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(54) **Title:** KIT FOR CARING FOR THE SKIN

(57) **Abstract:** A kit for keratin materials caring comprises: 1) a first composition comprising at least one water insoluble salt of polyvalent metal; and 2) a second composition comprising at least one aqueous phase, and a) optionally, at least one water soluble chelating agent of the polyvalent metal ion, and b) at least one water soluble gelatinizing agent, which is gelatinizable with the polyvalent metal ion, and 3) at least one water soluble carbonate or bicarbonate, which is added into either the first composition or the second composition, or the both.

KIT FOR CARING FOR THE SKIN

TECHNICAL FIELD

The present invention relates to an alginic system, especially to an alginic kit caring for the skin. Further, the present invention relates to use of same, especially as a mask for caring for keratin materials, especially the skin.

BACKGROUND ART

It has always been an ultimate goal of the cosmetic filed to deliver to the consumers' highly efficient products with skin benefits such as hydration, moisturizing, whitening, cleansing, and so on.

In general, there are four types of masks, i.e., paste type, peel-off type, gel type, and wet tissue type masks. Among others, paste type and peel-off type masks are mainly used for cleansing of the keratin materials, whereas gel type and wet tissue type masks are more often used for caring for the skin. It is known that, a gel type mask having good adhesion to the skin and can provide good fresh feel, however, may be insufficient in delivering moisturizing or hydration effect to the skin, while a wet issue type mask is good at delivering moisturizing and hydration effect, but will take it back if applied for an elongated period of time. Besides, the adhesion with the skin may not be as good as the gel type masks.

Carbonate or bicarbonate has been used for masks to generate carbon dioxide after being mixed with an acid, so as to cause enhanced blood circulation of skin. Meanwhile, it is known that some water soluble active agents are generally less stable in solvated state, e.g., in aqueous solution, compared with the dry form thereof, thus impacting the cosmetic effect thereof. For example, some water soluble vitamins, such as ascorbic acid (also known as vitamin C), is more readily to be reacted in aqueous solution. In particular, at a lower or higher pH, vitamin C tends to be hydrolyzed..

Based on the foregoing, there is a need for a new type of mask, which integrates two or more of the merits exhibited by the known mask types, but does not suffer from one or more problem(s) associated therewith.

AIMS OF INVENTION

Therefore, in one aspect, it is an object to provide masks, which is capable of texture transformation, for example, from tissue to gel, creating a pleasant consumer experience.

In another aspect, it is an object to provide masks, which have a moisture or actives delivery capacity that is at least on par with or even greater than that observed with wet tissue type masks.

In another aspect, it is an object to provide masks, which have good adhesion with the skin, and can provide fresh feeling, just like gel type masks.

In another aspect, it is an object to provide masks, which can bring enhanced blood

circulation to keratin materials for an elongated period of time.

In another aspect, it is an object to provide masks, which bring improved whitening effect to keratin materials.

In another aspect, it is an object to provide masks, which integrate all of the benefits described in the preceding aspects.

In another aspect, the present inventors discovered that the conception or gist of the present invention is applicable not only to the cosmetic field, but also to other fields like the medical field, then the masks of the preceding aspects may be broadened to kits, which show the benefits described herein in connection with these masks as well.

DISCLOSURE OF INVENTION

The present inventors have discovered that a specific combination of 1) a first composition comprising at least one water insoluble salt of polyvalent metal, as an ion donator of the polyvalent metal; 2) a second composition comprising at least one aqueous phase, and a) optionally, at least one water soluble chelating agent of the polyvalent metal ion, and b) at least one water soluble gelatinizing agent, which is gelatinizable with the polyvalent metal ion may satisfy one or more of the abovementioned requirements; and 3) a component of at least one water soluble carbonate or bicarbonate.

One subject of the invention is thus to provide a kit comprising the first composition and the second composition separately placed from one another.

Another subject of the invention is thus to provide a kit comprising the first composition and the second composition separately placed from one another, wherein the component 3), i.e., the at least one water soluble carbonate or bicarbonate, is added into the first and/or the second composition.

Another subject of the present invention is use of the second composition as juice or a part of juice for mask product, wherein the mask product comprises, separate from the second composition, a fabric (or tissue) comprising at least one water insoluble salt of polyvalent metal according to the invention.

Another subject of the present invention is use of the kit according to the present invention for caring for keratin materials, especially the skin. This use may manifest itself as a process for caring for keratin materials, especially the skin, comprising the steps of compounding the first composition and the second composition of the kit at a predetermined weight ratio, and then applying to said keratin materials the thus obtained mixture.

Another subject of the present invention is use of the kit according to the present invention for managing skin wound, for preventing post-surgical adhesion formation, or for filling or repairing osteochondral defects, and so on. This use may manifest itself as a process for managing skin wound, for preventing post-surgical adhesion formation, or for filling or repairing osteochondral defects, comprising the steps of compounding the first composition and the second composition of the kit at a predetermined weight ratio, and then applying to a location in need of the thus obtained mixture.

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

DETAILED DESCRIPTION OF INVENTION

Other than in the operating examples, or where otherwise indicated, all numbers expressing quantities of components and/or reaction conditions are to be understood as being modified in all instances by the term "about," meaning within 10% of the indicated number (e.g. "about 10%" means 9% - 1 1 % and "about 2%" means 1.8% - 2.2%).

The articles "a" and "an," as used herein, mean one or more when applied to any feature in embodiments of the present invention described in the specification and claims. The use of "a" and "an" does not limit the meaning to a single feature unless such a limit is specifically stated. The article "the" preceding singular or plural nouns or noun phrases denotes a particular specified feature or particular specified features and may have a singular or plural connotation depending upon the context in which it is used. The adjective "any" means one, some, or all indiscriminately of whatever quantity.

The term "comprising" (and its grammatical variations) as used herein is used in the inclusive sense of "having" or "including" and not in the exclusive sense of "consisting only of." Nonetheless, those skilled can realize without any doubt for an embodiment capable of being carried out in the form of "comprising", the forms of "consisting essentially of" and "consisting of" are naturally modifications of the embodiment, and are also within the scope of the invention.

All percentages and ratios are calculated by weight unless otherwise indicated. All percentages are calculated based on the total weight of a composition unless otherwise indicated. All component or composition levels are in reference to the active level of that component or composition, and are exclusive of impurities, for example, residual solvents or by-products, which may be present in commercially available sources.

Preferably, the “keratin material” according to the present invention is the skin. By “skin”, we intend all the body skin. Still preferably, the keratin material is the face, or the neck, especially the face.

By “topical application”, it meant that the composition is applied or spread onto the surface of the keratin materials, such as at least one zone of the skin.

By “alkali metal”, it refers to an element located in Group IA of the periodic table, such as sodium, potassium, lithium or a combination thereof, preferably sodium, potassium or a combination thereof.

The term "water-soluble or water-dispersible" means a compound which, when introduced into water at 25°C, at a mass concentration equal to 1%, make it possible to obtain a macroscopically homogeneous and transparent solution, i.e. a solution with a maximum light transmittance value, at a wavelength equal to 500 nm, through a sample 1 cm thick, of at least 60% and preferably of at least 70%.

In the application, unless specifically mentioned otherwise, contents, parts and percentages are expressed on a weight basis.

According to the present invention, the kit comprises a first composition and a second composition.

First composition

First of all, the first composition according to the present invention comprises at least one water insoluble salt of polyvalent metal.

Water insoluble salt of polyvalent metal

The term “water insoluble” means that the salt is not dissolvable, e.g., having a solubility of less than 0.01g/100g of water or only slightly soluble, e.g., having a solubility of less than 0.5g/100g of water, in water, nor does it break apart in the bulk state upon immersion in water.

In particular, the at least one water insoluble salt of polyvalent metal may be present in form of powder, particulate, fiber or bulk state.

For the purposes of the present invention, the term "particulate", when being used for the water insoluble salt of polyvalent metal, means that the salt is in the form of particles.

Specifically, water insoluble salt of polyvalent metal may be formed from an acid anion and a polyvalent metal cation, especially calcium, strontium, zinc, copper, manganese, aluminum, or mixtures thereof. The useful metal is preferably calcium, copper or a mixture thereof, more preferably calcium.

The acid to provide acid anion according to the present invention can be any known acid useful in cosmetic products, provided that the salt formed from the acid with the polyvalent metal is water insoluble or slightly soluble. The typical acids may be used comprise various inorganic acids, e.g., sulphate, carbonic acid, phosphoric acid meta-aluminic acid, silicic acid, and various organic acids, especially higher saturated or unsaturated fatty acids, in particular those having 18 or more carbon atoms, e.g., stearic acid and oleic acid, or polycarboxylic acids, especially e.g., alginic acid, oxalic acid, as long as the salt formed is water insoluble or slightly soluble.

More specifically, the at least one water insoluble salt of polyvalent metal may be a sulphate or alginate, preferably chosen from calcium sulphate/alginate, strontium sulphate/alginate, zinc sulphate/alginate, copper sulphate/alginate, manganese sulphate/alginate, or a mixture thereof, preferably calcium sulphate/alginate or copper sulphate/alginate, in particular calcium sulphate/alginate.

The term "alginate" in particular means a salt of alginic acid. 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).

Water insoluble alginates, in which the principal cation is calcium, are specifically found in the fronds and stems of seaweeds of the class *Phaeophyceae*, examples of which are *Fucus vesiculosus*, *Fucus spiralis*, *Ascophyllum nodosum*, *Macrocystis pyrifera*,

Alaria esculenta, *Eclonia maxima*, *Lessonia nigrescens*, *Lessonia trabeculata*, *Laminaria japonica*, *Durvillea antarctica*, *Laminaria hyperborea*, *Laminaria longicruris*, *Laminaria digitata*, *Laminaria saccharina*, *Laminaria cloustoni*, and *Saragassum sp*.

Suitable water insoluble 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).

Superabsorbent material

According to an embodiment of the present invention, the first composition may comprise at least one superabsorbent material.

In particular, the at least one superabsorbent material may be present in form of powder, particulate, fiber or bulk state.

The superabsorbent material advantageously presents very great ability to absorb a liquid, and in particular water. In particular, it may present the capacity to absorb 15 times, or even 20 times to 50 times its own weight in water, e.g. about 25 times to 30 times.

The capacity of the superabsorbent material for absorbing liquid can be determined by implementing the following method.

A sample of the superabsorbent material in the powder, fiber, or bulk state, or arranged as a film or a sheet, is weighed while in the dry state (M_D). For example it is possible to use a non-woven square web having a side of about 1 centimeter (cm). In the context of the present method, the superabsorbent material is obtained in the "dry" state by being treated in a drying oven for about 4 hours (h) at about 50°C.

Water (or any other liquid that is to be absorbed by the material) is put into contact with the material. This can be done either by immersing the material in the liquid, or else by pouring the liquid onto the material. For example, the material may be immersed for a duration of about 1 minute (min).

The quantity of water (or liquid) is used in excess so as to saturate the material completely, for example. The excess water (or liquid) is then eliminated, e.g. by drip-drying for about 2 min, and the material saturated in liquid is weighed (M_L).

