Description

BACKGROUND OF THE INVENTION

Field of the Invention:

This invention relates to a cosmetic and, more particularly, to a cosmetic having a high, long-lasting moisturizing effect.

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A normal horny layer of epidermis usually contains 10 - 20% of moisture which helps to impart elasticity, flexibility, or softness to the skin and to maintain a protective effect for the skin. It is known that when the moisture content decreases to less than 10% due to changes in environmental conditions or the like, this will cause the skin to lose its elasticity and protective function and develop a so-called dry-skin condition which causes various skin problems.

In order to avoid the dry-skin condition or to recover normal skin conditions, a hydrophilic humectant is included in the formulation of cosmetics. Hydrophilic humectants conventionally used are polyol compounds, such as polyethylene glycol, polypropylene glycol, dipropylene glycol, propylene glycol, and butylene glycol, glycerine, sorbitol, maltitol, amino acid, sodium pyrrolidone carboxylate, urea, lactic acid, hyaluronic acid, and collagen.

Cosmetic compositions comprising a diglyceride and/or a polyol type humectant and/or another humectant of the types specified above are known from the prior art, see for example FR-A-2237615, BE-A-888912, DE-A-2913040, CH-A-443565, DE-A-2225513, EP-A-0102534, DE-A-3304897 and US-A-4035513 .

However, these humectants are too hydrophilic to penetrate the horny layer of the normal skin. They usually remain on the surface of the epidermis, giving only an inadequate and temporary moisturizing effect to the skin.

In view of this situation the inventors have made extensive and earnest studies to obtain a cosmetic with a high and long-lasting moisturizing effect, and found that when both a specific diglyceride which is liquid at room temperature, and a specific polyol type humectant are included in the formulation of a cosmetic, they exhibit a moisturizing effect which is higher than when they are used independently. In addition, it was found that the persistency of the effect can be synergetically enhanced. Such findings have led to the completion of this invention.

The present invention provides a cosmetic composition comprising:

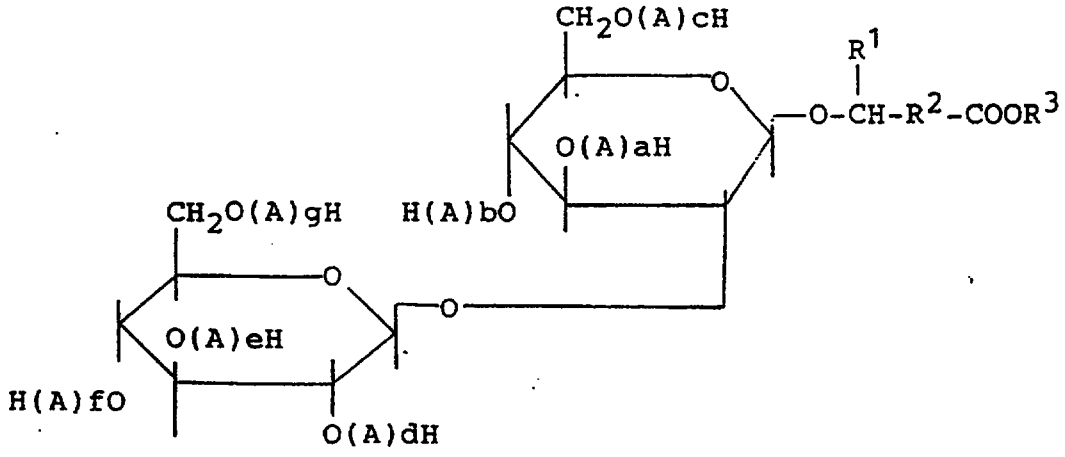
(A) 5 to 50% by weight of a diglyceride, selected from di(2-ethylhexanoic acid) glycerine ester, dioctanoic acid glycerine ester and dioleic acid glycerine ester, which are liquid at room temperature, and have melting point of not more than 20 °C, and are obtainable by seperating or purifying a glycerine ester of a fatty acid containing more than 60% of diester, and

(B) 2 to 90% by weight of a compound selected from the group consisting of dipropylene glycol, propylene glycol and butylene glycol.

