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(54) Title: COMPOSITION COMPRISING A PARTICULAR DOUBLE SALT OF A DIAMMONIUM AND CARBOXYLATE(S), METHOD AND USE THEREOF

(57) Abstract: The present invention relates to a composition comprising a particular double salt consisting of a diammonium and carboxylate(s), and at least one cosmetically acceptable solvent. The present invention also relates to particular double salts, a method for treatment of keratin fibers, and the use of the said composition for treatment of keratin fibers.



**COMPOSITION COMPRISING A PARTICULAR DOUBLE SALT
OF A DIAMMONIUM AND CARBOXYLATE(S), METHOD AND
USE THEREOF**

5

The present invention relates to a composition comprising a particular double salt consisting of a diammonium and carboxylate(s), and at least one cosmetically acceptable solvent.

10 The present invention also relates to particular double salts, a method for treatment of keratin fibers, and the use of the said composition for treatment of keratin fibers.

External atmospheric agents such as pollution and weather, as well as mechanical or chemical treatments such as brushing, combing, dyeing, bleaching, perms, straightening, repeated washing, can damage and / or weaken the hair. The hair is damaged and can become dry, rough, brittle, dull, split and / or soft.

15 More particularly, the intensive and repeated brushing of the hair, especially wet, causes the appearance of split ends in the hair.

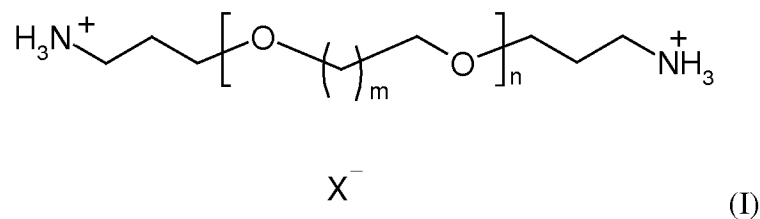
To overcome these drawbacks, it is customary to cut split ends with scissors or to use hair compositions comprising silicones, intended to condition the hair by providing them with cosmetic properties and good shaping.

20 However, the conditioning effect obtained by these silicone hair compositions does not present a good repair of split ends.

25 There is therefore a real need to develop care/repair compositions for keratin fibers that are capable of improving the quality of the fiber such as softness, disentangling, smoothing, discipline, volume, strength of the fibers, control of the volume and of the hairstyle, for example by repairing the split ends of the hair.

30 This aim is achieved by the present invention, one subject of which is a composition comprising:

- a double salt of the following formula (I), consisting of a diammonium and carboxylate:



in which:

n represents an integer ranging from 1 to 10; preferably n=2;

m is an integer selected from 1 or 2, preferably m=1;

5 X⁻ represents a carboxylate compound associated with a(the) cationic charge(s) of the double salt of formula (I), selected from C₂-C₁₂ alkyl carboxylate (Alk-COO⁻) optionally substituted by one or more hydroxy;

- at least one cosmetically acceptable solvent.

10

The applicant has found, surprisingly, that the composition according to the invention makes it possible to improve the cosmetic properties conferred on keratinous fibers, in particular on sensitized hair.

15

It has also been found that the composition according to the invention makes it possible to improve the quality of the hair, in particular a better resistance to breakage and a better sensoriality of the hair.

20

In particular, it has been found that the composition according to the invention makes it possible to significantly repair the split ends of the hair.

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

25

In the present description and unless otherwise indicated:

- the limits of a range of values are included within this range, in particular in the expressions "of between...and ..." and "ranging from ... to ...";

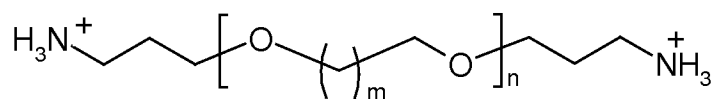
- the expression "at least one" used in the present description is equivalent to the expression "one or more" and may be substituted for it.

- The expression "double salt" used in the present description is a salt obtained from a diamine and carboxylic acid(s).

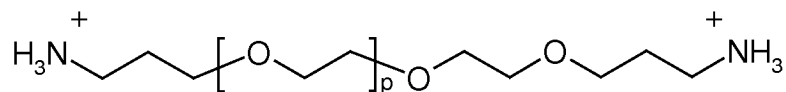
- The expression "alkyl" used in the present description, in particular in the expression "alkylcarboxylate Alk-COO⁻", is a saturated hydrocarbon radical, linear or branched, preferably a saturated linear C₂-C₁₂ hydrocarbon radical.