The difference Δ between the weight of the material when saturated in liquid and the weight of the material when dry represents the quantity of liquid that it has absorbed, which weight is compared with the dry weight of the material. The resulting value C is indicative of the capacity of the superabsorbent material to absorb the liquid, e.g. expressed in grams of liquid absorbed per gram of dry material:

$$C = \frac{\Delta}{M_D} = \frac{(M_L - M_D)}{M_D}$$

The superabsorbent material may be selected from cellulose derivatives, alginates (not including the water insoluble alginates and the alkali metal alginic compounds described herein as the water soluble gelatinizing agent) and derivatives thereof, in particular derivatives such as propylene glycol alginate, or salts thereof, derivatives of polyacrylic acid or polymethacrylic acid, derivatives of poly(meth)acrylamide, derivatives of polyvinylpyrrolidone, derivatives of poly-vinyl ether, and mixtures thereof, amongst others.

In particular, the superabsorbent material may be selected from derivatives of chemically modified cellulose. For example it may be selected from carboxy-methyl cellulose, sodium carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, carboxyethyl cellulose, hydroxyethylethyl cellulose, hydroxypropylmethyl cellulose, methyl cellulose, sodium methyl cellulose, microcrystalline cellulose, sodium cellulose sulfate, and mixtures thereof.

It may also be selected from alkyl celluloses. These polymers are obtained by grafting an alkyl residue onto one or more hydroxy groups of the cellulose polymer to form the hydroxyalkyl derivative. These alkyl residues may be selected from the following groups: stearyl, isostearyl, lauryl, myristyl, cetyl, isocetyl, cocoyl, palmityl, oleyl, linonyl, ricinolyl, behenyl, and mixtures thereof. These hydroxyalkyl cellulose derivatives may also be subjected to chemical modification, e.g. using a carboxylic residue.

The superabsorbent material may also be selected from natural polymer derivatives, such as, for example, gellan gum and glucomannan and galactomannan polysaccharides extracted from seeds, vegetable fibers, fruit, seaweed, starch, plant resins, or indeed of microbial origin. For example, it may be selected from agar gum, guar gum, gum tragacanth, carrageenan gum, konjac gum, locust bean gum, gellan gum, xanthan gum, and mixtures thereof.

In particular, the first composition of the present invention may comprise the at least one superabsorbent material in a content ranging from 0% to 80% by weight, especially from 50% to 80% by weight, or even the rest, relative to the total weight of the first composition.

According to an embodiment of the present invention, in particular for mask use, the first composition further comprises additional fibers other than one formed from the at least one water insoluble salt of polyvalent metal, where the at least one water insoluble salt of polyvalent metal and optionally the at least one carbonate or bicarbonate are loaded to the additional fibers.

According to an embodiment, the water insoluble salt of polyvalent metal may be present in form of fiber. Then, the fiber of the at least one water insoluble salt of polyvalent metal may, solely or together with one or more other fibers, be formed into a water insoluble substrate. The carbonate or bicarbonate is optionally loaded to the substrate.

Water insoluble substrate

For the purpose of the present invention, the term "water insoluble" means that the substrate is not dissolvable in water, nor does it break apart upon immersion in water.

Typically, the substrate may be a woven or nonwoven fabric made of a fiber of the at least one water insoluble salt of polyvalent metal (also referred to as water insoluble polyvalent metal salt fiber hereinafter) together with at least one other fiber chosen from natural fibers such as cotton, pulp, bamboo and cellulose fibers, semi-natural fibers such as viscose rayon fibers, synthetic fibers such as polyester fibers, polyethylene terephthalate fibers, polyethylene fibers and polypropylene fibers. Two or more selected from the other fibers may be used in combination.

The substrate can be made into a wide variety of shapes and forms such as flat pads, thick pads, thin sheets of irregular thickness, depending on the desired use and characteristic of the kit. Just for example, the substrate is typically designed to fit the area of the skin in the case of mask to which topical application is desired. To this end, when the mask is applied to the face, the substrate is designed to correspond to the shape of the face avoiding the eye, nostril, and mouth areas, as necessary. Non-limiting examples of the substrates useful in the present invention are described, for example, in the patent application WO 02/062132, or EP 2489286A.

In particular, the water insoluble substrate or the fabric may comprise the water insoluble polyvalent metal salt fiber, especially calcium alginate fiber, in an amount ranging from 10% to 100% by weight, or 10% to 80% by weight, especially from 10% to 40% by weight, relative to the total weight of the water insoluble substrate or the fabric. Correspondingly, the water insoluble substrate or the fabric may comprise the at least one other fiber in an amount ranging from 10% to 80% by weight, especially from 50% to 80% by weight, relative to the total weight of the water insoluble substrate or the fabric.

More particularly, a suitable nonwoven fabric comprising calcium alginate fiber is commercially available from the Sanjiang company under the name M762R-40CN.

The kit according to the present invention comprises, separate from and isolated with the first composition (e.g. the water insoluble substrate), a second composition. The second composition, as needed, impregnates, coats or is otherwise in contact with the first composition, so as to transform the texture of the first composition, for example, from tissue to gel.

Preferably, for a sufficient texture transformation, the weight ratio of the first composition (e.g. the water insoluble substrate or the fabric) to the second composition

ranges from 1:3 to 1:20, preferably from 1:8 to 1:15.

Second Composition

The second composition of the present invention at least comprises a) optionally, at least one water soluble chelating agent of the polyvalent metal ion and b) at least one water soluble gelatinizing agent, which is gelatinizable with the polyvalent metal ion.

According to the present invention, when the first composition is mixed with the second composition, the water insoluble polyvalent metal ion donator reacts with salt in solution and releases the polyvalent metal ions. When the second composition does not comprise component a), i.e., the at least one water soluble chelating agent of the polyvalent metal ion, the polyvalent metal ions released into solution react with component b), i.e., the at least one water soluble gelatinizing agent, directly. When the second composition comprises component a), most of the polyvalent metal ions released into solution would be trapped by the water soluble chelating agent. A few of free polyvalent metal ions in the solution react with the water soluble gelatinizing agent and start to gelatinize on the tissue surface. As the concentration of free polyvalent metal ions decreases over time, the chelated polyvalent metal ions would be gradually released and then gelatinize on the tissue surface. After a short period of time, transformation of tissue texture and a homogeneous gel on the tissue surface would be observed.

Chelating agent of the polyvalent metal ion

The second composition according to the present invention comprises optionally component a), i.e., at least one water soluble chelating agent of the polyvalent metal ion, to facilitate the texture transformation, and specially, to boost at least the moisture or actives delivery capacity. The water soluble chelating agent of the polyvalent metal ion is water-soluble.

According to the present invention, when the first composition is mixed with the second composition comprising component a), the water insoluble polyvalent metal ion donator releases few or more of the polyvalent metal ions into solution. Both the chelating agent of the polyvalent metal ion and the water soluble gelatinizing agent are capable of being combined with the polyvalent metal ions.

Surprisingly, the specific chelating agent according to the present invention conquers the gelatinizing agent in the competition of combination with the polyvalent metal ion, such that most of polyvalent metal ions released are trapped by the water soluble chelating agent. There are still a few of free polyvalent metal ions in the solution to react with the water soluble gelatinizing agent and start to gelatinize on the tissue surface. As the concentration of free polyvalent metal ions decreases over time, the chelated polyvalent metal ions would be gradually released and then gelatinize on the tissue surface. That is, the specific chelating agent according to the present invention serves as a reservoir of the polyvalent metal ions for the gelatinization on the tissue surface.

According to the present invention, the useful chelating agent of the polyvalent metal ion comprises aminocarboxylic acids, e.g., elhylenediamine tetraacetic acid (EDTA), aminotriacetic acid, diethylene triaminepentaacetic acid, and in particular the alkali metal salt thereof, e.g., N,N-bis(carboxymethyl)glutamic acid, tetrasodium EDTA, tetrasodium salt of N,N-bis(carboxymethyl)glutamic acid (glutamic acid diacetic acid, GLDA); hydroxy carboxylic acids, e.g., citric acid, tartaric acid, glucuronic acid, succinic acid, ethylenediamine disuccinic acid (EDDS), and in particular the alkali metal salt thereof; hydroxy aminocarboxylic acids, e.g., hydroxyethylethylenediamine triacetic acid (HEDTA), dihydroxyethylglycine (DEG), and in particular the alkali metal salt thereof; polyphosphonic acid, and in particular the alkali metal salt thereof; other phosphor-containing organic acid, e.g., phytic acid, and in particular the alkali metal salt thereof, e.g., sodium phytate, potassium phytate polycarboxylic acid, e.g., polyacrylic acid, polymethacrylic acid, and in particular the alkali metal salt thereof.

In one embodiment, the at least one water soluble chelating agent of the polyvalent metal ion is an alkali metal hydroxy polycarboxylate represented by an alkane containing from 1 to 4 carbon atoms, preferably containing 2 or 3 carbon atoms, substituted by 1, 2, or 3 hydroxy groups (-OH), preferably by one (1) hydroxy group, and further substituted by 2, 3, 4 or 5 carboxylate groups (-COOM), preferably by 2 or 3 carboxylate groups (-COOM), wherein the multiple groups M independently represent H or alkali metal, with the proviso that at least one of the groups M represents alkali metal, such as Na, K or Li, preferably all groups M represent alkali metal, such as Na, K or Li, preferably Na. More specifically, the at least one alkali metal hydroxy polycarboxylate may be chosen from sodium tartrates, sodium citrates, potassium tartrates, potassium citrates, and hydrates thereof, preferably sodium citrates, in particularly trisodium citrate. Herein, sodium citrates are used to indicate monosodium citrate, disodium citrate and trisodium citrate, and other alkali metal hydroxy polycarboxylates may be understood in a similar way.

Amongst others, the alkali metal mentioned above is preferably sodium or potassium, in particular sodium. Accordingly, preferable chelating agents can comprise sodium citrate, tetrasodium EDTA, tetrasodium GLDA, trisodium EDDS, sodium phytate, or a mixture thereof.

In particular, the second composition of the present invention may comprise the at least one water soluble chelating agent of the polyvalent metal ion in a content ranging from 0.1% to 1% by weight, especially from 0.2% to 0.4% by weight, relative to the total weight of the second composition.

Water soluble gelatinizing agent

The second composition according to the present invention comprises at least one water soluble gelatinizing agent, which is gelatinizable with the polyvalent metal ion, to trigger the texture transformation.

In this application, the term "water soluble gelatinizing agent" specifically means

one gelatinizable with the polyvalent metal ion from the first composition.

According to the present invention, when the first composition is mixed with the second composition, the water insoluble polyvalent metal ion donator releases few or more of the polyvalent metal ions into solution.

According to principle of the present invention, the gelatinizing agent can thus be anyone gelatinizable with the polyvalent metal ion. Examples of the gelatinizing agent can comprise glutins, pectins, gellan gum, carrageenans, agars, alginic compounds and in particular alkali metal salts of alginic acid, e.g., sodium alginate, and mixtures thereof. When the second composition comprises component a), i.e., the chelating agent, the gelatinizing agent and the chelating agent are both specifically selected where the gelatinizing agent has an ability of combining with the polyvalent metal ions lower than that of the chelating agent, such that the gelatinizing agent does not combine the free polyvalent metal ions released directly from the first composition, but combines with the polyvalent metal ions subsequently from the reservoir, i.e., the chelated polyvalent metal ions. Accordingly, a gel on the surface of the first composition can be formed.