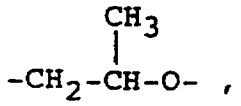
DETAILED DESCRIPTION OF THE INVENTION AND PREFERRED EMBODIMENTS

The component (A) used in this invention is a diglyceride which is liquid at room temperature, and has a melting point of not more than 20 °C. Such components may be prepared by separating or purifying a glycerine ester of a fatty acid containing more than 60% of diester, which is obtained by esterification of glycerine fatty acid, by glycerolysis of animal or vegetable oils and fats of natural origin, or by glycerolysis of a higher fatty acid-higher alchohol ester, by means of molecular distillation, or solvent extraction. Among them particularly preferable compounds are di(2-ethylhexanoic acid) glycerine ester, dioctanoic acid glycerine ester, and dioleic acid glycerine ester. The component (A), the diglyceride, is formulated in a cosmetic in an amount of 5 - 50% by weight, preferably 5 - 25% by weight.

It is essential that the polyol type humectant, the component (B), can mix with the component (A) at an arbitrary proportion at room temperature. This components (B) may be dipropylene glycol, propylene glycol, or butylene glycol. Taking the compatibility with the component (C), a hydrophilic humectant, into account, especially preferred compounds are dipropylene glycol and butylene glycol. In addition, a PSL represented by the following formula can be preferably used.



in which R^1 is CH_3 or H, R^2 represents a saturated or unsaturated hydrocarbon group having 11 - 15 carbon atoms when R^1 is CH_3 and a saturated or unsaturated hydrocarbon group having 12 - 16 carbon atoms when R^1 is H, A represents



R^3 represents a saturated or unsaturated hydrocarbon group having 1 - 20 carbon atoms or $(A)_hH$, and a, b, c, d, e, f, g, and h are integers the total of which is 1 - 60. The component (B), the polyol type humectant, is formulated to a cosmetic in an amount of 2 - 90% by weight, preferably 5 - 50% by weight. If the amount is less than 2% by weight, the effect of this invention can not be exhibited. On the other hand, when the amount exceeds 90% by weight, the effect proportional to the used amount can no longer be realized. Although there is no specific limitation to the proportion of the components (A) and (B) in a cosmetic, a ratio of (A)/(B) in the neighborhood of 1/2 is preferable.

The component (C), a hydrophilic humectant, used in this invention includes natural humectants such as glycerine, sorbitol, maltitol, amino acid, sodium pyrrolidone carboxylate, urea and lactic acid, as well as hyaluronic acid, chemically modified collagens. These hydrophilic humectants may be formulated in a cosmetic of this invention in the amount of 2 - 25%.

In addition to the above essential components, the cosmetic according to the present invention may be formulated as appropriate and to the extent not impairing the effect of the invention with various components which are generally used in cosmetics. These other components may include a surface active agent, humectant other than mentioned above, ultraviolet absorber, chelating agent, pH adjusting agent, preservative, vehicle, coloring agent, perfume.

The cosmetic according to this invention may take any form such as an oily cosmetic, emulsion cosmetic, or aqueous cosmetic, which can suitably be applied to roughened skin or hair requiring a humectant effect.

The cosmetic of the present invention has a high, longlasting moisturizing effect. It can preserve the moisturizing function of the skin or hair after a lapse of time or even after the portion to which it was applied has been washed. Thus the cosmetic can exhibit a marked effect for especially maintaining injured or roughened skin or hair in good condition.

Other features of the invention will become apparent in the course of the following description of the exemplary embodiments which are given for illustration of the invention.

EXAMPLES

Example 1

Mixtures having formulations as shown in Table 1 were prepared and their long-lasting moisturizing effects were measured.

〈Formulation〉

Table 1

(wt%)

Components	Diglyceride *	Dipropylene glycol	Glycerine	Pure water
Comparative Product No.1	100	-	-	-
Comparative Product No.2	-	100	-	-
Comparative Product No.3	-	-	100	-
Comparative Product No.4	-	-	-	100
Comparative Product No.5	50	-	50	-
Inventive Product No.1	50	50	-	-
Inventive Product No.2	25	50	25	-

* 2-ethylhexanoic acid diglyceride

〈Test Method〉

The above samples were applied to the axilla side of the arm of each subject, left for 1 hour, and then washed off with hot water. The subjects stayed in a room with a constant temperature and humidity of 20 °C and 50%. After 15 minutes, the moisture content of the horny layer was measured by an impedance meter (manufactured by IBS Co.). Two hours later, washing with hot water was repeated, and 15 minutes thereafter the measurement of the moisture content was again conducted. The results are shown in Table 2, in which the moisture contents (unit:$\mu_{\mho}$) are indicated in mean values (N = 10).

