Title of the Invention

COSMETIC COMPOSITION CONTAINING A WHITENING AGENT AND AN EXFOLIANT

Technical Field

The present invention relates to cosmetic compositions including delivery systems that provide new ways of delivering dermatologically active agents to cosmetically significant areas of the stratum corneum. Compositions of the invention are particularly, but not exclusively, useful as skin lightening compositions. The invention also includes a stabilized anhydrous delivery system for water soluble acids. Finally, the present invention relates to a method of improving skin tone, moisturization and skin firmness.

Background

Many skin lightening and skin whitening compositions have been used to reduce skin pigmentation and improve skin tone. These compositions include kojic acid and its derivatives.

There are many other chemicals which have a profound physiological effect on the skin. One group of such dermatologically active compounds is alpha hydroxy carboxylic acids of relatively/low molecular weight, for example with 10 carbon or less. Popularly called "alpha hydroxy acids", these acids are known to have a number of useful effects on the skin. Referenced as "AHA's", alpha hydroxy acids can moisturize dry skin and improve various disorders including acne, psoriasis and other skin anomalies. AHA's are also effective in revitalizing the skin. Depending upon the concentration and length of application they can cause, or stimulate, exfoliation which is the removal of outer keratinous or horny tissue layers, and stimulate renewal of new skin layers to provide a significant improvement in the appearance of the skin.

Some AHA's that have been used to provide these benefits are the simplest alpha hydroxy acid, namely lactic acid, as well as glycolic acid, citric acid and malic acid. These acids are also known as "fruit acids" because they are found in fruits and in the case of glycolic acid, in sugar cane. There are many other AHA's, or equivalent alpha keto acids and the like, that are known, or have been suggested for use in revitalizing skin or otherwise

providing useful dermatological skin functions. Some beta hydroxy acids, for example salicylic acid, also have useful dermatological properties. Some such "skin acids" are disclosed in Yu *et al.*, U.S. Patent No. 5,091,171 the disclosure of which is hereby incorporated herein by reference thereto.

The AHA's of interest are usually quite hydrophilic, dissolve readily in water and, in the case of lactic acid become liquid around room temperature (about 16.8°C). Such hydrophilicity is usually incompatible with common hydrophobic cosmetics. The anhydrous nature of such cosmetics means that small quantities of active hydrophilic agents, for example, AHA's may either lose their activity due to chemical or physico-chemical combination, or fail to be delivered to the skin surface in an adequately hydrophilic or aqueous environment to be effective.

In addition, preferred environments for such agents are significantly acidic, a condition which is difficult to provide at skin surfaces treated with anhydrous, or substantially hydrophobic, cosmetics. Avoiding irritation is of special significance to products intended for daily use.

It has been found that when a whitening agent such as kojic acid is combined with an exfoliating agent, such as an alpha hydroxy acid, more specifically, lactic acid, improved whitening results.

Disclosure of the Invention

Further features of the invention will be set forth in part in the description which follows and in part will be apparent from the description, or may be learned by practice of the invention. The features of the invention may be realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

In accordance with the purpose of the invention in one of its aspects embodied and broadly described herein, there is disclosed:

A topically applied cosmetic composition comprising:

a) a whitening agent selected from the group consisting of kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid; hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof;

b) an exfoliant selected from the group consisting of lactic acid, glycolic acid, malic acid, citric acid and salicylic acid;

c) a sufficient quantity of an adsorbent or absorbent particulate carrier to support the exfoliant; and

d) a cosmetic base, the base having a sufficient quantity of a film-forming agent to produce a desired cosmetic film when the cosmetic composition is applied to the skin.

There is further disclosed:

A stabilized whitening composition comprising a whitener selected from kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid; hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof; and a gellant selected from castor oil derivatives, silicone polymers, silicone gums, bentonite clays, and styrene/ethylene/propylene block copolymers.

There is still further disclosed:

A method of lightening skin comprising:

applying to the surface of skin a source of water followed by applying to the skin a whitening cosmetic composition including:

a) a whitening agent selected from the group consisting of kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid; hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof;

b) an exfoliant selected from the group consisting of lactic acid, glycolic acid, malic acid, citric acid and salicylic acid;

c) a sufficient quantity of an adsorbent or absorbent particulate carrier to support the exfoliant; and

d) a cosmetic base, the base having a sufficient quantity of a film-forming agent to produce a desired cosmetic film when the cosmetic composition is applied to the skin.

There is finally disclosed:

A topically applied hydrophobic, essentially anhydrous cosmetic composition comprising:

a) a whitening agent selected from the group consisting of kojic acid, ascorbic acid, and mixtures thereof;

b) an exfoliant of lactic acid;

c) an anti-aging agent selected from Vitamin A Palmitate and retinol and its derivatives;

d) a sufficient quantity of an adsorbent or absorbent particulate carrier to support the exfoliant; and

e) a cosmetic base, the base having a sufficient quantity of a film-forming agent to produce a desired cosmetic film when the cosmetic composition is applied to the skin.

Additional aspects of the invention will be set forth in part in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The purposes and features of the invention will be realized and attained by means of the elements and combinations particularly pointed out in the appended claims.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Various embodiments of the invention and one or more ways of practicing the invention will now be described in more detail. Illustrative, non-limiting examples of preferred embodiments of the invention will also be described.

Preferred embodiments of the invention relate to novel cosmetic compositions containing a stabilized whitening composition, an exfoliant and an anti-aging agent to improve skin whitening.