Pectins are linear polymers of α-D-galacturonic acid (at least 65%) linked in positions 1 and 4 with a certain proportion of carboxylic groups esterified with a methanol group. About 20% of the sugars constituting the pectin molecule are neutral sugars (L-rhamnose, D-glucose, D-galactose, L-arabinose, D-xylose). L-Rhamnose residues are found in all pectins, incorporated into the main chain in positions 1,2.

Uronic acid molecules bear carboxyl functions. This function gives pectins the capacity for exchanging ions, when they are in COO^- form. Divalent ions (in particular calcium) have the capacity of forming ionic bridges between two carboxyl groups of two different pectin molecules.

In the natural state, a certain proportion of the carboxylic groups are esterified with a methanol group. The natural degree of esterification of a pectin may range between 70% (apple, lemon) and 10% (strawberry) depending on the source used. Using pectins with a high degree of esterification it is possible to hydrolyse the $-COOCH_3$ groups, so as to obtain weakly esterified pectins. Depending on the proportion of methylated or non-methylated monomers, the chain is thus more or less acidic. HM (high-methoxy) pectins are thus defined as having a degree of esterification of greater than 50%, and LM (low-methoxy) pectins are defined as having a degree of esterification of less than 50%.

In the case of amidated pectins, the $-OCH_3$ group is substituted with a $-NH_2$ group.

Pectins are especially sold by the company Cargill under the name Unipectine™, by the company CP-Kelco under the name Genu, and by Danisco under the name Grinsted Pectin.

Carrageenans are anionic polysaccharides constituting the cell walls of various red algae (Rhodophyceae) belonging to the Gigartinacae, Hypneaceae, Furcellariaceae and Polyideaceae families. They are generally obtained by hot aqueous extraction from natural strains of said algae. These linear polymers, formed by disaccharide units, are composed of two D-galactopyranose units linked alternately by α(1,3) and β(1,4) bonds.

They are highly sulfated polysaccharides (20-50%) and the α-D-galactopyranosyl residues may be in 3,6-anhydro form. Depending on the number and position of sulfate-ester groups on the repeating disaccharide of the molecule, several types of carrageenans are distinguished, namely: kappa-carrageenans, which bear one sulfate-ester group, iota-carrageenans, which bear two sulfate-ester groups, and lambda-carrageenans, which bear three sulfate-ester groups.

Carrageenans are composed essentially of potassium, sodium, magnesium, triethanolamine and/or calcium salts of polysaccharide sulfate esters.

Carrageenans are sold especially by the company SEPPIC under the name Solagum®, by the company Gelymar under the names Carragel®, Carralact® and Carrasol®, by the company Cargill, under the names Satiagel™ and Satiagum™, and by the company CP-Kelco under the names Genulacta®, Genugel® and Genuvisco®.

Agars are galactose polysaccharides contained in the cell wall of some of these species of red algae (rhodophyceae). They are formed from a polymer group whose base backbone is a β(1,3) D-galactopyranose and α(1,4) L 3-6 anhydrogalactose chain, these units repeating regularly and alternately. The differences within the agar family are due to the presence or absence of solvated methyl or carboxyethyl groups. These hybrid structures are generally present in variable percentage, depending on the species of algae and the harvest season.

Agar-agar is a mixture of polysaccharides (agarose and agaropectin) of high molecular mass, between 40 000 and 300 000 $g.mol^{-1}$. It is obtained by manufacturing algal extraction liquors, generally by autoclaving, and by treating these liquors which comprise about 2% of agar-agar, so as to extract the latter.

Agar is produced, for example, by the group B&V Agar Producers under the names Gold Agar, Agarite and Grand Agar by the company Hispanagar, and under the names Agar-Agar, QSA (Quick Soluble Agar), and Puragar by the company Setexam.

Gellan gum is an anionic linear heteropolyoside based on oligoside units composed of 4 saccharides (tetra-oside). D-Glucose, L-rhamnose and D-glucuronic acid in 2:1:1 proportions are present in gellan gum in the form of monomer elements.

It is sold, for example, under the name Kelcogel CG LA by the company CP Kelco.

In one embodiment of the present invention, the gelatinizing agent is preferably chosen from alkali metal alginic compounds. The particularly preferable gelatinizing agent is alginate, e.g., sodium or potassium alginate, especially sodium alginate.

According to an embodiment, the at least one water soluble gelatinizing agent is present in the second composition from 0.1% to 0.5% by weight, preferably from 0.1% to 0.3% by weight, relative to the total weight of the second composition.

According to the present invention, the amounts of the chelating agent and the gelatinizing agent are so selected that the molar ratio of the moiety to be released from the chelating agent chelatable with the polyvalent cation to the moiety to be released from the gelatinizing agent gelatinizable with the polyvalent cation ranging from about 10:1 to

about 1:1, preferably from about 5:1 to about 2:1.

Alkali metal alginic compound

The term "alkali metal alginic compound" in particular means alkali metal alginic acid salts (alginates) or alkali metal salts of alginic acid derivatives. The alkali metal alginic compound is water-soluble.

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. These alginates are water-soluble in aqueous medium at pH 4 but dissociate into alginic acid at a pH 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.

Alginic acid or alginates may be chemically modified, especially with urea or urethane groups or by hydrolysis, oxidation, esterification, etherification, sulfatation, phosphatation, amination, amidation or alkylation reaction, or by several of these modifications, forming alginic acid derivatives, including salts.

These derivatives may be anionic, cationic, amphoteric or nonionic, and are capable of forming water-soluble salts with an alkali metal such as sodium, potassium or lithium, forming alkali metal salts of alginic acid derivatives.

More specifically, alginates may be reacted with an alkylene oxide, such as ethylene oxide or propylene oxide, to form polyglycol alginates. The polyglycol segment is bonded to alginates through the carboxyl group(s). Typically, alginates react with propylene oxide to form polypropylene glycol alginates (PPG alginates), while react with ethylene oxide to form polyethylene glycol alginates (PEG alginates). Preparation of polyglycol alginates is disclosed in Strong, U.S. Pat. No. 3,948,881, Pettitt, U.S. Pat. No. 3,772,266, and Steiner, U.S. Pat. No. 2,426,125.

Preferably, the polyglycol alginate has a degree of esterification of about 40% to about 95%, more preferably about 70% to 95%.

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).

The weight-average molecular weights indicated above are also valid for the alkali metal salts of alginic acid derivatives.

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 alkali metal alginic compound may be chosen from sodium alginate and potassium alginate, preferably sodium alginate.

The alkali metal alginic compounds that are suitable for use in the present invention may be represented, for example, by the products sold under the names Kelcosol, Satialgine™, Cecalgum™ or Algogel™ by the company Cargill Products, under the name Protanal™ by the company FMC Biopolymer, under the name Grindsted® Alginate by the company Danisco, under the name Kimica Algin by the company Kimica, and under the names Manucol® and Manugel® by the company ISP.

Aqueous phase

The second composition according to the present invention comprises at least one aqueous phase.

The at least one aqueous phase comprises water.

The aqueous phase may also comprise water-miscible organic solvents (at room temperature: 25°C), for instance monoalcohols containing from 2 to 6 carbon atoms, such as ethanol or isopropanol; polyols especially 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 as mono-, di- or tri-propylene glycol (C_1-C_4)alkyl ethers, mono-, di- or tri-ethylene glycol (C_1-C_4)alkyl ethers, and mixtures thereof.

The aqueous phase may also comprise any water-soluble or water-dispersible compound that is compatible with an aqueous phase, such as hydrophilic gelling agents, preservatives or surfactants, and mixtures thereof.

In particular, the second composition of the present invention may comprise the at least one aqueous phase in a content ranging from 10% to 99% by weight, especially from 50% to 99% by weight, and more particularly from 70% to 99% by weight, relative to the total weight of the second composition.

Acidic agent

In order to release CO_2 from the (bi)carbonate in the kit, the kit comprising the first and second compositions according to the present invention further comprises an acidic agent. After being mixed with the (bi)carbonate in solution state, the acid agent reacts with the (bi)carbonate, so as to release carbon dioxide.

For the purpose of the invention, an “acidic agent” means any cosmetically allowable one having a pH of less than 7 in solution capable of reacting with the

(bi)carbonate used in the kit.

The useful acidic agent may be an inorganic or an organic acid. Preferably, the acidic agent is at least one organic acid selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, fumaric acid, maleic acid, phthalic acid, isophthalic acid, terephthalic acid, glutamic acid, asparagic acid, glycolic acid, malic acid, tartaric acid, citric acid, lactic acid, hydroxyacrylic acid, glyceric acid, tartronic acid, salicylic acid, gallic acid, tropic acid, ascorbic acid, and gluconic acid; or an inorganic acid, e.g. phosphoric acid; acidic derivatives thereof or a mixture thereof.

Amongst others, the acids usually used in cosmetic products as active agents or adjuvants are preferably used. For example, amino acids, tartronic acid, salicylic acid, gallic acid, tropic acid, ascorbic acid, and gluconic acid are preferably used. Then, such an acid or a mixture thereof can serve as both the agent or adjuvant and an acidic agent for releasing carbon dioxide from the (bi)carbonate.

For use of the present invention, the acidic agent may be added into the second composition. Accordingly, the acids are dissolved into the aqueous phase of the second solution. When the second composition separately placed from the first composition is brought into contact with the first composition before use, the acid reacts with the (bi)carbonate.

For use of the present invention, the acidic agent may be added into the first composition. Accordingly, it is preferable to use acid in solid form, e.g., in particulate form. Then, the acidic agent is preferably one selected from the group consisting of oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, fumaric acid, maleic acid, phthalic acid, isophthalic acid, terephthalic acid, glutamic acid, asparagic acid, glycolic acid, malic acid, tartaric acid, citric acid, lactic acid, hydroxyacrylic acid, glyceric acid, tartronic acid, salicylic acid, gallic acid, tropic acid, ascorbic acid, gluconic acid.

For the purpose of the present invention, the composition of the present invention is particularly applicable to use acidic agents which are unstable in solvated state.

For the purpose of the present invention, by “unstable” we intend to mean an ingredient or composition undergoes significant change in its structure or properties within 2 months, or preferably 1 month, in solvent or solvated state. Such change may be any one undesirable for the cosmetic use, including, but not limited to, color change, degradation, decomposition, reaction with others, significant evaporation, deposition, crystallization, and the like.

For such unstable acid agents, they are added into the first composition in solid form. Amongst others, ascorbic acid is preferably used. The ascorbic acid suitable for use in the present invention may be represented, for example, by the products sold under the name ASCORBIC ACID 100 MESH, available from CSPC WEISHENG PHARMACEUTICAL, or from BASF.

Useful derivatives of ascorbic acid comprises preferably 3-o-ethyl ascorbic acid, ascorbyl glucoside, or a mixture thereof.