A double salt of formula (I)

According to the invention, the composition comprises a double salt of the following formula (I), consisting of a diammonium and carboxylate(s) as above defined:



Preferably, the double salt of formula (I) is chosen from the double salts of following formula (Ib):



(Ib)

in which:

p represents an integer between 0 and 2;

Y⁻ represents a carboxylate compound associated with a(the) cationic charge(s) of the double salt of formula (Ib), selected from C₂-C₁₂ alkylcarboxylate Alk-COO⁻ optionally substituted by one or more hydroxy.

Preferably, p is an integer equal to 1.

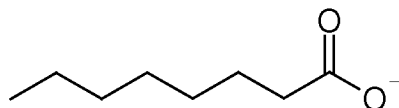
Preferably, X^- (respectively Y^-) are selected from C_2-C_8 alkylcarboxylate $Alk-COO^-$ optionally substituted by one or more hydroxy.

5 More preferably, X^- (respectively Y^-) represents glycolate or caprylate.

The glycolate is also named hydroxyethanoate or hydroxyacetate. The structure of the glycolate is:



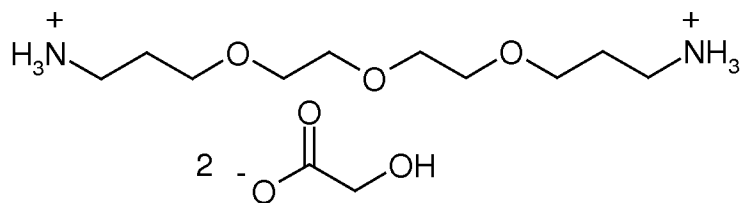
The caprylate is also named octanoate. The structure of the caprylate is:



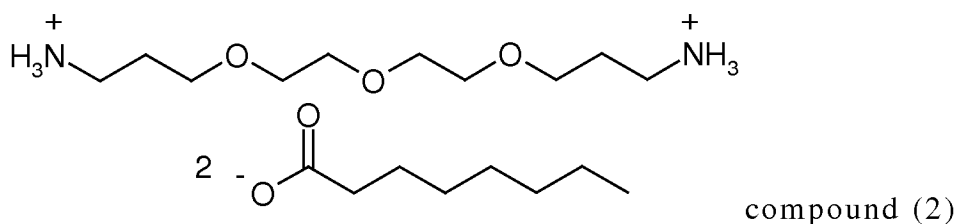
15 Preferably, the double salt of formula (I) (respectively of formula (Ib)) is such that the molar ratio of the carboxylate X^- (respectively Y^-) to the diammonium is 2.

20 According to a preferred embodiment of the invention, the double salt of formula (I) (respectively of formula (Ib)) is selected from the following compound (1) or compound (2), or mixture thereof.

The compound (1) and the compound (2) are defined as follows:



compound (1)



The compound (1) correspond to a double salt of 4,7,10-trioxa-1,13-tridecanediamine diglycolate.

5 The compound (2) correspond to a double salt of 4,7,10-trioxa-1,13-tridecanediamine dicaprylate.

One object of the present invention is the compound (1) and/or the compound (2), as previously described.

10

Preferably, the double salt of formula (I) present in the composition according to the invention, represents from 0.01 to 20% by weight, more preferably from 0.1 to 15% by weight, even more preferably from 0,5 to 10% by weight, and even better from 1 to 8% by weight, relative to the total weight of the composition according to the invention.

Preferably, the double salt of formula (Ib) present in the composition according to the invention, represents from 0.01 to 20% by weight, more preferably from 0.1 to 15% by weight, even more preferably from 0,5 to 10% by weight, and even better from 1 to 8% by weight, relative to the total weight of the composition according to the invention.

25 Cosmetically acceptable solvent

According to the invention, the composition comprises at least one cosmetically acceptable solvent.

The cosmetically acceptable solvent(s) present(s) in the composition according to the invention are preferably selected from water, organic solvents, and mixtures thereof.

The organic solvents that may be used are preferably water-miscible (at room temperature: 25°C). The water-miscible organic solvents can be chosen from monoalcohols containing from 2 to 6 carbon atoms, such as ethanol or isopropanol; polyols especially
5 containing from 2 to 20 carbon atoms, preferably containing from 2 to 10 carbon atoms and preferentially containing from 2 to 6 carbon atoms, such as glycerol, propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, dipropylene glycol or diethylene glycol; glycol ethers (especially containing from 3 to 16 carbon atoms) such
10 as mono-, di- or tripropylene glycol (C₁-C₄)alkyl ethers, mono-, di- or triethylene glycol (C₁-C₄)alkyl ethers, and mixtures thereof.

In certain embodiments of the present invention, the organic solvent is chosen from propylene glycol, glycerin, and mixtures thereof.