Whitening agents can include but are not limited to kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid; hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof. Other whitening agents will be apparent to the cosmetic formulator. The preferred whitening agents for use in the present invention are kojic acid and its derivatives and ascorbic acid and its derivatives.

The whitening agent of the present invention is preferably stabilized with an anhydrous gellant. Such anhydrous gellants of the present invention

include, but are not limited to castor oil derivatives, for example, trihydroxystearine; silicone polymers, silicone gums, bentonite clays; and styrene/ethylene/propylene block copolymers. If the gellant contains metallic ions, it should first be treated with an appropriate chelating agent to prevent reaction between the metallic ions and the active ingredients. Appropriate chelating agents are well understood by the artisan skilled in cosmetic formulation.

The use of the gellant allows the water soluble acids to be stabilized for inclusion in an anhydrous delivery system of the present invention.

The whitening agent of the present invention is preferably present in the cosmetic composition of the present invention in an amount of about 0.10 to about 10.0 % by weight, more preferably about 0.50 to about 5.0 % by weight and most preferably about 1.0 to about 3.0 % by weight. The whitening agent can be combined with the gellant before combination with the cosmetic base or the whitening agent and the gellant may be incorporated sequentially into the cosmetic base.

An exfoliant is also used in the composition according to the present invention. The exfoliant not only improves the whitening/lightening properties of the whitening agent but also improves the overall look and feel of the skin. An exfoliant, such as, an alpha hydroxy acid, namely lactic acid, as well as, glycolic acid, citric acid and malice acid can be used in the cosmetic composition of the present invention. There are many other AHA's, or equivalent alpha keto acids and the like, that are known, including some beta hydroxy acids, for example salicylic acid, that may also be used in accordance with the present invention. The preferred exfoliant for use in the present invention is lactic acid.

An absorbent carrier may be used in conjunction with the present invention. Pursuant to the invention, a variety of materials can be employed as a carrier for delivering a dermatologically active ingredient or agent, for example, an exfoliant, such as an alpha hydroxy acid to the skin in an active agent form while protecting the active ingredient from other cosmetic ingredients that may deactivate it. Suitable carrier materials include but are

not limited to polymeric organic microspheres and inorganic particulates. Some commercially available microspherical powders useful in the preparation of the cosmetic materials of this invention include organic polymeric materials, such as, polyethylene, polypropylene and copolymers thereof, polyurethane, polyesters, polyamides, polymethylmethacrylate, nylon, ethylene acrylates copolymers and polyvinylidene copolymers. Substantially, any non-toxic, non-irritating, cosmetically compatible organic polymeric material that can be provided in a satisfactorily adsorbent or absorbent form for the purposes of this invention, and which is compatible with the anhydrous vehicle, can be used.

Some examples of inorganic particulates include talc, clays, organic modified clays, kaolin, mica, calcium salicylate and various carbonates of various metals, for example, calcium and magnesium.

While the carrier can effectively function at larger sizes, the carrier particles should not be too large or their presence as a component of the composition will be apparent to the user and may give a particulate coarse or sandy, rather than, smooth feel to the cosmetic. Thus, at least eighty percent of the particles preferably do not exceed 50 microns and more preferably do not exceed 20 microns. Nor should the particles be too small, or they may be absorbed in the sebaceous follicles, which, while acceptable, is not desired, and will provide too small a storage volume for the passenger dermatologically active agent. Within the limits of providing a satisfactorily cosmetic feel upon spreading, the carrier particles should be relatively large to be able to release the active ingredient from either the surface or through surface openings from interior volumes of the particles. Preferably, at least eighty percent of the carrier particles are in excess of 10 microns in diameter. A particularly preferred range for at least eighty percent of the particles is from 10 to 20 microns, more preferably from 10 to 15 microns. A useful average particle size is from 12 to 20 microns.

A porous carrier particle is particularly preferred wherein the liquid phase absorbed within the particle occupies, for example, from 10 to 90

percent of the particle's volume, rather than simply being retained on the particle's surface.

An absorbent matrix powder serving as a carrier for topical delivery of the dermatologically active agent or dermatologically active solution can comprise porous synthetic organic polymeric microspheres, for example, a cosmetically acceptable polyamide such as nylon 12, in a proportion of from about 0.1 to about 40.0 percent, preferably from about 5.0 to about 20.0 percent, and more preferably from about 6.5 to about 10.0 percent by weight of the cosmetic composition. In addition to carrying AHA's, or other dermatologically active hydrophilic agents, the organic polymeric microspheres impart desirable feel properties, for example, creamy, powdery and silky qualities to consumer formulations, and enhance the light-scattering qualities of the formulation. When discharged of AHA or other dermatologically active agents the organic polymeric microspheres are available to absorb skin oils, helping control oil breakthrough.

Examples of suitable dermatologically active agents which can be delivered to the skin in the compositions of the invention include, but are not limited to, the following:

anesthetics, for example, benzyl alcohol, lidocaine and menthol;

astringents, for example, witch hazel, benzoic acid and aluminum or aluminum/zirconium salts;

keratolytics, for example, resorcinol, salicylic acid, ascorbic acid and acetic acid;

exfoliants, for example, lactic acid, glycolic acid and other alpha or beta hydroxy acids;

vasoconstrictors, for example, phenylepinephine hydrochloride;

external analgesics, for example, tripelennamine hydrochloride and camphor;

anti-inflammatory agents, for example, salts of glycyrrhizic acid, alpha bisabolol;

salicylate derivatives and ibuprofen;