According to the present invention, the acidic agent is used in a stoichiometrically excess amount relatively to the (bi)carbonate, e.g., in a molar ratio of 1.1:1-3:1, preferably 1.2:1-2:1. When the acidic agent is added into the first composition, the acidic agent is preferably used in amount of 0.01-20%, preferably 0.1-15%, or preferably 0.2-10%, relatively to the weight of the first composition.

Hydrophilic gelling agent

The second composition according to the present invention may comprise optionally at least one additional hydrophilic gelling agent.

For the purposes of the present invention, the term "hydrophilic gelling agent" means a compound that is capable of gelling the aqueous phase, without combining with the polyvalent metal ions from the first composition.

The gelling agent may be water-soluble or water-dispersible.

More specifically, the hydrophilic gelling agent may be chosen from synthetic polymeric gelling agents, polymeric gelling agents that are natural or of natural origin, or a mixture thereof.

Synthetic polymeric gelling agents

For the purposes of the present invention, the term "synthetic" means that the polymer is neither naturally existing nor a derivative of a polymer of natural origin.

The synthetic polymeric gelling agent under consideration according to the present invention may or may not be particulate.

For the purposes of the present invention, the term "particulate", when being used for the synthetic polymeric gelling agent, means that the polymer is in the form of particles, preferably spherical particles.

More specifically, these polymers may be chosen especially from:

modified or unmodified carboxyvinyl polymers, such as the products sold under the name Carbopol® (CTFA name: Carbomer) by the company Goodrich; polyacrylates, polymethacrylates such as the products sold under the names Lubrajel™ and Norgel by the company Guardian or under the name Hispagel® by the company Hispano Chimica; polyacrylamides; optionally crosslinked and/or neutralized 2-acrylamido-2-methylpropanesulfonic acid polymers and copolymers, for instance the poly(2-acrylamido-2-methylpropanesulfonic aci

d) sold by the company Clariant under the name Hostacerin AMPS® (CTFA name: ammonium polyacryldimethyltauramide); crosslinked anionic copolymers of acrylamide and of AMPS®, which are in the form of a W/O emulsion, such as those sold under the name Sepigel™ 305 (CTFA name: Polyacrylamide/C_{13-14} isoparaffin/Laureth-7) and under

the name Simulgel™ 600 (CTFA name: Acrylamide/Sodium acryloyldimethyltaurate copolymer/Isohexadecane/Polysorbate 80) by the company SEPPIC; and mixtures thereof.

Preferably, these polymers may be chosen from Acrylates/C_{10-30} Alkyl Acrylate Crosspolymer such as, Carbopol® ultrez 20, Carbopol® ultrez 21, Permulen™ TR-1, Permulen™ TR-2, Carbopol® 1382, Carbopol® ETD 2020, Carbomer such as Synthalen® K, Carbopol® 980, Ammonium acryloyldimethyl Taurate/Steareth-8 Methacrylate copolymer such as Aristoflex® SNC, Acrylates copolymer such as Carbopol® Aqua SF-1, Ammonium acryloyldimethyl taurate/steareth-25 Methacrylate Crosspolymer such as Aristoflex® HMS, Ammonium acryloyldimethyl taurate such as Aristoflex® AVC.

Preferably, these polymers may be chosen from carboxyvinyl polymers such as the Carbopol® products (carbomers) such as Carbopol® Ultrez 20 Polymer marketed by Lubrizol and the Pemulen products (acrylate/C_{10-30} alkylacrylate copolymer); polyacrylamides, for instance the crosslinked copolymers marketed under the trademarks Sepigel™ 305 (CTFA name: polyacrylamide/C_{13-14} isoparaffin/Laureth-7) or Simulgel™ 600 (CTFA name: acrylamide/sodium acryloyldimethyltaurate copolymer/isohexadecane/polysorbate 80) by SEPPIC; 2-acrylamido-2-methylpropanesulfonic acid polymers and copolymers, which are optionally crosslinked and/or neutralized, for instance the poly(2-acrylamido-2-methylpropanesulfonic acid) marketed by Hoechst under the trademark Hostacerin AMPS® (CTFA name: ammonium polyacryloyldimethyltaurate) or Simulgel™ 800 marketed by SEPPIC (CTFA name: sodium polyacryloyldimethyltaurate/polysorbate 80/sorbitan oleate); copolymers of 2-acrylamido-2-methylpropanesulfonic acid and of hydroxyethyl acrylate, for instance Simulgel™ NS and Sepinov EMT 10 marketed by SEPPIC; and mixtures thereof.

Preferably, these polymers may be chosen from glyceryl acrylate/acrylic acid copolymers available from ISP Technologies, Inc. (United Guardian Inc.) under the tradename Lubrajel™, particular the form known as Lubrajel™ oil which contains about 1.0%-1.3% glyceryl acrylate/acrylic acid copolymer in aqueous glycerin (about 40% glycerin). Lubrajel™ oil also includes about 0.6% PVM/MA copolymer (also known as methoxyethylene/maleic anhydride copolymer).

Polymeric gelling agents that are natural or of natural origin

For the purposes of the present invention, the term "of natural origin" is intended to denote polymeric gelling agents obtained by modification of natural polymeric gelling agents.

These gelling agents may be particulate or non-particulate.

More specifically, these gelling agents fall within the category of polysaccharides.

In general, polysaccharides that are suitable for use in the present invention may be homopolysaccharides such as fructans, glucans, galactans and mannans or heteropolysaccharides such as hemicellulose.

Similarly, they may be linear polysaccharides such as pullulan or branched

polysaccharides such as gum arabic and amylopectin, or mixed polysaccharides such as starch.

In general, the polysaccharides may be chosen from ones produced by microorganisms; polysaccharides isolated from algae, and higher plant polysaccharides, such as homogeneous polysaccharides, in particular celluloses and derivatives thereof or fructosans, heterogeneous polysaccharides such as gum arables, galactomannans, glucomannans, and derivatives thereof; and mixtures thereof.

In particular, the polysaccharides may be chosen from fructans, gellans, glucans, amylose, amylopectin, glycogen, pullulan, dextrans, celluloses and derivatives thereof, in particular methylcelluloses, hydroxyalkylcelluloses, ethylhydroxyethylcelluloses and carboxymethylcelluloses, mannans, xylans, lignins, arabans, galactans, galacturonans, chitin, chitosans, glucuronoxylans, arabinoxylans, xyloglucans, glucomannans, arabinogalactans, glycosaminoglucans, gum arables, tragacanth gums, ghatti gums, locust bean gums, galactomannans such as guar gums and nonionic derivatives thereof, in particular hydroxypropyl guar, and ionic derivatives thereof, biopoly saccharide gums of microbial origin, in particular scleroglucan or xanthan gums, mucopolysaccharides, and in particular chondroitin sulfates, and mixtures thereof. These polysaccharides may be chemically modified, especially with urea or urethane groups or by hydrolysis, oxidation, esterification, etherification, sulfatation, phosphatation, amination, amidation or alkylation reaction, or by several of these modifications.

The derivatives obtained may be anionic, cationic, amphoteric or nonionic.

Advantageously, the polysaccharides may be chosen from xanthan gum, scleroglucan gum, guar gum, inulin and pullulan, and mixtures thereof.

In general, the compounds of this type that may be used in the present invention are chosen from those described especially in Kirk-Othmer's Encyclopedia of Chemical Technology, Third Edition, 1982, volume 3, pp. 896-900, and volume 15, pp. 439-458, in Polymers in Nature by E.A. MacGregor and C.T. Greenwood, published by John Wiley & Sons, Chapter 6, pp. 240-328, 1980, in the book by Robert L. Davidson entitled Handbook of Water-Soluble Gums and Resins published by McGraw Hill Book Company (1980) and in Industrial Gums - Polysaccharides and their Derivatives, edited by Roy L. Whistler, Second Edition, published by Academic Press Inc.

More precisely, these polysaccharides that are suitable for use in the present invention may be distinguished according to whether they are derived from microorganisms, from algae or from higher plants, and are detailed below.

<u>Polysaccharides produced by microorganisms</u>

<u>Xanthan</u>

Xanthan is a heteropolysaccharide produced at the industrial scale by the aerobic fermentation of the bacterium *Xanthomonas campestris*. Its structure consists of a main chain of β(1,4)-linked β-D-glucoses, similar to cellulose. One glucose molecule in two bears a trisaccharide side chain composed of an α-D-mannose, a β-D-glucuronic acid and

a terminal β-D-mannose. The internal mannose residue is generally acetylated on carbon 6. About 30% of the terminal mannose residues bear a pyruvate group linked in chelated form between carbons 4 and 6. The charged pyruvic acids and glucuronic acids are ionizable, and are thus responsible for the anionic nature of xanthan (negative charge down to a pH equal to 1). The content of pyruvate and acetate residues varies according to the bacterial strain, the fermentation process, the conditions after fermentation and the purification steps. These groups may be neutralized in commercial products with Na^+, K^+ or Ca^{2+} ions (Satia company, 1986). The neutralized form may be converted into the acid form by ion exchange or by dialysis of an acidic solution.

Xanthan gums have a molecular weight of between 1 000 000 and 50 000 000 and a viscosity of between 0.6 and 1.65 Pa.s for an aqueous composition containing 1% of xanthan gum (measured at 25°C on a Brookfield viscometer of LVT type at 60 rpm).

Xanthan gums are represented, for example, by the products sold under the names Rhodicare by the company Rhodia Chimie, under the name Satiaxane™ by the company Cargill Texturizing Solutions (for the food, cosmetic and pharmaceutical industries), under the name Novaxan™ by the company ADM, and under the names Kelzan® and Keltrol® by the company CP-Kelco.

Pullulan

Pullulan is a polysaccharide consisting of maltotriose units, known under the name α(1,4)-α(1,6)-glucan. Three glucose units in maltotriose are connected via an α(1,4) glycoside bond, whereas the consecutive maltotriose units are connected to each other via an α(1,6) glycoside bond.

Pullulan is produced, for example, under the reference Pullulan PF 20 by the group Hayashibara in Japan.

Dextran and dextran sulfate

Dextran is a neutral polysaccharide not bearing any charged groups, which is biologically inert, prepared by fermentation of beet sugar containing solely hydroxy groups. It is possible to obtain dextran fractions of different molecular weights from native dextran by hydrolysis and purification. Dextran may in particular be in the form of dextran sulfate.

Dextran is represented, for example, by the products sold under the name Dextran or Dextran T by the company Pharmacosmos, or under the name Dextran 40 Powder or Dextran 70 Powder by the company Meito Sangyo Co. Dextran sulfate is sold by the company PK Chemical A/S under the name Dextran sulfate.

Succinoglycan

Succinoglycan is an extracellular polymer of high molecular weight produced by bacterial fermentation, consisting of octasaccharide repeating units (repetition of 8 sugars). Succinoglycans are sold, for example, under the name Rheozan by the company Rhodia. Scleroglucan

Scleroglucan is a nonionic branched homopolysaccharide consisting of β-D-glucan units. The molecules consist of a linear main chain formed from D-glucose units linked

via β(1,3) bonds and of which one in three is linked to a side D-glucose unit via a β(1,6) bond.

A more complete description of scleroglucans and of their preparation may be found in patent US 3 301 848.