15 According to a preferred embodiment of the invention, the composition according to the invention comprises at least one cosmetically acceptable solvent chosen from water, monoalcohols containing from 2 to 6 carbon atoms, polyols, glycol ethers, and mixture thereof; more preferably chosen from water, ethanol,
20 isopropanol, glycerol, propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, dipropylene glycol, diethylene glycol, mono-, di- or tripropylene glycol (C₁-C₄)alkyl ethers, mono-, di- or triethylene glycol (C₁-C₄)alkyl ethers, and mixtures thereof; even better chosen from water, ethanol, isopropanol, glycerol, propylene
25 glycol, butylene glycol, and mixture thereof.

Preferably, the composition according to the invention comprises water.

More preferably, the composition according to the invention comprises water in a total content ranging from 45% to 99.9% by weight, more preferably from 50% to 99% by weight, even more
30 preferably from 60% to 98% by weight, relative to the total weight of the composition according to the invention.

Preferably, the composition according to the invention comprises at least one additional compound chosen from surfactants, cationic polymers, amphoteric polymers, or mixture thereof.

5 More preferably, the surfactant(s) is(are) selected from nonionic surfactants, cationic surfactants, or mixture thereof.

Cationic surfactants

According to the invention, the composition may optionally further comprise at least one cationic surfactant.

10 The cationic surfactants that can be used according to the invention can be chosen from polyoxyalkylenated primary, secondary or tertiary fatty amine salts, quaternary ammonium salts, and mixtures thereof.

15 Mention may be made of tetraalkylammonium halides, preferably chlorides, such as dialkyldimethylammonium or alkyltrimethylammonium chlorides in which the alkyl group comprises from 12 to 22 carbon atoms, particularly behenyltrimethylammonium, distearyldimethylammonium, cetyltrimethylammonium, and benzyldimethylstearyl ammonium chlorides.

20 Mention may also be made of palmitylamidopropyltrimethylammonium halides, preferably chlorides, or stearamidopropyldimethyl(myristyl acetate)-ammonium halides, preferably chlorides, such as the product sold under the name CERAPHYL[®] 70 by the company VAN DYK.

25 - imidazoline quaternary ammonium salts for example under the name REWOQUAT[®] W 75 by the company REWO.

30 - quaternary di- or triammonium salts for example, FINQUAT CT-P (Quaternium 89) and FINQUAT CT (Quaternium 75) sold by the company FINETEX.

Other cationic surfactant are for examples the chloride or methyl sulfate of diacyloxyethyldimethylammonium, diacyloxyethylhydroxyethyl-methylammonium,

monoacyloxyethyl-dihydroxyethylmethylammonium, triacyloxyethylmethylammonium or monoacyloxyethylhydroxyethyl-dimethylammonium, and mixtures thereof. The acyl groups preferably contain 14 to 18 carbon atoms and are obtained more particularly from
5 a plant oil, such as palm oil or sunflower oil. When the compound contains several acyl groups, these groups may be identical or different.

Such compounds are, for example, sold under the names DEHYQUART[®] by the company HENKEL, STEPANQUAT[®] by the
10 company STEPAN, NOXAMIUM[®] by the company CECA or REWOQUAT[®] WE 18 by the company REWO-WITCO.

According to a preferred embodiment of the invention, the composition comprises at least one surfactant; more preferably selected from cationic surfactants; more preferably still chosen from
15 cetyltrimethylammonium salts, behenyltrimethylammonium salts, dipalmitoylethylhydroxyethyl-methylammonium salts, and mixtures thereof; better from behenyltrimethylammonium chloride or methosulfate, cetyltrimethylammonium chloride or methosulfate, dipalmitoylethylhydroxyethylmethylammonium chloride or
20 methosulfate, and mixtures thereof; even better, the cationic surfactant is a cetyltrimethylammonium salt.

Preferably, when the cationic surfactant(s) is/are present in the composition according to the invention, the cationic surfactant(s)
25 represent(s) from 0.01 to 20% by weight, more preferably from 0.05 to 15% by weight, even more preferably from 0.1 to 10% by weight, and even better from 0.2 to 5% by weight, relative to the total weight of the composition according to the invention.

30 Nonionic surfactants

According to the invention, the composition may optionally further comprise at least one nonionic surfactant.

According to the invention, the nonionic surfactants may be chosen from alcohols, α -diols and (C₁₋₂₀)alkylphenols, these

compounds being polyethoxylated and/or polypropoxylated and/or polyglycerolated, the number of ethylene oxide and/or propylene oxide groups possibly ranging from 1 to 100, and the number of glycerol groups possibly ranging from 2 to 30; or alternatively these
5 compounds comprising at least one fatty chain comprising from 8 to 30 carbon atoms and especially from 16 to 30 carbon atoms.