anti-irritants, for example, allantoin, proteins, trimethyl glycine, glycine,

ascorbic acid, ferulic acid, sodium lactate;
bleaching agents, for example, magnesium ascorbyl phosphate, hydrogen peroxide, kojic acid and hydroquinone;
lipolytic agents, for example, caffeine, aminophylline and other xanthine bases;
pigmentation enhancers, for example, dihydroxy acetone; sunscreens, for example, diethanolamine paramethoxycinnamate, glyceryl aminobenzoate, 2-hydroxy-4-methoxy-benzophenone-5-sulfonic acid, 2-phenylbenzimidazole sulfonic acid;
moisturizers and humectants, for example, panthenol lactamiodopropyl trimonium chloride, salts of pyrolidone carboxylic acid, and polyethylene glycol, with molecular weights of from about 40 to about 10,000 daltons, propylene glycol/ethylene glycol copolymers, glycerine, polyglyceryl polymers, mono-, di-, tri- or polysaccharides or reduced mono-, di-, tri- or polysaccharides or their derivatives, propylene glycol, polypropylene glycol with molecular weights from about 100 to about 10,000 daltons, hygroscopic amino acids, peptides and polypeptides or their derivatives, glycosoamino glycans, amides or esters of alpha or beta hydroxy acids, ethoxylated derivatives of glycerine, propylene glycol, butanol or pentanol, inositol and choline chloride;
nutrients, for example, vitamin C, vitamin B, folic acid, and minerals for example calcium, magnesium, iron, zinc, manganese, selenium and phosphorus.

Moisturizers, when added directly to the skin lightening composition, are most preferably added in the particle carriers to prevent oxidation of the active acidic whitening agents. Equivalents to the foregoing examples and other guidelines herein will suggest other dermatologically active agents suitable for including in the compositions of the invention. Some such agents are listed in OTC Monographs and the Physician's Desk Reference which are hereby included herein by reference thereto. Some of these agents, and others, are disclosed in Schaefer *et al.*, U.S. Patent No. 5,292,512, the disclosure of which is also incorporated herein by reference thereto.

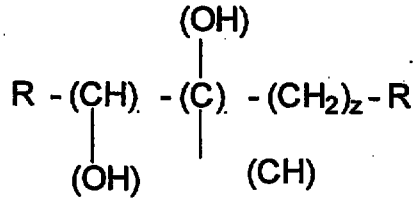
The most preferred dermatologically active agents for use in the present invention are exfoliants, such as alpha hydroxy acids, specifically lactic acid.

One or more dermatologically active agents, including an exfoliant, are present in the cosmetic composition of the present invention in a range of from about 0.01 to about 20.0 percent by weight of the composition can be incorporated into preferred embodiments of the current composition. More preferably these agents can be added from about 0.5 to about 8.0 percent and still more preferably from about 1.0 to about 5.0 percent. Other active agents can be used in equivalent proportions depending upon their activity.

While some dermatologically active agents possess properties, for example a low enough melting point, that enable them to be absorbed or adsorbed directly into or onto the carrier matrix, others are in crystalline form at room temperature, and are preferably dissolved in a suitable hydrophilic solvent system for the active agent. Preferably also the solvent system should have little or no affinity for the essentially anhydrous base. This is important to retaining both the solvent and its dermatologically active solute in or on the carrier and to preserving the intended functionality of the dermatologically active agent. Additionally, the solvent should be suitably viscous to further help retard the migration of the dermatologically active agent from the carrier. Also, the solvent should be inert or inactive with respect to, or at least not negatively impact the functionality of the dermatologically active agent.

Some classes of liquid hydrophilic solvents or dispersion phase media that can be used alone or in combination as adjuvants to assist the loading of the dermatologically active agent or agents onto or into the particular carrier include but are not limited to water, alcohols and ethers.

A suitable class of alcohols comprises mono-, di-, tri- or polyhydroxy alcohols having the formula:



where R = H, CH_3, or a saturated, unsaturated, cyclic or branched alkyl radical containing from 1 to 20 carbons; X = 0 to 1,000,000; Y = 0 to 100; Z = 0 to 10; and

$$R^1 = H, CH_3, O\text{-}CH_3, O\text{-}CH_2\text{-}CH_3$$

Suitable examples of such compounds include glycerine, propylene glycol, dipropylene glycol, propanol, isopropanol, butanol, isobutanol, pentanol, isopentanol, neopentanol, diglycerol, polyglycerol, sorbitol, polyethylene glycerol, and polyol.

Suitable ethers include unsubstituted and substituted ethers for example UCON® fluid, Union Carbide Corp. or DOWANOL® fluids, Dow Chemical Company or CARBITOL® and CELLOSOLVE® solvents from Union Carbide.

In principle, suitable viscous, hydrophilic solvents or blends of solvents can be used with the dermatologically active agent in a proportion of from about 99:1 to about 1:99. However, preferred proportions are chosen to exploit the physical or physico-chemical characteristics of the solvent to deliver the dermatologically active agent in an active form in a liquid phase for uptake by absorbent carrier particles. To this end, while a lesser proportion of solvent may have merit in some circumstances, greater proportions of solvent are preferred. An example of a preferred proportions are from about 1:1 to about 1:20 parts agent to solvent, on a weight basis. Whereas such proportions can be efficacious for intercellularly active agents, more potent intracellularly active agents, for example hydrophilic or water-soluble hormones such as corticosteroids may be present in smaller relative proportions, for example from about 1:99 to 1:20 parts agent to solvent. A preferred solvent for a dermatologically active agent, for example, an alpha hydroxy acid (AHA) is glycerine. The solvent's viscosity helps retain the AHA within or on the particulate carrier while the hydrophilicity permits skin moisture to draw dissolved AHA out of or off of the microparticle.