Scleroglucan is sold, for example, under the name Amigel by the company Alban Miiller, or under the name Actigum™ CS by the company Cargill.

Polysaccharides isolated from algae

Furcellaran

Furcellaran is obtained commercially from red algae Furcellaria fasztigiata. Furcellaran is produced, for example, by the company Est-Agar.

Polysaccharides of higher plants

This category of polysaccharides may be divided into homogeneous polysaccharides (only one saccharide species) and heterogeneous polysaccharides composed of several types of saccharides.

a) Homogeneous polysaccharides and derivatives thereof

The polysaccharide according to the present invention may be chosen from celluloses and derivatives or fructosans.

Cellulose and derivatives

The polysaccharide according to the present invention may also be a cellulose or a derivative thereof, especially cellulose ethers or esters (e.g. methylcellulose, carboxymethylcellulose, hydroxymethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, hydroxymethylpropylcellulose, cellulose acetate, cellulose nitrate, nitrocellulose).

The present invention may also contain a cellulose-based associative polymer.

According to the present invention, the term "cellulose-based compound' means any polysaccharide compound bearing in its structure linear sequences of anhydroglucopyranose residues (AGU) linked together via β(1,4) bonds. The repeating unit is the cellobiose dimer. The AGUs are in chair conformation and bear 3 hydroxy functions: 2 secondary alcohols (in position 2 and 3) and a primary alcohol (in position 6). The polymers thus formed combine together via intermolecular bonds of hydrogen bond type, thus giving the cellulose a fibrillar structure (about 1500 molecules per fibre).

The degree of polymerization differs enormously depending on the origin of the cellulose; its value may range from a few hundred to several tens of thousands.

The hydroxy groups of cellulose may react partially or totally with various chemical reagents to give cellulose derivatives having intrinsic properties. The cellulose derivatives may be anionic, cationic, amphoteric or nonionic. Among these derivatives, cellulose ethers, cellulose esters and cellulose ester ethers are distinguished.

Among the nonionic cellulose ethers, mention may be made of alkylcelluloses such as methylcelluloses and ethylcelluloses; hydroxyalkylcelluloses such as hydroxymethylcelluloses, hydroxyethylcelluloses and hydroxypropylcelluloses; and

mixed hydroxyalkylalkylcelluloses such as hydroxypropylmethylcelluloses, hydroxyethylmethylcelluloses, hydroxy ethylethylcelluloses and hydroxybutylmethylcelluloses.

Among the anionic cellulose ethers, mention may be made of carboxyalkylcelluloses and salts thereof. By way of example, mention may be made of carboxymethylcelluloses, carboxymethylmethylcelluloses and carboxymethylhydroxyethylcelluloses and sodium salts thereof.

Among the cationic cellulose ethers, mention may be made of crosslinked or non-crosslinked, quaternized hydroxyethylcelluloses.

The quaternizing agent may in particular be glycidyltrimethylammonium chloride or a fatty amine such as laurylamine or stearylamine. Another cationic cellulose ether that may be mentioned is hydroxy ethylcellulosehydroxypropyltrimethylammonium.

The quaternized cellulose derivatives are, in particular:

- quaternized celluloses modified with groups comprising at least one fatty chain, such as alkyl, arylalkyl or alkylaryl groups comprising at least 8 carbon atoms, or mixtures thereof,

- quaternized hydroxyethylcelluloses modified with groups comprising at least one fatty chain, such as alkyl, arylalkyl or alkylaryl groups comprising at least 8 carbon atoms, or mixtures thereof.

The alkyl radicals borne by the above quaternized celluloses or hydroxyethylcelluloses preferably contain from 8 to 30 carbon atoms. The aryl radicals preferably denote phenyl, benzyl, naphthyl or anthryl groups.

Examples of quaternized alkylhydroxyethylcelluloses containing C_{8-30} fatty chains that may be indicated include the products Quatrisoft LM 200, Quatrisoft LM-X 529-18-A, Quatrisoft LM-X 529-18B (C_{12} alkyl) and Quatrisoft LM-X 529-8 (C_{18} alkyl) sold by the company Amerchol and the products Crodacel QM, Crodacel QL (C_{12} alkyl) and Crodacel QS (C_{18} alkyl) sold by the company Croda.

Among the cellulose derivatives, mention may also be made of:

- celluloses modified with groups comprising at least one fatty chain, for instance hydroxyethylcelluloses modified with groups comprising at least one fatty chain, such as alkyl groups, especially of C_{8-22}, arylalkyl and alkylaryl groups, such as Natrosol Plus Grade 330 CS (C_{16} alkyls) sold by the company Aqualon, and

- celluloses modified with polyalkylene glycol alkylphenyl ether groups, such as the product Amercell Polymer HM-1500 (nonylphenyl polyethylene glycol (15) ether) sold by the company Amerchol.

Among the cellulose esters are mineral esters of cellulose (cellulose nitrates, sulfates, phosphates, etc.), organic cellulose esters (cellulose monoacetates, triacetates, amidopropionates, acetatebutyrates, acetatepropionates and acetatetrimellitates, etc.), and mixed organic/mineral esters of cellulose, such as cellulose acetatebutyrate sulfates and cellulose acetatepropionate sulfates. Among the cellulose ester ethers, mention may be made of hydroxypropylmethylcellulose phthalates and ethylcellulose sulfates.

The cellulose-based compounds of the present invention may be chosen from

unsubstituted celluloses and substituted celluloses. The celluloses and derivatives are represented, for example, by the products sold under the names Avicel® (microcrystalline cellulose, MCC) by the company FMC Biopolymers, under the name Cekol (carboxymethylcellulose) by the company Noviant (CP-Kelco), under the name Akucell AF (sodium carboxymethylcellulose) by the company Akzo Nobel, under the name Methocel™ (cellulose ethers) and Ethocel™ (ethylcellulose) by the company Dow, and under the names Aqualon® (carboxymethylcellulose and sodium carboxymethylcellulose), Benecel® (methylcellulose), Blanose™ (carboxymethylcellulose), Culminal® (methylcellulose, hydroxypropylmethylcellulose), Klucel® (hydroxypropylcellulose), Polysurf® (cetylhydroxyethylcellulose) and Natrosol® CS (hydroxy ethylcellulose) by the company Hercules Aqualon.

Fructosans

The polysaccharide according to the present invention may especially be a fructosan chosen from inulin and derivatives thereof (especially dicarboxy and carboxymethyl inulins).

Fructans or fructosans are oligosaccharides or polysaccharides comprising a sequence of anhydrofructose units optionally combined with several saccharide residues other than fructose. Fructans may be linear or branched. Fructans may be products obtained directly from a plant or microbial source or alternatively products whose chain length has been modified (increased or decreased) by fractionation, synthesis or hydrolysis, in particular enzymatic. Fructans generally have a degree of polymerization from 2 to about 1000 and preferably from 2 to about 60.

Three groups of fructans are distinguished. The first group corresponds to products whose fructose units are for the most part linked via β(2,1) bonds. These are essentially linear fructans such as inulins.

The second group also corresponds to linear fructoses, but the fructose units are essentially linked via β(2,6) bonds. These products are levans.

The third group corresponds to mixed fructans, i.e. containing β(2,6) and β(2,1) sequences. These are essentially branched fructans, such as graminans.

The preferred fructans in the compositions according to the present invention are inulins. Inulin may be obtained, for example, from chicory, dahlia or Jerusalem artichoke, preferably from chicory.

In particular, the polysaccharide, especially the inulin, has a degree of polymerization from 2 to about 1000 and preferably from 2 to about 60, and a degree of substitution of less than 2 on the basis of one fructose unit.

The inulin used for the present invention is represented, for example, by the products sold under the name Beneo™ inulin by the company Orafti, and under the name Frutafit® by the company Sensus.

b) Heterogeneous polysaccharides and derivatives thereof

The polysaccharides that may be used according to the present invention may be gums, for instance cassia gum, karaya gum, konjac gum, gum tragacanth, tara gum, acacia

gum or gum arabic.

Gum arabic

Gum arabic is a highly branched acidic polysaccharide which is in the form of mixtures of potassium, magnesium and calcium salts. The monomer elements of the free acid (arabic acid) are D-galactose, L-arabinose, L-rhamnose and D-glucuronic acid.

Galactomannans (guar, locust bean, fenugreek, tara gum) and derivatives (guar phosphate, hydroxypropyl guar, etc.)

Galactomannans are nonionic polyosides extracted from the endosperm of leguminous seeds, of which they constitute the storage carbohydrate.

Galactomannans are macromolecules consisting of a main chain of β(1,4)-linked D-mannopyranose units, bearing side branches consisting of a single D-galactopyranose unit α(1,6)-linked to the main chain. The various galactomannans differ, firstly, by the proportion of α-D-galactopyranose units present in the polymer, and secondly, by significant differences in terms of distribution of galactose units along the mannose chain.

The mannose/galactose (M/G) ratio is about 2 for guar gum, 3 for tara gum and 4 for locust bean gum.

Guar

Guar gum is characterized by a mannose/galactose ratio of the order of 2/1. The galactose group is regularly distributed along the mannose chain.

The guar gums that may be used according to the present invention may be nonionic, cationic or anionic. According to the present invention, use may be made of chemically modified or unmodified nonionic guar gums.

The unmodified nonionic guar gums are, for example, the products sold under the names Vidogum GH, Vidogum G and Vidocrem by the company Unipektin and under the name Jaguar by the company Rhodia, under the name Meypro® Guar by the company Danisco, under the name Viscogum™ by the company Cargill, and under the name Supercol® guar gum by the company Aqualon.

The hydrolysed nonionic guar gums that may be used according to the present invention are represented, for example, by the products sold under the name Meyprodor® by the company Danisco.

The modified nonionic guar gums that may be used according to the present invention are preferably modified with C_{1-6} hydroxyalkyl groups, among which mention may be made, for example, of hydroxymethyl, hydroxyethyl, hydroxypropyl and hydroxybutyl groups.

Such nonionic guar gums optionally modified with hydroxyalkyl groups are sold, for example, under the trade names Jaguar HP 60, Jaguar HP 105 and Jaguar HP 120 (hydroxypropyl guar) by the company Rhodia or under the name N-Hance® HP (hydroxypropyl guar) by the company Aqualon.

The cationic galactomannan gums preferably have a cationic charge density of less than or equal to 1.5 meq./g, more particularly between 0.1 and 1 meq./g. The charge density may be determined by the Kjeldahl method. It generally corresponds to a pH of

the order of 3 to 9.

In general, for the purposes of the present invention, the term "cationic galactomannan gum" means any galactomannan gum containing cationic groups and/or groups that can be ionized into cationic groups.

The preferred cationic groups are chosen from those comprising primary, secondary, tertiary and/or quaternary amine groups.

The cationic galactomannan gums used generally have a weight-average molecular mass of between 500 and 5×10^6 approximately and preferably between 10^3 and 3×10^6 approximately.

The cationic galactomannan gums that may be used according to the present invention are, for example, gums comprising tri(C_{1-4})alkylammonium cationic groups. Preferably, 2% to 30% by number of the hydroxy functions of these gums bear trialkylammonium cationic groups.