Mention may also be made of condensates of ethylene oxide and of propylene oxide with fatty alcohols; polyethoxylated fatty
10 amides preferably having from 2 to 30 ethylene oxide units, polyglycerolated fatty amides comprising on average from 1 to 5, and in particular from 1.5 to 4, glycerol groups; ethoxylated fatty acid esters of sorbitan preferably containing from 2 to 40 ethylene oxide units, fatty acid esters of sucrose, polyoxyalkylenated and preferably
15 polyoxyethylenated fatty acid esters containing from 2 to 150 mol of ethylene oxide, including oxyethylenated plant oils, N-(C₆₋₂₄ alkyl)glucamine derivatives, amine oxides such as (C₁₀₋₁₄ alkyl)amine oxides or N-(C₁₀₋₁₄ acyl)aminopropylmorpholine oxides.

20 Mention may also be made of nonionic surfactants of alkyl(poly)glycoside type, preferably, the alkyl(poly)glycoside surfactant is an alkyl(poly)glucoside surfactant. C₈/C₁₆ alkyl(poly)glycosides 1,4, and especially decyl glucosides and caprylyl/capryl glucosides, are most particularly preferred.

25 Among the commercial products, mention may be made of the products sold by the company COGNIS under the names PLANTAREN® (600 CS/U, 1200 and 2000) or PLANTACARE® (818, 1200 and 2000); the products sold by the company SEPPIC under the names ORAMIX CG 110 and ORAMIX NS 10; the products sold by the
30 company BASF under the name LUTENSOL GD 70, or else the products sold by the company CHEM Y under the name AG10 LK.

Preferably, use is made of C₈/C₁₆-alkyl(poly)glycosides 1,4, especially as an aqueous 53% solution, such as those sold by Cognis under the reference Plantacare® 818 UP.

According to a preferred embodiment of the invention, the composition comprises at least one nonionic surfactant; more preferably chosen from (C₆-C₂₄ alkyl)polyglycosides, and more particularly (C₈₋₁₈ alkyl)(poly)glycosides, ethoxylated C₈-C₃₀ fatty acid esters of sorbitan, polyethoxylated C₈-C₃₀ fatty alcohols and polyoxyethylenated C₈-C₃₀ fatty acid esters, these compounds preferably containing from 2 to 150 mol of ethylene oxide, and mixtures thereof.

Preferably, when the nonionic surfactant(s) is/are present in the composition according to the invention, the nonionic surfactant(s) represent(s) from 0.01 to 20% by weight, more preferably from 0.05 to 15% by weight, even more preferably from 0.1 to 10% by weight, and even better from 0.2 to 5% by weight, relative to the total weight of the composition according to the invention.

Cationic polymers

According to the invention, the composition may optionally further comprise at least one cationic polymer.

The term "cationic polymer" means any polymer comprising cationic groups and/or groups that can be ionized to cationic groups. Preferably, the cationic polymer is hydrophilic or amphiphilic. The preferred cationic polymers are chosen from those that contain units comprising primary, secondary, tertiary and/or quaternary amine groups that may either form part of the main polymer chain or may be borne by a side substituent directly connected thereto.

The cationic polymers that may be used preferably have a weight-average molar mass (M_w) of between 500 and 5×10⁶ approximately and preferably between 10³ and 3×10⁶ approximately.

According to an embodiment of the invention, the composition comprises at least one cationic polymer; more preferably the cationic polymer(s) is/are chosen from cationic polysaccharides, especially

cationic celluloses and galactomannan gums, and in particular quaternary cellulose ether derivatives such as the products sold under the name "JR 400" by the company Amerchol, cationic cyclopolymers, in particular dimethyldiallylammonium salt (for example chloride) homopolymers or copolymers, sold under the names Merquat 100, Merquat 550 and Merquat S by the company Nalco, quaternary polymers of vinylpyrrolidone and of vinylimidazole, optionally crosslinked homopolymers or copolymers of methacryloyloxy(C₁-C₄)alkyltri(C₁-C₄)alkylammonium salts, and mixtures thereof.

Preferably, when the cationic polymer(s) is/are present in the composition according to the invention, the cationic polymer(s) represent(s) from 0.01 to 5% by weight, more preferably from 0.05 to 3% by weight, even more preferably from 0.1 to 2% by weight, relative to the total weight of the composition according to the invention.

Amphoteric polymers

According to the invention, the composition may optionally further comprise at least one amphoteric polymer.

The amphoteric polymers that can be used according to the invention are preferably chosen from amphoteric polymers comprising a repetition of:

- (i) one or more units derived from a monomer of (meth)acrylamide type,
- (ii) one or more units derived from a monomer of (meth)acrylamidoalkyltrialkylammonium type, and
- (iii) one or more units derived from an acidic monomer of (meth)acrylic acid type.