The composition also preferably includes an anti-aging agent, such as, Vitamin A palmitate or retinol derivatives, specifically, retinoic acid. The anti-aging agent improves the elasticity of the skin and minimizes the formation of

fine wrinkles. The anti-aging agent is present in the cosmetic composition according to the present invention in an amount of from about 0.20 to about 10.0 percent by weight, more preferably about 1.0 to about 6.0 percent by weight, and most preferably about 1.5 to about 2.5 percent by weight.

The cosmetic base may be aqueous or anhydrous. Suitable cosmetic base materials are well understood by the skilled artisan. While an aqueous base can be used, an anhydrous hydrophobic base is preferred. In the event an aqueous base is used, the skilled artisan should minimize, to the extent possible, contact between the water in the base and the active agents that may be degraded by oxidation.

The preferred essentially or substantially anhydrous base can provide a medium or vehicle for dispersal of the active-agent which medium can be liquid or semi-solid, for example, a dispersant or solvent for other cosmetic ingredients bringing desired cosmetic properties to the composition. The anhydrous base can thus comprise a more or less volatile hydrophobic cosmetic solvent in which a gelling agent is optionally dispersed to provide a desired consistency.

The whitening cosmetic composition of the present invention is best used in conjunction with an aqueous source, most often a moisturizing composition. The moisturizer is preferably applied to a surface of the skin before the whitening cosmetic composition is applied. This is not, however, necessary.

The whitening cosmetic composition of the present invention in addition to the active ingredients can contain a variety of products or processing aids. The addition of such materials is readily understood by the skilled artisan and while a variety of additives are described below, the description is not intended to be limiting.

Preferably, the invention provides for a film-forming agent to assist with the adhesion of the particulate carrier onto the skin and to help form an occlusive barrier to enhance the buildup of water on or near the surface of the skin. By film-forming is meant that an essentially continuous layer of product is formed on the surface of the skin. By occlusive is meant that a barrier is

placed on the surface of the skin which barrier substantially blocks or retards the loss of volatile materials from the skin's surface and enables them to build up in the upper layers of the skin. For the purpose of this invention, the barrier film is preferably hydrophobic.

Some classes of suitable cosmetic film-forming agents that can be used alone or in combination include but are not limited to metallic soaps, waxes and film-forming emollients. Some non-limiting examples of each of these classes of cosmetic film-forming agents will now be described. Others will be known to those skilled in the art.

Metallic soaps are useful materials which function to aid adhesion and to promote the formation of a hydrophobic film. The metallic soap gelling agent or agents can be an alkaline earth or aluminum alkanoate of from six to twenty carbon atoms, for example, the laurate, oleate, or stearate salts of calcium, magnesium, zinc, aluminum or lithium or mixtures thereof. A cosmetic metal soap, for example zinc laurate, can be used in a proportion of from about 1.0 to about 5.0 percent, preferably about 3.0 percent by weight of the composition. Metallic soap functions as an ionic gelling agent, aids adhesion and adds to hydrophobic film formation.

Other useful film-forming agents are waxes. Many waxes which can function as suitable film-forming agents in the compositions of present invention are well known in the cosmetic art. Typically these materials are composed of the formula R-X, in which R is a long chain saturated, unsaturated, cyclic or branched chain alkyl radical of from C_8 to $C_{1,000,000}$, X is -H, $-OR^1$ or $-C-OR^{11}$, where R^1 is H, or a saturated, unsaturated, cyclic or branched chain alkyl radical of from C_1, to C_{24}; R^{11} is H or residue of a mono-, di-, tri- or polyhydroxy compound capable of forming a mono-, di-, tri or polyester.

Preferred waxes have melting points which exceed 100°F. Materials such as glyceryl wax esters, beeswax, ceresin wax, carnauba wax, candelilla wax and other cosmetically acceptable waxes can be used.

A total wax content of from 0 to 10.0 percent is adequate for formulating satisfactory cosmetics, pursuant to the invention. Preferably, total

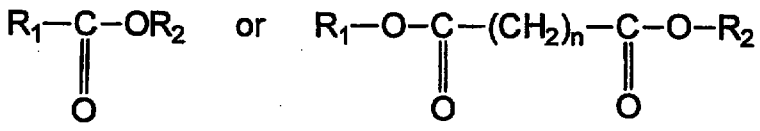
wax content does not exceed 5.0 percent and more preferably not 3.0 percent. Suitable waxes are, for example, glyceryl tribehenate, ceresin wax and microcrystalline wax used in proportions of from about 0.00 to about 5.00 percent, preferably about 0.1 to 1.5 percent. More preferably, from about 0.25 to 0.5 percent of waxes such as glyceryl tribehenate and a somewhat higher proportion of about 1 to 2 percent of a ceresin was are used.

The low wax content attainable with cosmetic compositions according to the invention has the advantage of providing low drag and enhanced removability. Useful wax functions are adhesion, imparting a creamy feel to the product, film forming and increasing viscosity.

Other useful film-forming agents are emollients. These materials are usually liquid at temperatures between 32°F and 100°F. Emollients useful in the present invention include those with the following formula $C_nH_{(2n+2-x)}$, where n is an integer from 6 to greater than 1 million and x is 0 or an even integer no greater than n and may include saturated, unsaturated, branched and cyclic hydrocarbon chains. Examples include: mineral oil, petrolatum, PERMETHYL® fluids, and polybutylenes.