Among these trialkylammonium groups, mention may be made most particularly of trimethylammonium and triethylammonium groups.

Even more preferentially, these groups represent from 5% to 20% by weight relative to the total weight of the modified galactomannan gum.

According to the present invention, the cationic galactomannan gum is preferably a guar gum comprising hydroxypropyltrimethylammonium groups, i.e. a guar gum modified, for example, with 2,3-epoxypropyltrimethylammonium chloride.

These galactomannan gums, in particular guar gums modified with cationic groups are products already known per se and are, for example, described in patents US 3 589 578 and US 4 031 307. Such products are moreover sold especially under the trade names Jaguar EXCEL, Jaguar C13 S, Jaguar C 15, Jaguar C 17 and Jaguar CI 62 (Guar Hydroxypropyltrimonium Chloride) by the company Rhodia, under the name Amilan® Guar (Guar Hydroxypropyltrimonium Chloride) by the company Degussa, and under the name N-Hance® 3000 (Guar Hydroxypropyltrimonium Chloride) by the company Aqualon.

The anionic guar gums that may be used according to the present invention are polymers comprising groups derived from carboxylic, sulfonic, sulfenic, phosphoric, phosphonic or pyruvic acid. The anionic group is preferably a carboxylic acid group. The anionic group may also be in the form of an acid salt, especially a sodium, calcium, lithium or potassium salt.

The anionic guar gums that may be used according to the present invention are preferentially carboxymethyl guar derivatives (carboxymethyl guar or carboxymethyl hydroxypropyl guar).

Locust bean

Locust bean gum is extracted from the seeds of the locust bean tree Ceratonia siliqua).

The unmodified locust bean gum that may be used in the present invention is sold, for example, under the name Viscogum™ by the company Cargill, under the name

Vidogum L by the company Unipektin and under the name Grinsted® LBG by the company Danisco.

The chemically modified locust bean gums that may be used in the present invention may be represented, for example, by the cationic locust beans sold under the name Catinal CLB (locust bean hydroxypropyltrimonium chloride) by the company Toho.

Tara gum

The tara gum that may be used in the context of the present invention is sold, for example, under the name Vidogum SP by the company Unipektin.

Glucomannans (konjac gum)

Glucomannan is a polysaccharide of high molecular weight (500 000 < Mglucomannan < 2 000 000) composed of D-mannose and D-glucose units with a branch every 50 or 60 units approximately. It is found in wood, but is also the main constituent of konjac gum. Konjac (Amorphophallus konjac) is a plant of the Araceae family.

The products that may be used according to the present invention are sold, for example, under the names Propol® and Rheolex® by the company Shimizu.

Other polysaccharides

Among the other polysaccharides that may be used according to the present invention, mention may also be made of chitin (poly-N-acetyl-D-glucosamine, β(1,4)-2-acetamido-2-deoxy-D-glucose), chitosan and derivatives (chitosan-β-glycerophosphate, carboxymethylchitin, etc.) such as those sold by the company France-Chitine; glycosaminoglycans (GAG) such as hyaluronic acid, chondroitin sulfate, dermatan sulfate, keratan sulfate, and preferably hyaluronic acid; xylans (or arabinoxylans) and derivatives.

Arabinoxylans are polymers of xylose and arabinose, all grouped under the name pentosans. Xylans consist of a main chain of β(1,4)-linked D-xylose units and on which are found three substituents (Rouau & Thibault, 1987): acid units, α-L-arabinofuranose units, side chains which may contain arabinose, xylose, galactose and glucuronic acid.

According to this variant, the polysaccharide is preferably hyaluronic acid, or a salt thereof.

The at least one hydrophilic gelling agent may be present in an amount ranging for example from 0.001 to 10% by weight, preferably 0.01 to 5% by weight and more preferably from 0.05 to 3% by weight relative to the total weight of the second composition.

Active agents

According to an embodiment of the present invention, the first composition may comprise at least one active agent.

According to an embodiment of the present invention, the second composition may comprise at least one active agent.

When the first composition includes the at least one active agent, it may be incorporated into the first composition in particular by means of an alternating electric field. The active agent(s) may be incorporated in particular in the powder state.

Amongst all of the active agents that can be used in the present invention, particular mention can be made of: α- or β-hydroxy acids such as lactic acid, glycolic acid, citric acid, 5-octanoylsalicyclic acid, α-hydroxydecanoic acid, α-hydroxylauric, tartaric acid, glucuronic acid, galacturonic acid, acrylic acid, α-hydroxybutyric acid, α-hydroxyisobutyric acid, malic acid, mandelic acid, phosphoric acid, pyruvic acid, lactobionic acid, and salicylic acid.

It is also possible to use anti-acne agents, such as salicylic acid or benzoyl peroxide, octopirox, dextrorotary and levorotary sulfur-containing amino acids, their salts, and their N-acetyl derivatives such as N-acetyl cysteine, or agents seeking to prevent aging of the skin and/or to improve its state, for example the above-mentioned α- and β-hydroxy acids, retinoids such as retinoic acid, retinol, and its esters, such as, for example, retinyl propionate, and retinyl acetate, or retinyl palmitate, niacinamide, allantoin, extracts of aloe, azelaic acid, bisabolol, phytic acid, collagen, or agents stimulating the formation of collagen, vitamins such as vitamin C or derivatives thereof, such as ascorbyl glucoside, vitamin E or derivatives thereof, vitamin A or derivatives thereof, vitamin F or derivatives thereof, dextrorotary and levorotary sulfur-containing amino acids and derivatives thereof as mentioned above, elastin, N-acetyl D-glucosamine, luteolin, or antioxidants such as green tea or active fractions thereof, glycerin, laponite, caffeine, essential aromatic oils, coloring agents, free-radical scavengers, moisturizers, depigmenting agents, agents for improving the color of the skin such as artificial-tanning agents of the dihydroxyacetone or tyrosin ester type, liporegulators, softeners, anti-wrinkle agents, keratolytic agents, fresheners, deodorants, anesthetics, nourishing agents, and mixtures thereof. It is also possible to use bleaching agents such as kojic acid, ascorbyl phosphates, ascorbyl glucosides, ascorbic acid, and mixtures thereof.

It is also possible to use active agents for improving the condition of the skin in the case of mask, such as moisturizers or agents serving to improve the natural lipid barrier, such as ceramides, cholesterol sulfates, and/or fatty acids, and mixtures thereof. It is also possible to use enzymes that have activity on the skin, such as proteases, lipases, cerebrosidases, and/or melanases, and mixtures thereof.

As other examples of active agents that can be suitable for implementing the present invention there are agents for drugs, peptides, proteins, detectable labels, contrast reagents, pain-killing, anesthetics, antibacterial agents, anti-yeast agents, antifungal agents, antiviral agents, anti-dermititis agents, anti-pruritic agents, anti-emetics, vascular protectors, agents against motion sickness, anti-irritants, anti-inflammatory agents, immunomodulators, anti-hyperkeratolytic agents, agents for treating dry skin, antiperspirants, anti-psoriatic agents, antidandruff agents, anti-aging agents, anti-asthmatic agents and bronchodilators, sunscreen agents, antihistamines, healing agents, corticosteroids, tanning agents, and mixtures thereof.

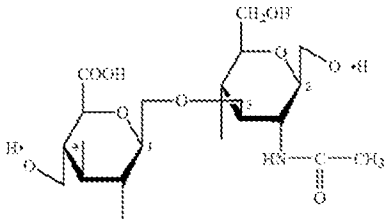
The content of the at least one active agent in the first composition and/or in the second composition may be adjusted as a function of the intended purpose of the kit.

Alkali metal hyaluronic compound

Hyaluronic compound may be also used as an active agent according to the present invention. The hyaluronic compound is preferably an alkali metal hyaluronic compound.

The term "alkali metal hyaluronic compound" in particular means alkali metal salts of hyaluronic acid (hyaluronates) or derivatives thereof. The alkali metal hyaluronic compound is water-soluble.

In the context of the present invention, the term "hyaluronic acid or derivatives thereof" covers in particular the basic unit of hyaluronic acid of formula:



It is the smallest fraction of hyaluronic acid comprising a disaccharide dimer, namely D-glucuronic acid and N-acetylglucosamine.

The term "hyaluronic acid or derivatives thereof" also comprises, in the context of the present invention, the linear polymer comprising the polymeric unit described above, linked together in the chain via alternating β(1,4) and β(1,3) glycosidic linkages, having a molecular weight (Mw) that can range between 380 and 13 000 000 daltons. This molecular weight depends in large part on the source from which the hyaluronic acid is obtained and/or on the preparation methods.

In the natural state, hyaluronic acid is present in pericellular gels, in the base substance of the connective tissues of vertebrate organs such as the dermis and epithelial tissues, and in particular in the epidermis, in the synovial fluid of the joints, in the vitreous humor, in the human umbilical cord and in the crista galli apophysis.

Thus, the term "hyaluronic acid or derivatives thereof" comprises all the fractions or subunits of hyaluronic acid having a molecular weight in particular within the molecular weight range recalled above.

By way of illustration of the various hyaluronic acid fractions, reference may be made to the document "Hyaluronan fragments: an information-rich system", R. Stern et al., European Journal of Cell Biology 58 (2006) 699-715, which reviews the listed biological activities of hyaluronic acid according to its molecular weight.

According to a preferred embodiment of the present invention, the hyaluronic acid fractions suitable for the use covered by the present invention have a molecular weight of between 50 000 and 5 000 000, in particular between 100 000 and 5 000 000, especially

between 400 000 and 5 000 000 Da. In this case, the term used is high-molecular-weight hyaluronic acid.

Alternatively, the hyaluronic acid fractions that may also be suitable for the use covered by the present invention have a molecular weight of between 50 000 and 400 000 Da. In this case, the term used is intermediate-molecular-weight hyaluronic acid.

Alternatively again, the hyaluronic acid fractions that may be suitable for the use covered by the present invention have a molecular weight of less than 50 000 Da. In this case, the term used is low-molecular-weight hyaluronic acid.

Finally, the term "hyaluronic acid or derivatives thereof" also comprises hyaluronic acid esters in particular those in which all or some of the carboxylic groups of the acid functions are esterified with oxyethylenated alkyls or alcohols, containing from 1 to 20 carbon atoms, in particular with a degree of substitution at the level of the D-glucuronic acid of the hyaluronic acid ranging from 0.5 to 50%.

More specifically, hyaluronic acid or hyaluronates may be reacted with an alkylene oxide, such as ethylene oxide or propylene oxide, to form polyglycol hyaluronates. The polyglycol segment is bonded to hyaluronic acid through the carboxyl group(s). Typically, hyaluronic acid or hyaluronates react with propylene oxide to form polypropylene glycol hyaluronates, while react with ethylene oxide to form polyethylene glycol hyaluronates.

Further, mention may be made of methyl, ethyl, n-propyl, n-pentyl, benzyl and dodecyl esters of hyaluronic acid. Such esters have in particular been described in D. Campoccia et al. "Semisynthetic resorbable materials from hyaluronan esterification", Biomaterials 19 (1998) 2101-2127.

The molecular weights indicated above are also valid for the hyaluronic acid esters.