However, according to a preferred embodiment of the invention, the said amphoteric polymers consist solely of units derived from monomers (i) of (meth)acrylamide type, (ii) of

(meth)acrylamidoalkyltrialkylammonium type and (iii) of (meth)acrylic acid type.

As examples of amphoteric polymers that are particularly preferred, mention may be made of
5 acrylamide/methacrylamidopropyltrimethylammonium chloride/acrylic acid terpolymers. Such polymers are listed in the CTFA Dictionary (International Cosmetic Ingredient Dictionary) under the name Polyquaternium 53. Corresponding products are especially sold under the names Merquat 2003 and Merquat 2003 PR by the company Nalco.

10 As another type of amphoteric polymer that may be used, mention may also be made of copolymers based on (meth)acrylic acid and on a dialkyldiallylammonium salt, such as copolymers of (meth)acrylic acid and of dimethyldiallylammonium chloride. An example that may be mentioned is Merquat 280 sold by the company
15 Nalco.

According to a preferred embodiment of the invention, the composition comprises at least one amphoteric polymer; more preferably the amphoteric polymer(s) is/are chosen from
20 acrylamide/methacrylamidopropyltrimethylammonium chloride/acrylic acid terpolymers, cocobetaine, cocoamidopropylbetaine, sodium cocoamphoacetate, sodium cocoamphopropionate, disodium cocoamphodiacetate, disodium cocoamphodipropionate, sodium lauroamphoacetate, sodium cocoylisethionate, and mixtures thereof.

25 Preferably, when the amphoteric polymer(s) is/are present in the composition according to the invention, the amphoteric polymer(s) represent(s) from 0.01 to 5% by weight, more preferably from 0.05 to 3% by weight, even more preferably from 0.1 to 2% by weight, relative to the total weight of the composition according to the
30 invention.

The composition according to the invention optionally comprises any auxiliary ingredient usually used in the cosmetic field. Such ingredients may be selected, for example, from emulsifying

agents, conditioning agents, stabilizers such as sodium chloride, magnesium dichloride or magnesium sulfate, moisturizing agents, shine agents, fillers, colorants, pigments, chelating compounds, sequestering agents, fragrances, preservatives, stabilizers, and mixtures thereof.

It is a matter of routine operations for a person skilled in the art to adjust the nature and amount of the additives present in the compositions in accordance with the invention such that the desired cosmetic properties and stability properties thereof are not thereby affected.

The pH of the composition according to the invention can vary between 4 and 12, more preferably between 5 and 11, and even better between 6 and 7.

According to a particular embodiment of the invention, the composition according to the invention may be further prepared as follows:

Step 1:

- either add the 4,7,10-trioxa-1,13-tridecanediamine in free diamine form,
- or add a salt of 4,7,10-trioxa-1,13-tridecanediamine of formula (I) (respectively of formula (Ib)) such as defined thereafter;

Step 2:

- either add the carboxylic acid(s) chosen from the glycolic acid, the caprylic acid, and mixture thereof,
- or add the carboxylic acid(s) salt(s) chosen from the glycolic acid salt, the caprylic acid salt, and mixture thereof;

in at least one cosmetically acceptable solvent as previously described.

According to a preferred embodiment of the invention, a method for preparing a composition according to the invention as

previously described, comprises at least one step of mixing compound (1) and/or compound (2) such as defined previously, with at least one cosmetically acceptable solvent as previously described.

5 Another object of the present invention is a method of treatment of keratin fibers comprising at least one step of applying onto the keratin fibers of a composition according to the invention as previously described.

10 Preferably, the method of treatment of keratin fibers according to the invention is a method for the care and/or repair of keratin fibers.

15 More preferably, the method of treatment of keratin fibers according to the invention is a method for caring and/or repairing the hair split ends.

20 According to a preferred embodiment of the invention, the method of treatment of keratin fibers according to the invention comprises a step of rinsing the keratin fibers. More preferably, the said step of rinsing is implemented after the said step(s) of applying onto the keratin fibers of a composition as previously described.