Further useful film-forming emollients include the mono-, di-, tri- or polybranched, -cyclic, -saturated or -unsaturated alkyl esters or ethers of di, tri or polyhydroxy compounds, for example, ethylene glycol, propylene glycol, glycerine, sorbitol or polyol. Examples of such emollients include but are not limited to vegetable oils, for example, soybean oil, babassu oil, castor oil, cottonseed oil, Chinese tallow oil, crambe oil, perilla oil, Danish rapeseed oil, rice bran oil, palm oil, palm kernel oil, olive oil, linseed oil, coconut oil, sunflower oil, safflower oil, peanut oil, and corn oil. Preferred saturated and unsaturated vegetable oils are those having fatty acid components with 6 to 24 carbon atoms.

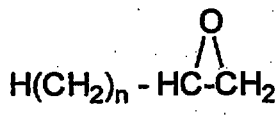
Additional suitable emollient film-forming agents include esters of the formula:



wherein R_1 and R_2 are saturated, unsaturated, branched or cyclic alkyl radicals of 2 to 24 carbon atoms and n is an integer from 0 to about 20.

The novel cosmetic compositions of the invention may also contain a silicone material to provide some measure of auxiliary film-forming ability. Suitable silicone materials are preferably insoluble in water and include cyclomethicone polyalkylsiloxanes, polyarylsiloxanes, polyalkylarylsiloxanes, polysiloxane gums, amino functional polysiloxanes and polyethersiloxane copolymers. Teachings directed to additional suitable silicone materials can be found in U.S 4,788,006; U.S.4,341,799; 4,152,416; 3,964,500; 3,208,911; 4,364,837 and U.S. 4,465,619, the disclosures of all of which are hereby incorporated herein by reference thereto.

Another class of suitable auxiliary film-forming agents comprises substances formed by the polymerization of alkylene oxide monomers of the formula



where n is an integer from 0 to about 3.

These materials can be either a homogeneous polymer or a copolymer of two or more monomers. Examples of homogeneous polymers include polypropylene oxide and polybutylene oxide. Typically, the molecular weights of these materials are between 100 and 10,000 daltons. Additionally, these materials can be condensed with a mono or polyhydroxyalkyl alcohol as exemplified by the UCON® fluids from Union Carbide Corp.

The film-forming agent can be used alone or in combination with other film-forming agents to achieve desired aesthetic properties in the final preparation. A preferred range of film-forming agents is from 1 to 99%, more preferably from about 1 to 50% by weight of the composition.

Suitable non-hardening film formers, for example, dimethicone, can be used in proportions of from about 0.5 to about 5.0 percent, preferably about 0.6 to 1.5 percent, and more preferably about 1.0 percent. Preferred functions

include film forming, skin protectant or water-barrier forming agent, lubricious and silky emollient.

Film enhancing agents, for example, aluminum-myristate-treated mica, in a proportion of from about 4.0 to about 20.0 percent by weight of the composition, preferably about 5.0 to 8.0 percent, and more preferably 6.5 percent can be used. Preferred film enhancer functions include adhesion to skin, imparting of a creamy and silky feel to the composition and enhancing hydrophobic film formation.

Although strong adhesive properties can be introduced into anhydrous cosmetics compositions by incorporating waxy film-forming agents, too high a wax content causes drag and an undesired tacky feel when the cosmetic is applied, and may result in a cosmetic that is difficult to remove.

To solve this problem, the invention also provides a novel film-forming system which comprises relatively high proportions of a particulate mineral gelling agent, for example, a bentonite-clay based gelling agent, and of a metallic soap gelling agent, such as, for example, zinc laurate, while using only a small proportion of wax, if any.

When this film system is used in cosmetic compositions containing microspheres a good anhydrous film can be obtained with excellent spreadability and no tackiness or drag. These desirable properties appear to result from a unique combination of the skin-adhering properties of the metal soap with "ball-bearing" type lubricity properties of the microspheres.

In one practical embodiment of the invention, carrier loading of an AHA, e.g., lactic acid, is achieved by dissolving the AHA in glycerine and absorbing the glycerine-dissolved AHA on porous microspheres or fine polymer particles. This system is intended for use in a hydrophobic environment where the AHAs remain in stored within the porous microspheres. When applied to the skin, as the cosmetic is rubbed or massaged into the skin, microspheres are brushed across the skin surface, bringing them into contact with moisture which releases the hydrophilic AHA-glycerine system from the microporous polymer particles.

Once discharged the now-hollow microspheres are available to absorb oil, moderating oil-breakthrough tendencies.

The AHA is preferably loaded on the carrier particles, for example, porous nylon particles in a liquid medium which should be sufficiently viscous to be held in the particles' pores during formulation. Lactic acid melts at 16.8°C and can be absorbed into porous carrier particles, without the need for any adjuvant, at temperatures above this melting point, by blending in appropriate proportions of microshperes to lactic acid, for example, near 1:1 by weight, until the lactic acid is absorbed. Other acids, such as a mixture of fruit acids, can be similarly loaded onto carrier particles by agitating i.e., blending, by using fine powders with a sufficiently small particle size to be contained in the carrier's pores.

Skin lightening or whitening benefits resulting from the whitening cosmetic composition may begin to be apparent only after long-term use of the cosmetic composition of the invention on a regular, for example daily, basis for a period of weeks for example, four or six weeks or more.

A preferred hydrophobic vehicle for the active-agent-loaded microsphere particles is a silicone gel, which is preferably formulated using a volatile silicone solvent such as a dimethicone. A preferred gelling agent is a trihydroxystearine.