(Results)

Table 2

Long-lasting moisturizing effect	15 min. later	2 hours later
Comparative Product No.1	95	50
Comparative Product No.2	100	50
Comparative Product No.3	115	65
Comparative Product No.4	90	60
Comparative Product No.5	110	60
Inventive Product No.1	135	75
Inventive Product No.2	150	85

As can be seen from Table 2 the Inventive Product No. 1 which is a dipropylene glycol/diglyceride mixed system has a greater moisturizing effect which lasts a longer period of time than those systems which are formulated independently with diglyceride and dipropylene glycol. Thus, it is evident that the two compounds exert their effects synergistically. In addition, the Inventive Product No. 2 shows that addition of the component (C) is also effective.

Example 2

Creams having formulations as shown in Table 3 were prepared and their long-lasting moisturizing effects were measured.

Table 3 (wt%)

Components	Comparative Product No.6	Comparative Product No.7	Inventive Product No.3
1) Petrolatum	6.0	6.0	6.0
2) Cetanol	3.0	3.0	3.0
3) Hydrophobic glycerine monostearate	2.0	2.0	2.0
4) POE (20) sorbitan monoglyceric acid ester *	2.0	2.0	2.0
5) Diglyceride **	-	19.0	19.0
6) Olive oil	19.0	-	-
7) Butyl paraben	0.1	0.1	0.1
8) Methyl paraben	0.1	0.1	0.1
9) Dipropylene glycol	10.0	-	10.0
10) Perfume	0.1	0.1	0.1
11) Pure water	57.7	67.7	57.7

* POE (20): polyoxyethylene with 20 moles added oxyethyle groups

** A mixture of 2-ethylhexanoic acid diglyceride (10 parts) and octanoic acid diglyceride (9 parts)

〈Method of Preparation〉

The oil components 1) - 7) in the above table were mixed, heated to dissolve, and kept at 70°C, to which solution a water phase comprising the components 8) - 11) was gradually added and emulsified by a mixer. The emulsion was cooled to 30°C by a heat exchanger to obtain a cream (Inventive Product No. 3). The Comparative Products Nos. 6 and 7 were prepared in the same manner.

〈Test Method〉

A prescribed amount of the above samples were applied to the axilla side of the arm of each subject, left for 2 hours, and then washed off with hot water. The subjects stayed in a room with a constant temperature and humidity of 20°C and 40%. After 15 minutes, the moisture content of the horny layer was measured by an impedance meter (manufactured by IBS Co.). Washing with hot water and the measurement of the moisture content in the horny layer were repeated at 1, 2 and 5 hours following the initial

washing. The results are shown in Table 3, in which the moisture contents (unit:μ_V) are indicated in mean values (N = 4).

〈Results〉

Table 4

Long-lasting moisturizing effect	Blank	Comparative Product No. 6	Comparative Product No. 7	Inventive Product No. 3
Right after initial washing	32	59	55	87
1 hour later	33	55	50	77
2 hours later	33	48	47	63
5 hours later	31	39	35	51

As can be seen from Table 4 the cream according to this invention has a higher moisturizing effect which lasts a longer period of time than those creams which are formulated independently with diglyceride [the component (A)] and dipropylene glycol [the component (B)]. Thus, it is evident that these components exert a synergistic effect in an emulsion system.

Example 3 Milky lotion

〈Formulation〉

Oil Phase:	
Cetanol	0.5 (%)
Petrolatum	1.0
Octanoic acid diglyceride	10.0
POE (10) monooleic acid ester	2.0
Stearic acid	2.0
Water Phase:	
1,3-butylene glycol	3.0
Dipropylene glycol	6.0
Triethanolamine	1.0
Ethyl paraben	0.1
Methyl paraben	0.2
Perfume	0.1
Pure water	74.1
	100.0

〈Method of Preparation〉

Components for the oil phase were mixed, heated to dissolve, and kept at 70 • C. Components for the water phase were also mixed and heated to 70 • C. Then, the former mixture was added to the latter and emulsified by a mixer. The emulsion thus obtained was cooled to an ultimate temperature of 30 • C by a heat exchanger to obtain a milky lotion.

