium carbonate and potassium hydrogen carbonate, lithium chloride, lithium sulfate, lithium nitrate, lithium carbonate and lithium hydrogen carbonate, magnesium chloride, magnesium sulfate, magnesium nitrate, magnesium carbonate and magnesium hydrogen carbonate, , and mixtures thereof.

25 11. The composition according to claim 9 or 10, wherein the mineral salt is present in an amount ranging from 0.001 wt.% to 0.6 wt.%, preferably from 0.001 wt.% to 0.5 wt.%, more preferably from 0.001 wt.% to 0.3 wt.%, relative to the total weight of the composition.

30 12. The composition according to any one of claims 1 to 10, wherein the composition has a viscosity ranging from 60 UD to 90 UD, as determined at 25 °C, using a Rheomat 100 Plus viscometer equipped with a spindle M1 rotating at 200 rpm.

35

13. The composition according to claim 1, comprising, relative to the total weight of the composition:

a) from 0.01 wt.% to 0.2 wt.% of vitreoscilla ferment;

5 b) from 0.05 wt.% to 0.3 wt.% of at least one acrylic acid homopolymer crosslinked with an allyl ether of pentaerythritol, an allyl ether of sucrose, or an allyl ether of propylene;

c) from 0.05 wt.% to 0.2 wt.% of at least one xanthan gum; and

10 d) from 0.02 wt.% to 0.15 wt.% of at least one polymer selected from alginic acid, sodium alginate, ammonium alginate, and potassium alginate, and a mixture thereof,

wherein the composition has a viscosity in the range 60-90 UD, as determined at 25 °C, using a Rheomat 100 Plus viscometer equipped with a spindle M1 rotating at 200 rpm.

15 14. A non-therapeutic process for caring for keratin materials, comprising the step of applying the composition as described above to the keratin material.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/123045

A. CLASSIFICATION OF SUBJECT MATTER

A61K 8/02(2006.01)i

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 8/-

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)

CNABS,CNXTX,DWPI,ENTXT,CNKI: keratin, acrylic, gel, xanthan gum, algin+, low viscosity, vitreoscilla ferment, silica, boron nitride

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 107613949 A (L'OREAL CORP.) 19 January 2018 (2018-01-19) paragraphs [0001], [0006]–[0007], [0013], [0019], [0022]–[0034]	1-8, 12-14
Y	CN 107613949 A (L'OREAL CORP.) 19 January 2018 (2018-01-19) paragraphs [0001], [0006]–[0007], [0013], [0019], [0022]–[0034]	9-12, 14
Y	CN 105722499 A (L'OREAL SA.) 29 June 2016 (2016-06-29) paragraphs [0014]–[0015], [0077], [0089]–[0093]	9-12, 14
Y	US 2011217253 A1 (L'OREAL) 08 September 2011 (2011-09-08) paragraphs [0017]–[0015], [0284]–[0297]	9-12, 14
A	CN 105188643 A (L'OREAL SA.) 23 December 2015 (2015-12-23) claims 1-23	1-14
A	WO 2017103052 A1 (L'OREAL) 22 June 2017 (2017-06-22) page 9 lines 5-21	1-14
A	JP 2019019115 A (DAIYA SEIYAKU K.K. et al.) 07 February 2019 (2019-02-07) claims 1-27	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

19 June 2022

Date of mailing of the international search report

07 July 2022

Name and mailing address of the ISA/CN

National Intellectual Property Administration, PRC
6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing
100088, China

Authorized officer

ZHAO,Nan

Facsimile No. (86-10)62019451

Telephone No. 86-(10)-53962688

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2021/123045

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	107613949	A	19 January 2018	WO	2016187874	A1	01 December 2016
CN	105722499	A	29 June 2016	FR	3013592	A1	29 May 2015
				WO	2015075236	A1	28 May 2015
				EP	3073990	A1	05 October 2016
				JP	2016537391	A	01 December 2016
				US	2016354297	A1	08 December 2016
US	2011217253	A1	08 September 2011	EP	2316409	A1	04 May 2011
				FR	2949676	A1	11 March 2011
CN	105188643	A	23 December 2015	EP	2958540	A1	30 December 2015
				FR	3002444	A1	29 August 2014
				US	2016008236	A1	14 January 2016
				JP	2016513121	A	12 May 2016
				WO	2014128679	A1	28 August 2014
				BR	112015020371	A2	18 July 2017
				ES	2762855	T3	26 May 2020
WO	2017103052	A1	22 June 2017	FR	3045330	A1	23 June 2017
JP	2019019115	A	07 February 2019	None			