A volatile solvent, for example a cyclomethicone, preferably the pentamer form, can be used as a hydrophobic vehicle, for example for a cream-to-powder composition. Suitable proportions are from about 20.0 to about 70.0 percent by weight of the composition, preferably about 30 to 40 percent, and more preferably about, 33.0 percent. The volatile solvents function as wetting agents while quickly evaporating upon application. Some alternative or additional volatile silicone solvents are described herein below.

A gelling agent suitable for a volatile solvent, for example, quaternium-18 bentonite, is present from about 1.0 to about 15.0 percent, more preferably from about 3 to 10 percent, and more preferably about 5.0 to 6.0 percent. The gelling agent physically stabilizes the composition and functions as a pigment-

suspension vehicle, if a pigment is present, and also may absorb oil and reduce shine.

In some formulations a wetting agent may be utilized. If a wetting agent, for example, sorbitan isostearate, is used, it is present in an amount of from about 1.0 to about 10.0 percent by weight of the composition, preferably about 3.5 to 4.5 percent, and more preferably about 4.0 percent can be used. Preferred wetting agents allow for increased capacity of solid material, and impart a hydrophobic film.

In appropriate cosmetics, synthetic polymeric microspheres in addition to the AHA carrier powder, for example polymethylmethacrylate, can be used in a proportion of from about 8.0 to about 20.0 percent by weight of the composition, preferably about 10.0 to 15.0 percent, and more preferably 12.0 percent. Such additional polymeric microspheres act as feel enhancers, providing a "ball bearing" feel on application, and a velvety, dry feel after application and evaporation of the solvent. Additional functions include light scattering and imparting of a powdery feel to the product.

An oily, low-volatility solvent ester, for example, isononyl isononanoate, is useful for volatility and molecular weight control of the solvent system in a proportion of from about 1.0 to about 10.0 percent by weight, preferably from about 4.0 to 6.0 percent, and more preferably about 5.0 percent of a solvent. Preferred solvents also function as lipophilic emollients, aid in the solubilization of the ingredients and are miscible with the volatile carrier solvent (for example, dimethicone).

One or more oil soluble moisturizers, for example lauryl PCA, in a proportion of from about 0.4 to about 2.5 percent, preferably about 0.5 percent, or cetyl dimethicone, in a proportion of from about 1.0 to about 5.0 percent by weight of the composition, can be used to enhance moisturization. Cetyl dimethicone provides a light, dry feel and aids film formation.

A moisturizer may be incorporated into the cosmetic composition of the present invention but if it is incorporated, it is preferably loaded into porous microspheres and dispersed in the composition. As an alternative to the incorporation of a moisturizer, or in conjunction with the incorporation of a

moisturizer, a moisturizer may be applied to the skin before application of the whitening cosmetic according to the present invention.

The whitening cosmetic of the present invention functions best in the presence of a source of water. The water source is for the purpose of hydrating the skin. Suitable hydration sources includes liquid water added specifically to hydrate the skin or incidently, such as, directly after a bath or shower. Hydration can also be achieved through the application of a moisturizer or other aqueous phase composition.

Kaolin or other oil absorbents can be used in a proportion of from about 0.50 to about 3.0 percent by weight of the composition, preferably about 0.7 to 1.5 percent, and more preferably 1.0 percent. Preferred oil absorbent functions include absorption of excess skin oils, skin adhesion, light diffusion, and opacification.

An opacifier, for example titanium dioxide, can be used in a proportion of from about 0.10 to about 5.0 percent by weight of the composition, preferably about 0.3 to 1.0 percent, and more preferably 0.50 percent to provide coverage and help mask skin defects.

A volatile polar activator solvent for the gellant, for example hexylene glycol, can be used in a proportion of from about 0.75 to about 3.0 percent by weight of the composition, preferably less than about 2.0 percent, more preferably not greater than about 1.0 percent. This will act as a binder plasticizing agent, solvent and softener while providing resistance to moisture and oxidation.

Preservatives such as, for example, methyl or propyl paraben, can be used in proportions of, for example, 0.1 to 0.3 percent by weight, as is known to those skilled in the art.

Other optional ingredients can be used, as is known to those skilled in the art including pigments and fragrances. Some further optional ingredients are: vitamin E linoleate, in a percentage of about 0.10 percent as a supplemental moisturizer; vitamin E acetate, at about 0.10 percent which functions as a free radical scavenger and an antioxidant; retinyl palmitate, at about 0.1 percent which functions as a derivative of retinoic acid to reduce

fine lines; ceramides at a percentage below about 0.3 percent which function as a skin firmer; sphingolipids serve the function of skin firming at a percentage below about 0.3 percent. Sphingolipids also function to improve the skin's barrier thereby increasing moisturization and decreasing penetration of irritant substances.

A class of cyclomethicone compounds that is preferred for use in the cosmetic compositions of this invention is illustrated by compounds of the formula $-[R_1R_2SiO]_n-$, in which R_1 and R_2 is each lower alkyl having from one to four carbon atoms with or without substitutes selected from the group consisting of halo, hydroxyl, carboxyl or methoxy and n is from 3 to 6; which compounds are cyclized. The volatile cyclomethicone solvent used can be a single one of the foregoing compounds or a mixture thereof and the compound or compounds can be a homopolymer in which all n monomeric units are similar, or a heteropolymer in which they are different. Some preferred cyclomethicones are dimethicones especially homopolymers in which n is 4 or 5; and R_1 and R_2 is each methyl such as octamethylcyclotetrasiloxane and decamethylcyclopentasiloxane.