Water soluble carbonate or bicarbonate

The kit of the present invention can comprise water soluble carbonate or bicarbonate to generate carbon dioxide after being mixed with the acidic agent in the kit, so as to cause enhanced blood circulation of skin. For convenience, term (bi)carbonate in the context represents a carbonate and/or bicarbonate.

Useful carbonate comprises carbonates of a metal from Group I of the periodic table of elements, preferably sodium carbonate, potassium carbonate, or a mixture thereof.

Useful bicarbonate comprises bicarbonates of a metal from Group I and/or Group II of the periodic table of elements, preferably sodium bicarbonate, potassium bicarbonate, magnesium bicarbonate, calcium bicarbonate, barium bicarbonate, or a mixture thereof.

According to an embodiment of the kit according to the present invention, the (bi)carbonate can be added into either the first composition or the second composition, or the both compositions. In case the water soluble (bi)carbonate is to be added in the second composition, it is dissolved according to any conventional means.

According to an embodiment, despite the first and/or the second composition to which the (bi)carbonate is added, the at least one carbonate or bicarbonate is added in a

content ranging from 0.01% to 30% by weight, especially from 0.1% to 20% by weight, such as 0.2% to 10%, relative to the total weight of the first composition.

Process to combine the (bi)carbonate with the substrate

In an embodiment, the (bi)carbonate is added into the first composition and combined with the water insoluble substrate. The process to combine the carbonate or bicarbonate with the water insoluble substrate is not limited specifically, as long as the carbonate or bicarbonate can be distributed uniformly in the substrate in an amount sufficient to soften the substrate to the desirable extent.

According to an embodiment, the carbonate or bicarbonate is prepared into an aqueous solution. Then, the carbonate or bicarbonate is loaded onto the substrate, e.g., a mask tissue.

According to another embodiment, the carbonate or bicarbonate is prepared into a suspension or paste, e.g., a water soluble carbonate or bicarbonate suspended in or mixed with a liquid medium other than water to form a suspension or paste thereof. Then, the suspension or paste is applied, e.g., through coating, spraying and the like, onto the substrate, so as to distribute uniformly the carbonate or bicarbonate in the substrate in an amount sufficient to form a gel on the substrate with alginate.

For the cases using a wet form, i.e., an aqueous solution, a suspension or a paste, to apply the carbonate or bicarbonate, the wet substrate loaded with the aqueous salt is subsequently dried or subjected any other means to remove the liquid medium. The method to dry the tissue or to remove the liquid medium is not limited specifically. For industrial application, the wet substrate is dried in an economically effective manner.

According to still another embodiment, the carbonate or bicarbonate in solid form is crushed into powder or particles, e.g., through milling, grinding and the like. Then, the powder or particle is applied uniformly onto the substrate. The diameter of the powder or particle is not limited specifically, as long as the carbonate or bicarbonate can be distributed uniformly in the substrate in an amount sufficient to soften the substrate.

According to the invention, the water insoluble substrate or the fabric may comprise the carbonate or bicarbonate, in an amount ranging from 0.01% to 30% by weight, especially from 0.1% to 20% by weight, such as 0.2% to 10%, relative to the total weight of the, relative to the total weight of the water insoluble substrate or the fabric.

According to the present invention, as the second composition comprises an aqueous phase, at most one of the acidic agent and the (bi)carbonate is added into the second composition, so as to avoid react therebetween before use.

In the embodiment both the acidic agent and the (bi)carbonate to be used as solid in the first composition comprising a water insoluble substrate, the acidic agent may be added into the first composition in a way same as the process to combine the (bi)carbonate with the substrate. However, notably, it should be avoided that both the acidic agent and the (bi)carbonate are added as an aqueous solution, a suspension or a paste. In other words, at least one of the acidic agent and the (bi)carbonate is added in dry form, i.e., as powder or

particles, e.g., through milling, grinding and the like. Further, in case where both the acidic agent and the (bi)carbonate are added in dry form into the first composition, the sequence of adding the acidic agent and the (bi)carbonate is not limited specially. As compared, in case where either of the acidic agent and the (bi)carbonate is added in wet form of aqueous solution, a suspension or a paste, while the other is added in dry from, the wet form is firstly added to the substrate, and after drying or removing the liquid medium, the dry form is then added.

Adjuvants

In a known manner, the second composition of the present invention may also contain adjuvants that are common in cosmetics and/or dermatology, such as preserving agents, antioxidants, pH modifiers (acidic or basic), fragrances, fillers, bactericides, odour absorbers, colorants (pigments and dyes), emulsifiers, and also lipid vesicles.

Needless to say, a person skilled in the art will take care to select this or these optional additional compound(s), and/or the amount thereof, such that the benefits of the second composition according to the present invention are not, or are not substantially, adversely affected by the envisaged addition.

Galenic form

The second composition according to the present invention may be in various forms, in particular in the form of aqueous solution, dispersion, or emulsion, especially such as a water/oil or oil/water emulsion or multiple emulsions.

An emulsion may have an oily or aqueous continuous phase. Such an emulsion may be, for example, an inverse (W/O) emulsion or a direct (O/W) emulsion, or alternatively a multiple emulsion (W/O/W or O/W/O).

In the case of emulsions, direct (O/W) emulsions are preferred.

In particular, the second composition according to the present invention may be in the form of an oil-in-water (O/W) emulsion, water-in-oil (W/O) emulsion, or a multiple emulsion, preferably a oil-in-water (O/W) emulsion.

The second composition of the present invention is preferably an aqueous solution.

According to a preferred embodiment of the present invention, the kit presents as a mask comprising:

1) a nonwoven fabric (or tissue) comprising, relative to the total weight of the nonwoven fabric:

from 10% to 80% by weight, especially from 10% to 40% by weight, of calcium alginate fiber, and

from 0.01% to 20% by weight, especially from 0.1% to 15% by weight, of at least one acidic agent;

2) a composition comprising from 10% to 99% by weight, preferably from 50% to 99% by weight, of the at least one aqueous phase, from 0.1% to 0.5% by weight, preferably from 0.1% to 0.3% by weight, of sodium alginate, and from 0.1% to 0.5% by weight, preferably from 0.2% to 0.4% by weight, of sodium citrate, relative to the total weight of the composition; and

3) from 0.01% to 30% by weight, especially from 0.1% to 20% by weight, of at least one carbonate or bicarbonate, which is added into either the first or the second composition, or into the both, relative to the total weight of the nonwoven fabric (or tissue);

wherein the weight ratio of the nonwoven fabric to the composition ranges from 1:3 to 1:20, preferably from 1:8 to 1:15.

Method and use

The first composition and the second/fourth composition according to the present invention can be generally prepared according to the general knowledge of a person skilled in the art. Nevertheless, it is to be understood that a person skilled in the art can choose the method of preparation, on the basis of his/her general knowledge, taking into account the nature of the constituents used, for example, their solubility in the vehicle, and the application envisaged for the compositions or the kit.

According to an embodiment, the kit according to the present invention can be used for caring for keratin materials, especially the face. This use may manifest itself as a process for caring for keratin materials, especially the face, comprising the steps of compounding the first composition and the second composition of the kit at a predetermined weight ratio, and then applying to said keratin materials the thus obtained mixture as a mask.

According to an embodiment, the kit according to the present invention can be used for managing skin wound, for preventing post-surgical adhesion formation, or for filling or repairing osteochondral defects, and so on. This use may manifest itself as a process for managing skin wound, for preventing post-surgical adhesion formation, or for filling or repairing osteochondral defects, comprising the steps of compounding the first composition and the second composition of the kit at a predetermined weight ratio, and then applying to a location in need of the thus obtained mixture as a mask or stuffing.

Notwithstanding that the numerical ranges and parameters setting forth the broad scope of the present invention are approximations, the numerical values set forth in the specific examples are reported as precisely as possible. Any numerical value, however, inherently contain certain errors necessarily resulting from the standard deviation found in their respective measurements. The following examples are intended to illustrate the present invention without limiting the scope as a result.

EXAMPLES

The ingredient amounts/concentrations in the compositions/formulas described

below are expressed in % by weight, relative to the total weight of each composition/formula.

I. Preparation

The invention Formulas A and B, and Comparative Formulas (Comp.) A-E were prepared, as the second composition.

Table 1

	Chemical or INCI name	Content (% by weight of the active ingredient relative to the total weight of the composition)						
		Formula A	Formula B	Comp. formula A	Comp. B	Comp. C	Comp. D	Comp. E
First composition	Non-woven*	20% Ca-Alginate	20% Ca-Alginate	20% Ca-Alginate	V55	Gauze	20% Ca-Alginate	20% Ca-Alginate
	ASCORBIC ACID	3.00%	3.00%	0.00%	2.00%	2.00%	2.00%	3.00%
Second composition : Juice (include water, polyol, preservatives, etc.)	Sodium Alginate	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.00%
	SODIUM BICARBONATE	1.50%	3.00%	3.00%	3.00%	3.00%	0.00%	3.00%
	Xanthan gum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%
	Juice	33g	33g	33g	33g	33g	33g	33g
Evaluation	Bubble volume	5	5	1	5	5	1	5
	Lasting long CO2 bubble	5	5	1	2	4	1	4
	Jellification	5	5	5	1	3	5	3
	TTL	15	15	7	8	12	7	12

II. Evaluation

Evaluation of bubble volume

After mixing juice and ascorbic acid, bubble is observed visibly. The definition of scores are when it's mixed with Juice, it generates bubble or not as below.

5: Generate bubble a lot

3: Generate bubble

1: Not Generate bubble

Evaluation of long lasting carbon dioxide

Firstly, the sample fresh mixed then massage completely for 1 min, then take out from sachet and unfold. Place the mask on a plate and observe till bubble disappear. Make it score following below definition.

5: Bubble exist and visible more than 10 min

4: Bubble exist and visible 10-7 min

3: Bubble exist and visible 7-3 min

2: Bubble exist and visible less than 3 min

1: No bubble

Evaluation of Jellification degree

After fresh mix and unfold the mask, 10 min after place, evaluate the jellification degree following below definition

5: Thick gel

4: Slightly thick gel

3: Fluid Gel

2: Watery lotion

1: No texture transform

Evaluation

See attached Excel file.

**non woven reference 20% Ca-Alginate: 20% Ca-alginate fiber + 80% Tencel. V55: Conventional non-woven for sheet mask. Rayon 100%, 55 smg. Gauze: It is 3-layer fabric Lyocell/Cotton Gauze/Lyocell, 60 smg*

III. Conclusion

The invention example A and B is better than comparative examples in all evaluation points.

The foregoing description illustrates and describes the present disclosure. Additionally, the disclosure shows and describes only the preferred embodiments of the disclosure, but, as mentioned above, it is to be understood that it is capable of changes or modifications within the scope of the concept as expressed herein, commensurate with the above teachings and/or skill or knowledge of the relevant art. The described hereinabove are further intended to explain best modes known of practicing the disclosure and to enable others skilled in the art to utilize the disclosure in such, or other embodiments and with the various modifications required by the particular applications or uses disclosed herein. Accordingly, the description is not intended to limit the disclosure to the form disclosed herein. Also it is intended that the appended claims be construed to include alternative embodiments.