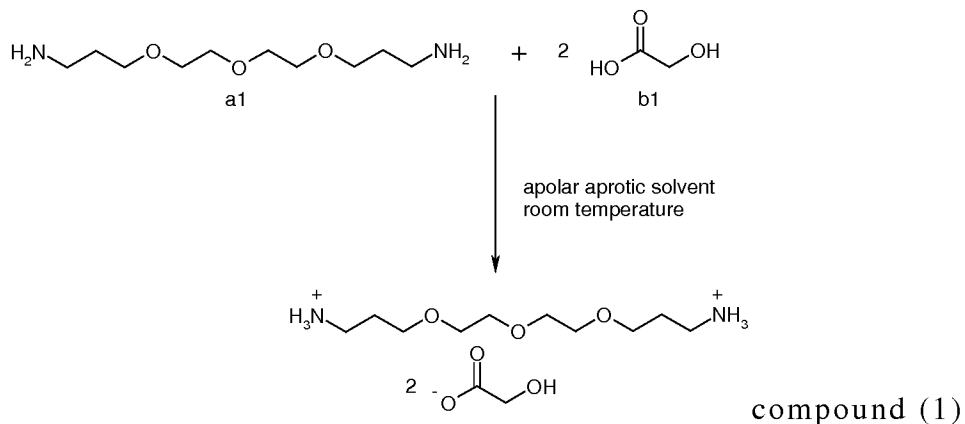
25 Another object of the present invention is a composition according to the invention as previously described, for use in the treatment, preferably the care and/or repair, of keratin fibers, in particular human keratin fibers such as the hair.

30 Another object of the present invention relates to the use of a composition according to the invention as previously described, for the treatment, preferably for the care and/or repair, of keratin fibers, preferably the hair split ends.

The following examples are given by way of illustration of the present invention and shall not be interpreted as limiting the scope.

EXAMPLES:**Example 1: Synthesis of the double salt of 4,7,10-trioxa-1,13-tridecanediamine diglycolate - compound (1)**

5

**Synthesis scheme of compound (1)**

To a stirred solution of 3,3'-(2,2'-oxybis(ethane-2,1-diyl)bis(oxy))dipropan-1-amine (a1) (75.0 g, 340mmol, 1 equivalent) in an apolar aprotic solvent (1.5 L) such as chloroform or dichloromethane and preferably in chloroform, is added glycolic acid (b1) (52.0 g, 682mmol, 2 equivalents). Then the mixture is stirred at room temperature (15-35°C) and at atmospheric pressure, for 5 minutes to 20 hours, preferably for 10 to 20 hours, for example 16 hours; and finally the solvent is evaporated under vacuum to obtain the desired compound (1) as a pale brown liquid. NMR spectra confirm structure of compound (1).

20

25

Example 2: Synthesis of the double salt of 4,7,10-trioxa-1,13-tridecanediamine dicaprylate - compound (2)

Composition C (Comparative): 4.52g of salt of 4,7,10-trioxa-1,13-tridecanediamine dimaleate has been added in 100mL of water.

5 Composition D (Comparative): A 0.1M mix of 2 4,7,10-trioxa-1,13-tridecanediamine and glycolic acid was prepared from 2.19g of 4,7,10-trioxa-1,13-tridecanediamine and 1.53g of glycolic acid.

10 The analyses by liquid chromatography coupled to a mass spectrometer confirm the stability and the presence in the compositions according to the invention of the corresponding double salt.

Protocol

15

Beforehand, hair locks which were used for this protocol, were placed in a combing machine holder and were subjected to 10 000 comb passages at the rate of 50 comb passages per minute. The room conditions were set to 20-23°C and 50-60% humidity.

20

This protocol was applied on three hair locks, that is to say each composition A, B, C or D was applied on one separate hair lock.

25 Step 1. In a watch glass, weigh 0.15 g of composition A, B, C or D for each gram of hair.

Step 2. Spread the composition along the lock from the roots to the ends in a homogenous manner.

30 Step 3. Gently massage the composition onto the hair, passing the lock between two fingers five times (without creating knots).

Step 4. Comb the lock if required.

Step 5. Keep the hair lock aside for 10 to 15 minutes at room temperature (20-25°C).

Step 6. Wash the hair lock with water

Step 7. Repeat the steps 1 to 6 for 5 times.

Evaluation

5 The composition A, B, C and D were tested on their capability to repair split ends of hair.

 The evaluation was carried out using a microscopic camera with optical zoom CASELITE NOVA.

10 The numbers of split ends or broken ends were counted for 100 hair fibers per lock before and after the implementation of the protocol as previously described.

 The extent of hair damage was further categorized based on the type of split end as:

- 15 • Single split end
- Double split end
- Multiple split or “Brush like structure”
- Broken end.

20 The results of this evaluation before and after the treatment with composition A, B, C or D are summarized in the table hereafter.

M_A represents the hair lock treated with composition A (Invention).

M_B represents the hair lock treated with composition B (Invention).

M_C represents the hair lock treated with composition C (Comparative)

25 M_D represents the hair lock treated with composition D (Comparative).

		M _A	M _B	M _C	M _D
BEFORE TREATMENT	Number of single split end	8	8	6	10
	Number of double split end	4	3	5	3
	Number of multiple split end	2	2	3	1
	Number of broken end	4	6	4	3
	TOTAL	18	19	18	17
AFTER TREATMENT	Number of single split end	0	1	1	7
	Number of double split end	1	0	3	2
	Number of multiple split end	0	0	0	1
	Number of broken end	0	1	2	2
	TOTAL	1	2	6	12

We notice that hair locks treated with composition A or composition B according to the invention present less split ends than hair lock treated with comparative composition C or D.