Depending upon the character of the end product composition, for example, a lotion, a powder, a cream, a stick, other optional ingredients can be used, as known to those skilled in the art, in proportions known to those skilled in the art. Such ingredients include, but are not limited to, fragrance, color, pigments, preservatives, wetting agents, oil absorbents, opacifiers, and antioxidants.

The following examples are provided to illustrate the invention. Because these examples are given for illustrative purposes only, the invention should not be limited thereto.

EXAMPLE 1

An ascorbic acid dry mixture was produced by combining the following materials in the following proportions by weight.

	W/W%
Ascorbic Acid	3.00
Zinc Laurate	3.00

Kaolin	1.00
Silica	0.20
Barium Sulfate	3.80
	11.00%

EXAMPLE 2

Using the ascorbic.acid dry mixture of Example 1, a cosmetic composition was prepared by mixing the ingredients listed below in the proportions noted. The composition was applied to skin causing improved skin tone and lightening.

	W/W%
Dimethicone, 350 Visc.	1.00
Sorbitan Isostearate	4.00
Isononyl Isononaote	5.00
Lauryl PCA	0.50
Cetyl Dimethicone	2.13
Glyceryl Tribehenate	0.32
Ceresin Wax	1.43
Microcrystalline	0.32
Propyl Paraben	0.10
Methyl Paraben	0.30
Cyclomethicone	33.50
Nylon-12/Lactic Acid (30%)	3.33
Ascorbic Acid Dry Mix	11.00
Nylon-12	6.67
PMMA Beads	12.00
Thixogel RCM (Trihydroxy stearin)	16.00
Tocopherol Linoleate	0.50
Tocopherol Acetate	0.50
Retinyl Palmitate	0.10
Parsol MCX	0.50
Lavender	0.30
Hydrophobic Sphingolipids	0.50

100%

EXAMPLE 3

A kojic acid dry mixture was produced by combining the following materials in the following proportions by weight.

	W/W%
Zinc Laurate	1.00
Cabosil	0.41
Barium Sulfate	2.07
Disodium EDTA	0.10
FD&C Red 40	0.01
FD&C Yellow #5	0.02
Titanium Dioxide	1.00
Methyl Paraben	0.30
Prodyl Paraben	0.10
Sodium Lactate 100%	1.05
Kojic Acid	1.00
	7.06%

EXAMPLE 4

Using the kojic acid dry mixture of Example 3, a cosmetic composition was prepared by mixing the ingredients listed below in the proportions noted. The composition was applied to skin on the hand causing improved skin tone and lightening.

	W/W%
Dimethicone	5.00
Cetyl Dimethicone	10.00
Glyceryl Tribehenate	0.38
Paraffin Wax	1.72
Microcrystalline Wax	0.38
Cyclometh icone	17.37
Kojic Acid Dry Mix	7.05
Lactic Acid/Glycerine/Nylon	10.00
Nylon-12	4.00

PMMA Beads	11.00
Trihydroxystearine (5.45%)/Cyclomethicone	31.00
Tocopherol	0.20
Tocopherol Acetate	0.50
Retinyl Palmitate	0.10
Ethylhexyl P-Methoxycinnamate	0.50
Lavender	0.30
Hydrophobic Sphingolipids	0.50
	100%

EXAMPLE 5

The whitening effect of compositions according to the present invention was tested using three panels of 20 women. The panelists were 35-60 and had to meet a Fitzpatrick skin classification of I to III. The panelists were excluded with a Modified Glogau Classification of I or IV.

Fitzpatrick Skin Classification

I	Always burns easily; never tans
II	Always burns easily; tans minimally
III	Burns moderately; tans gradually
IV	Burns minimally; always tans well
V	Rarely burns; tans profusely
VI	Never burns; deeply pigmented

Modified Glogau Classification

I	Mild:	no keratoses or scarring; little wrinkling
II	Moderate:	early actinic keratoses - slight yellow skin; discoloration; early wrinkling - parallel smile line
III	Advanced:	actinic keratoses - obvious yellow skin; discoloration with telangiectasia wrinkling - present at rest; moderate acne scarring
IV	Severe:	actinic keratoses; skin cancers have occurred; wrinkling - much cutis laxa of actinic, gravitational and dynamic origin; severe acne scarring

The test duration was 13 weeks during which time each of the three panels used one of the following:

I VISIBLE ACTION SKIN REVEALING LOTION®

II An anhydrous cosmetic composition according to the present invention along with VISIBLE ACTION SKIN REVEALING LOTION®

III An anhydrous cosmetic composition according to the present invention along with a body care moisturizing lotion

VISIBLE ACTION SKIN REVEALING LOTION®

Visible action skin revealing lotion is a moisturizer produced as a combination of the following ingredients in the proportions noted as a percentage by weight.