All publications, patents and patent applications cited in this specification are herein incorporated by reference, and for any and all purposes, as if each individual publication, patent or patent application were specifically and individually indicates to be incorporated by reference. In this case of inconsistencies, the present disclosure will prevail.

CLAIMS

1. A kit comprising:

1) a first composition comprising:

at least one water insoluble salt of polyvalent metal; and

2) a second composition comprising at least one aqueous phase, and

a) optionally, at least one water soluble chelating agent of the polyvalent metal ion, and

b) at least one water soluble gelatinizing agent, which is gelatinizable with the polyvalent metal ion; and

3) at least one water soluble carbonate or bicarbonate, which is added into either the first composition or the second composition, or the both;

wherein the first composition and the second composition are separately placed from one another.

2. Kit according to the preceding claim 1, wherein the gelatinizing agent is specifically selected to have an ability of combining with the polyvalent metal ions lower than that of the chelating agent.

3. Kit according to anyone of the preceding claims, wherein the water insoluble salt of polyvalent metal is chosen from water insoluble salts of calcium, strontium, zinc, copper, manganese, or mixtures thereof.

4. Kit according to anyone of the preceding claims, wherein the at least one water insoluble salt of polyvalent metal is a water insoluble salt of calcium chosen from calcium alginate, calcium sulphate and calcium carbonate, or a mixture thereof.

5. Kit according to anyone of the preceding claims, wherein the carbonate or bicarbonates comprises carbonates of a metal from Group I of the periodic table of elements, preferably sodium carbonate, potassium carbonate, and bicarbonates of a metal from Group I and/or Group II of the periodic table of elements, preferably sodium bicarbonate, potassium bicarbonate, magnesium bicarbonate, calcium bicarbonate, barium bicarbonate, or a mixture thereof.

6. Kit according to anyone of the preceding claims, wherein the kit comprises the at least one carbonate or bicarbonate in a content ranging from 0.01% to 30% by weight, especially from 0.1% to 20% by weight, such as 0.2% to 10%, relative to the total weight of the first composition.

7. Kit according to anyone of the preceding claims, wherein the water insoluble salt of polyvalent metal is in form of fiber, which, together with one or more other fibers, forms into a water insoluble substrate, to which substrate the carbonate or bicarbonate is loaded, wherein the one or more other fibers are chosen from natural fibers such as cotton, pulp, bamboo and cellulose fibers, semi-natural fibers such as viscose rayon fibers, synthetic fibers such as polyester fibers, polyethylene terephthalate fibers, polyethylene fibers and polypropylene fibers, or a mixture thereof.

8. Kit according to claim 7, wherein the water insoluble substrate comprises the water insoluble polyvalent metal salt fiber in an amount ranging from 10% to 80% by

weight, especially from 10% to 40% by weight, and comprises the at least one additional fiber in an amount ranging from 10% to 80% by weight, especially from 50% to 80% by weight, relative to the total weight of the water insoluble substrate.

9. Kit according to anyone of the preceding claims, wherein the at least one water soluble chelating agent of the polyvalent metal ion comprises aminocarboxylic acids, hydroxy carboxylic acids, hydroxy aminocarboxylic acids, polyphosphonic acid, other phosphor-containing organic acid, or a mixture thereof.

10. Kit according to anyone of the preceding claims, wherein the at least one water soluble chelating agent is chosen from sodium citrate, disodium EDTA, tetrasodium EDTA, tetrasodium GLDA, trisodium EDDS, sodium phytate, potassium phytate, and mixtures thereof.

11. Kit according to anyone of the preceding claims, wherein the at least one water soluble chelating agent of the polyvalent metal ion is present in the second composition from 0.1% to 1% by weight, preferably from 0.2% to 0.4% by weight, relative to the total weight of the second composition.

12. Kit according to anyone of the preceding claims, wherein the at least one gelatinizing agent comprises glutins, pectins, gellan gum, carrageenans, agars, alkali metal salts of alginic acid and mixtures thereof.

13. Kit according to anyone of the preceding claims, wherein the gelatinizing agent is chosen from alkali metal alginic compounds selected from alkali metal alginates, alkali metal salts of alginic acid derivative, or a mixture thereof, preferably from sodium alginate, potassium alginate, lithium alginate, sodium polyethylene glycol alginates, potassium polyethylene glycol alginates, lithium polyethylene glycol alginates, or a mixture thereof.

14. Kit according to claim 13, wherein the alkali metal alginic compound is chosen from sodium alginate and potassium alginate, more preferably sodium alginate.

15. Kit according to anyone of the preceding claims, wherein the at least one water soluble gelatinizing agent is present in the second composition from 0.1% to 0.5% by weight, preferably from 0.1% to 0.3% by weight, relative to the total weight of the second composition.

16. Kit according to anyone of the preceding claims, wherein the at least one aqueous phase is present in the second composition from 10% to 99% by weight, preferably from 50% to 99% by weight, relative to the total weight of the second composition.

17. Kit according to anyone of the preceding claims, wherein the kit further comprises and acidic agent in the first composition and/or in the second composition.

18. Kit according to 17, wherein the acidic agent is at least one organic acid selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, fumaric acid, maleic acid, phthalic acid, isophthalic acid, terephthalic acid, glutamic acid, asparagic acid, glycolic acid, malic acid, tartaric acid, citric

acid, lactic acid, hydroxyacrylic acid, glyceric acid, tartronic acid, salicylic acid, gallic acid, tropic acid, ascorbic acid, and gluconic acid; or an inorganic acid, e.g. phosphoric acid; acidic derivatives thereof or a mixture thereof.

19. Kit according to claim 17, wherein the acidic agent is added into the first composition, and the acidic agent is selected from the group consisting of oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, fumaric acid, maleic acid, phthalic acid, isophthalic acid, terephthalic acid, glutamic acid, asparagic acid, glycolic acid, malic acid, tartaric acid, citric acid, lactic acid, hydroxyacrylic acid, glyceric acid, tartronic acid, salicylic acid, gallic acid, tropic acid, ascorbic acid, gluconic acid, 3-o-ethyl ascorbic acid, ascorbyl glucoside, or a mixture thereof, preferably ascorbic acid.

20. Kit according to claim 19, wherein the acidic agent is preferably used in amount of 0.01-20%, preferably 0.1-15%, or preferably 0.2-10%, relatively to the weight of the first composition.

21. Kit according to anyone of the preceding claims, wherein the weight ratio of the first composition to the second composition ranges from 1:3 to 1:20, preferably from 1:8 to 1:15.

22. Kit according to anyone of the preceding claims, wherein the second composition comprises at least one hydrophilic gelling agent and/or at least one active agent.

23. Kit according to anyone of the preceding claims, wherein the at least one carbonate or bicarbonates is added into the second composition.

24. Kit according to anyone of the preceding claims, wherein the at least one carbonate or bicarbonates is added into both the first and the second compositions.

25. Kit according to anyone of the preceding claims, presenting as a mask comprising:

1) a nonwoven fabric (or tissue) comprising, relative to the total weight of the nonwoven fabric:

from 10% to 80% by weight, especially from 10% to 40% by weight, of calcium alginate fiber, and

from 0.01% to 20% by weight, especially from 0.1% to 15% by weight, of at least one acidic agent; and

2) a composition comprising from 10% to 99% by weight, preferably from 50% to 99% by weight, of the at least one aqueous phase, from 0.1% to 0.5% by weight, preferably from 0.1% to 0.3% by weight, of sodium alginate, and from 0.1% to 0.5% by weight, preferably from 0.2% to 0.4% by weight, of sodium citrate, relative to the total weight of the composition, and

3) from 0.01% to 30% by weight, especially from 0.1% to 20% by weight, of at least one carbonate or bicarbonate, relative to the total weight of the nonwoven fabric, which is added into the composition

wherein the weight ratio of the nonwoven fabric to the composition ranges from 1:3 to 1:20, preferably from 1:8 to 1:15.

26. Kit according to anyone of the preceding claims, wherein the amounts of the chelating agent and the gelatinizing agent are so selected that the molar ratio of the moiety to be released from the chelating agent chelatable with the polyvalent cation to the moiety to be released from the gelatinizing agent gelatinizable with the polyvalent cation ranging from about 10:1 to about 1:1, preferably from about 5:1 to about 2:1.

27. Use of kit according to anyone of the preceding claims for caring for keratin materials, especially the skin, for managing skin wound, for preventing post-surgical adhesion formation, or for filling or repairing osteochondral defects.

28. A process for caring for keratin materials, especially the skin, for managing skin wound, for preventing post-surgical adhesion formation, or for filling or repairing osteochondral defects, comprising the steps of compounding the first composition and the second composition of the kit according to any one of the preceding claims at a weight ratio of the first composition to the second composition of from 1:3 to 1:20, preferably from 1:8 to 1:15, and then applying to a location in need of the thus obtained mixture.

29. Use of the second composition, as defined in anyone of the preceding claims, as juice or a part of juice for mask product, wherein the mask product comprises, separate from the second composition, a fabric or tissue comprising the at least one water insoluble salt of polyvalent metal.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/125364

A. CLASSIFICATION OF SUBJECT MATTER

A61K 8/02(2006.01)i; A61K 8/60(2006.01)i; A61K 8/67(2006.01)i; A61K 8/73(2006.01)i; A61Q 19/00(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, 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)

Database:VEN, DWPI,CPRSABS,CNABS,CNTXT,CNKI; Keywords:fiber+, mask, kit, polyvalent, gelatini+, chelat+, carbonate, fibre+, mannitol, sucrose, starch+, saccharide, alginate, sorbitol, glucose, fructose, OREA, kit, fibre

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006053333 A1 (PROCTER & GAMBLEET AL.) 18 May 2006 (2006-05-18) claims 1-4 and 14, description, page 8, lines 7-11	1-29
A	US 2004219124 A1 (GUPTA S K) 04 November 2004 (2004-11-04) see claim 1	1-29
A	CN 104803082 A (LI, HEWEI) 29 July 2015 (2015-07-29) see claim 1	1-29
A	CN 101361700 A (QING, YIMIN) 11 February 2009 (2009-02-11) see abstract	1-29

☐ 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	Date of mailing of the international search report
17 September 2019	**10 October 2019**

Name and mailing address of the ISA/CN	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/125364

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☑ Claims Nos.: **27-28**
because they relate to subject matter not required to be searched by this Authority, namely:

[1] Claims 27-28 comprise a method of treatment of the human/animal body (Rule 39.1 (iv) PCT), however, the search has been carried out and based on the alleged effects of the kit in claims 27-28.

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/125364

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
WO	2006053333	A1	18 May 2006	JP	2008519864	A	12 June 2008
				MX	2007005724	A	09 July 2007
				CN	101056605	A	17 October 2007
				CN	101056605	B	18 July 2012
				KR	100890536	B1	27 March 2009
				HK	1109072	A1	03 May 2013
				US	2006104931	A1	18 May 2006
				EP	1811946	A1	01 August 2007
				KR	20070085322	A	27 August 2007
				CA	2587418	A1	18 May 2006
US	2004219124	A1	04 November 2004	None			
CN	104803082	A	29 July 2015	None			
CN	101361700	A	11 February 2009	None			