We notice therefore that hair locks treated with composition A or composition B according to the invention present a better reparation of split ends than hair lock treated with comparative composition C or D.

Example 4:

The compositions E and F according to the invention, have been prepared from the following ingredients whose contents are

indicated, as a percentage by weight of active ingredient relative to the total weight of the composition, in the table below.

Ingredients	E
COMPOUND (1) OF EXAMPLE 1	5
GLYCERIN	3
CETRIMONIUM CHLORIDE	0.5
AMODIMETHICONE AND TRIDECETH-5 AND TRIDECETH-10	2.5
POLYSORBATE-20	1
POLYQUATERNIUM-47	0.65
HYDROLIZED PEARL	0.001
WATER	Qs 100

Ingredients	F
COMPOUND (2) OF EXAMPLE 2	5
GLYCERIN	3
CETRIMONIUM CHLORIDE	0.5
AMODIMETHICONE AND TRIDECETH-5 AND TRIDECETH-10	2.5
POLYSORBATE-20	1
POLYQUATERNIUM-47	0.65
HYDROLIZED PEARL	0.001
WATER	Qs 100

5

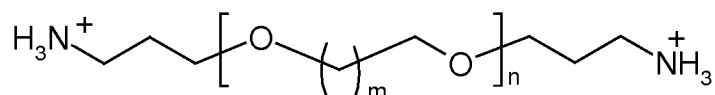
Hair locks treated with composition E or composition F according to the invention present good cosmetic properties and a better resistance to breakage and sensoriality of the hair, in particular less split ends, than hair lock treated only with water.

10

CLAIMS

1. Composition comprising :

- a double salt of the following formula (I), consisting of a diammonium and carboxylate(s):



(I)

in which:

n represents an integer ranging from 1 to 10;

m is an integer selected from 1 or 2;

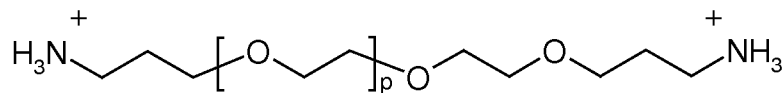
X⁻ represents a carboxylate compound associated with a(the) cationic charge(s) of the double salt of formula (I), selected from C₂-C₁₂ alkylcarboxylate Alk-COO⁻ optionally substituted by one or more hydroxy;

- at least one cosmetically acceptable solvent.

2. The composition according to the preceding claim, characterized in that X⁻ represents glycolate or caprylate.

3. The composition according to any one of the preceding claims, characterized in that n is an integer equal to 2.

4. The composition according to any one of the preceding claims, wherein the double salt has the following formula (Ib):



(Ib)

in which:

p represents an integer between 0 and 2; preferably p is an integer equal to 1;

Y^- represents a carboxylate compound associated with a(the) cationic charge(s) of the double salt of formula (Ib),
5 selected from C_2 - C_{12} alkylcarboxylate $Alk-COO^-$ optionally substituted by one or more hydroxy; preferably Y^- represents glycolate or caprylate.

10 5. The composition according to any one of the preceding claims, characterized in that the double salt is such that the molar ratio of the carboxylate to the diammonium is 2.

15 6. The composition according to any one of the preceding claims, characterized in that the double salt represents from 0.01 to 20% by weight, more preferably from 0.1 to 15% by weight, even more preferably from 0,5 to 10% by weight, and even better from 1 to 8% by weight, relative to the total weight of the composition.