2.0%	Acetylated Lanolin
4.0%	Stearyl Alcohol and ceteareth 20
2.5%	Stearyl Alcohol
5.0%	PPG-14 Butyl Ether
1.0%	Cetyl acetate, acetylate
0.25%	Dimethicone
70.5%	Water
3.0%	Methyl Gluceth - 10
0.25%	Xanthan Gum
3.0%	Water
3.0%	Lactic Acid 88%
3.0%	Sodium lactate
0.20%	Iodo Propynl Butylcarbamate
0.20%	DMDM Hydantoin
0.08%	Actiphylte of Japanese Green Tea
0.20%	Wheat-Barley-Soy-Millet
0.50%	Retinyl Palmitate
0.25%	Fragrance
0.06%	Bisabolol

The Anhydrous Cosmetic according to the present invention

The anhydrous cosmetic composition according to the present invention is a skin whitening or lightening composition. The anhydrous composition includes the following ingredients as a percentage by weight:

5.0%	Dimethicone
10.0%	Cetyl Dimethicone
0.38%	Glyceryl Tribehenate
1.72%	Paraffin Wax
0.38%	Microcrystalline Wax
10.4%	Cyclomethicone
6.97%	Cyclomethicone
1.05%	Sodium lactate
6.0%	Dry mix of kojic acid
10.0%	Lactic acid blend
4.0%	Nylon 12
11.0%	PMMA Beads
31.0%	Thixogel RCM
0.2%	Tocopherol
0.5%	Tocopherol Acetate
0.1%	Retinyl Palmitate
0.5%	Ethylhexyl P-Methoxycinnamate
0.3%	Lavender
0.5%	Hydrophobic Sphingolipids

The compositions according to the invention resulted in a 20 to 35% improvement in evenness of skin tone, a 30 to 35% increase in skin elasticity, a 50 to 60% improvement in skin firmness, a 30 to 80% reduction in the appearance of crepiness, a 30 to 40% improvement in skin clarity, a 30 to 40% reduction in fine lines, a 40 to 50% reduction in skin roughness, and a 20 to 30% improvement in overall skin condition.

While illustrative embodiments of the invention has been described above and are attached, it is, of course, understood that various modifications will be apparent to those of ordinary skill in the art.

We Claim:

1. A topically applied cosmetic composition comprising:

a) a whitening agent selected from the group consisting of kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid; hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof;

b) an exfoliant selected from the group consisting of lactic acid, glycolic acid, malic acid, citric acid and salicylic acid;

c) a sufficient quantity of an adsorbent or absorbent particulate carrier to support said exfoliant; and

d) a cosmetic base, said base having a sufficient quantity of a film-forming agent to produce a desired cosmetic film when said cosmetic composition is applied to the skin.

2. The cosmetic composition according to claim **1**, wherein said cosmetic base is a hydrophobic, essentially anhydrous cosmetic base.

3. The cosmetic composition according to claim **1**, further comprising an anti-aging composition selected from the group consisting of Vitamin A Palmitate and retinol and its derivatives.

4. The cosmetic composition according to claim **2**, wherein said composition further includes an anhydrous gellant.

5. The cosmetic composition according to claim **4**, wherein said anhydrous gellant is selected from castor oil derivatives, silicone polymers, silicone gums, bentonite clays, and styrene/ethylene/propylene block copolymers.

6. The cosmetic composition according to claim **5**, wherein said anhydrous gellant is trihydroxystearine.

7. The cosmetic composition according to claim **2**, wherein said hydrophobic phase cosmetic base includes one or more solvents selected from a glycerine polar solvent, a silicone solvent, and mixtures thereof.

8. A stabilized whitening composition comprising:

a whitener selected from kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid;

hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof; and

a gellant selected from castor oil derivatives, silicone polymers, silicone gums, bentonite clays, and styrene/ethylene/propylene block copolymers.

9. The whitening composition according to claim **8**, wherein the whitener is selected from kojic acid, ascorbic acid and mixtures thereof and the gellant is selected from trihydroxystearine.

10. A method of lightening skin comprising:

applying to the surface of skin a source of water followed by applying to said skin a whitening cosmetic composition comprising:

a) a whitening agent selected from the group consisting of kojic acid and derivatives thereof; ascorbic acid and derivatives thereof, including magnesium ascorbic acid; hydroquinone; bearberry extract; licorice extract; mulberry extract; arbutin; and mixtures thereof;

b) an exfoliant selected from the group consisting of lactic acid, glycolic acid, malic acid, citric acid and salicylic acid;

c) a sufficient quantity of an adsorbent or absorbent particulate carrier to support said exfoliant; and

d) a cosmetic base, said base having a sufficient quantity of a film-forming agent to produce a desired cosmetic film when said cosmetic composition is applied to the skin.

11. The method according to claim **10**, wherein said cosmetic base is a hydrophobic, essentially anhydrous cosmetic base.

12. The method according to claim **10**, wherein said whitening cosmetic further comprises an anti-aging composition selected from the group consisting of Vitamin A Palmitate and retinol and its derivatives.

13. The method according to claim **11**, wherein said whitening composition further includes an anhydrous gellant.

14. The method according to claim **13**, wherein said anhydrous gellant is selected from castor oil derivatives, silicone polymers, silicone gums, bentonite clays, and styrene/ethylene/propylene block copolymers.



15. The cosmetic composition according to claim **14**, wherein said anhydrous gellant is trihydroxystearine.

16. The method according to claim **11**, wherein said hydrophobic phase cosmetic base includes one or more solvents selected from a glycerine polar solvent, a silicone solvent, and mixtures thereof.

17. A topically applied hydrophobic, essentially anhydrous cosmetic composition comprising:

a) a whitening agent selected from the group consisting of kojic acid, ascorbic acid, and mixtures thereof;

b) an exfoliant of lactic acid;

c) an anti-aging agent selected from Vitamin A Palmitate and retinol and its derivatives;

d) a sufficient quantity of an adsorbent or absorbent particulate carrier to support the exfoliant; and

e) an essentially anhydrous, hydrophobic cosmetic base, said base having a sufficient quantity of a film-forming agent to produce a desired cosmetic film when said cosmetic composition is applied to the skin.