Example 4 Two-phase lotion

〈Formulation〉

Oil Phase:	
Oleic acid diglyceride	5.0 (%)
POE (20) sorbitan tetraoleic acid ester	0.2
Ethyl paraben	0.1
Ethanol	10.0
Water Phase:	
1,3-butylene glycol	4.0
Dipropylene glycol	2.0
Perfume	0.1
Pure water	78.6
	100.0

〈Method of Preparation〉

POE (20) sorbitan tetraoleic acid ester and ethyl paraben were added to oleic acid diglyceride and dissolved. Ethanol was added to this mixture to form the oil phase. The water phase was prepared by adding and dissolving 1,3-butylene glycol,dipropylene glycol and perfume in water. The oil phase was added to the water phase, and the mixture was thoroughly agitated and filtered through a nylon cloth to obtain the final product.

Both cosmetics of this invention as prepared in Examples 3 and 4 exhibited an excellent long-lasting moisturizing effect.

Claims

1. A cosmetic composition comprising:
   (A) 5 to 50% by weight of a diglyceride, selected from di(2-ethylhexanoic acid) glycerine ester, dioctanoic acid glycerine ester and dioleic acid glycerine ester, which are liquid at room temperature, and have melting point of not more than 20 °C, and are obtainable by seperating or purifying a glycerine ester of a fatty acid containing more than 60% of diester, and
   (B) 2 to 90% by weight of a compound selected from the group consisting of dipropylene glycol, propylene glycol and butylene glycol.

2. A cosmetic composition according to claim 1, which further comprises glycerine as a component (C).

Patentansprüche

1. Kosmetisches Mittel, umfassend:
   (A) 5 bis 50 Gew.-% eines Diglycerids, ausgewählt aus Di(2-ethylhexansäure)glycerinester, Dioctansäureglycerinester und Diölsäureglycerinester, die bei Raumtemperatur flüssig sind und die einen

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(Formulation)

Oil Phase:	
Oleic acid diglyceride	5.0 (%)
POE (20) sorbitan tetraoleic acid ester	0.2
Ethyl paraben	0.1
Ethanol	10.0
Water Phase:	
1,3-butylene glycol	4.0
Dipropylene glycol	2.0
Perfume	0.1
Pure water	78.6
	100.0

(Method of Preparation)

POE (20) sorbitan tetraoleic acid ester and ethyl paraben were added to oleic acid diglyceride and dissolved. Ethanol was added to this mixture to form the oil phase. The water phase was prepared by adding and dissolving 1,3-butylene glycol,dipropylene glycol and perfume in water. The oil phase was added to the water phase, and the mixture was thoroughly agitated and filtered through a nylon cloth to obtain the final product.

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* C L M S *

Schmelzpunkt von nicht mehr als 20 °C aufweisen und erhältlich sind durch Abtrennen oder Reinigen eines Glycerinesters einer Fettsäure mit mehr als 60 % Diester, und
(B) 2 bis 90 Gew.-% einer Verbindung, ausgewählt aus der Gruppe, bestehend aus Dipropylenglycol, Propylenglycol und Butylenglycol.

2. Kosmetisches Mittel nach Anspruch 1, zusätzlich Glycerin als Bestandteil (C) umfassend.

Revendications

1. Composition cosmétique comprenant :
(A) 5 à 50 % en poids d'un diglycéride choisi parmi l'ester de glycérine de l'acide di(2-éthylhexanoïque), l'ester de glycérine de l'acide dioctanoïque et l'ester de glycérine de l'acide dioléique, qui sont liquides à température ambiante, ont un point de fusion qui n'est pas supérieur à 20 °C et peuvent être obtenus par séparation ou purification d'un ester de glycérine d'un acide gras contenant plus de 60 % de diester, et
(B) 2 à 90 % en poids d'un composé choisi dans le groupe constitué du dipropylène glycol, du propylène glycol et du butylène glycol.

2. Composition cosmétique selon la revendication 1, qui comprend par ailleurs de la glycérine comme composant (C).