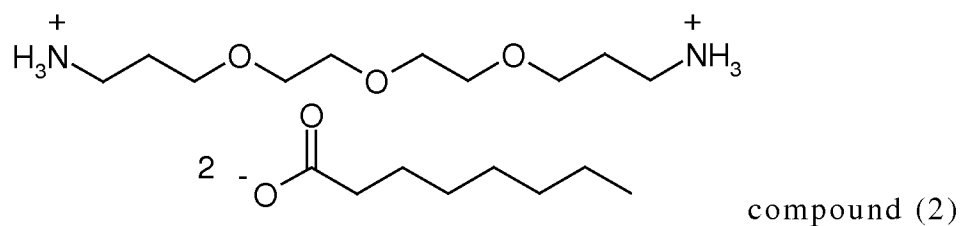
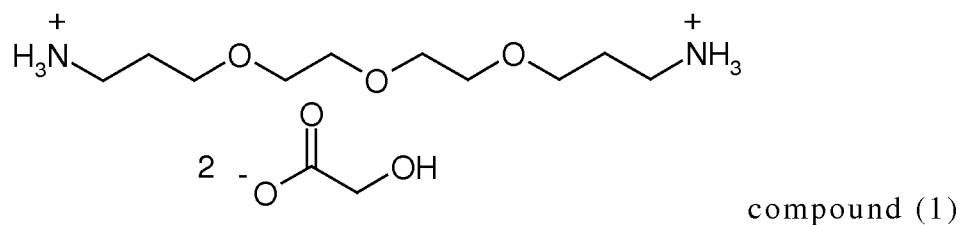
20 7. The composition according to any one of the preceding claims, characterized in that the cosmetically acceptable solvent(s) is/are chosen from water, monoalcohols containing from 2 to 6 carbon atoms, polyols, glycol ethers, and mixture thereof; more preferably chosen from water, ethanol, isopropanol, glycerol, propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, dipropylene
25 glycol, diethylene glycol, mono-, di- or tripropylene glycol (C_1 - C_4)alkyl ethers, mono-, di- or triethylene glycol (C_1 - C_4)alkyl ethers, and mixtures thereof; even better chosen from water, ethanol, isopropanol, glycerol, propylene glycol, butylene glycol, and mixture thereof.

30 8. The composition according to any one of the preceding claims, characterized in that it comprises at least one additional compound selected from surfactants, cationic polymers, amphoteric polymers, or mixture thereof.

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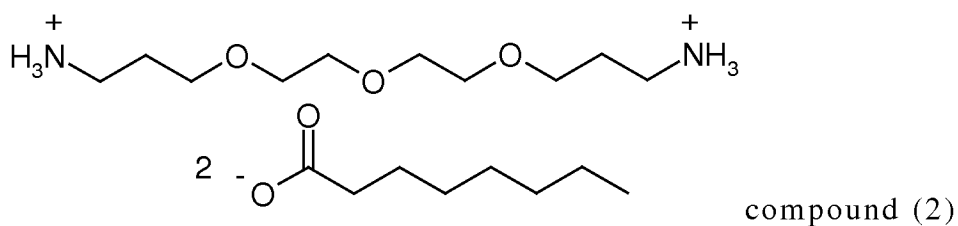
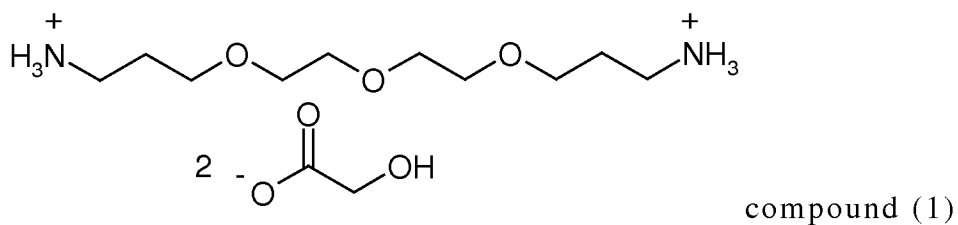
9. The composition according to the preceding claim, characterized in that the surfactant(s) is(are) selected from nonionic surfactants, cationic surfactants, or mixture thereof.

5 10. The composition according to any of the preceding claims characterized in that the double salt is selected from the following compound (1) or compound (2), or mixture thereof:



10

11. Compound (1) and/or compound (2), as follows:



15

12. Method of treatment of keratin fibers comprising at least one step of applying onto the keratin fibers of a composition as defined in any one of claims 1 to 10.

5 13. The method according to the preceding claim, characterized in that it is a method for the care and/or repair of keratin fibers.

10 14. The method according to Claim 12 for caring and/or repairing the hair split ends.

 15. Use of the composition as defined in any one of claims 1 to 10, for the treatment, preferably for the care and/or repair, of keratin fibers.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/066353

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61Q5/00 A61K8/36 A61K8/365 A61K8/41
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

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, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2015/034117 A1 (PRESSLY ERIC D [US] ET AL) 5 February 2015 (2015-02-05) paragraphs [0002], [0017] - [0021]; claims 9,29 -----	1-15
A	US 2010/203000 A1 (NGUYEN NGHI VAN [US] ET AL) 12 August 2010 (2010-08-12) paragraphs [0010] - [0022], [0045] - [0050]; claim 3 -----	1-15
A	WO 2016/179017 A1 (OREAL [FR]; HAMILTON KIMBERLY CHRISTINE [US] ET AL.) 10 November 2016 (2016-11-10) paragraphs [0012], [0046] - [0049], [0063], [0067], [0071] - [0076] -----	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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"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

26 September 2019

Date of mailing of the international search report

28/10/2019

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/066353

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