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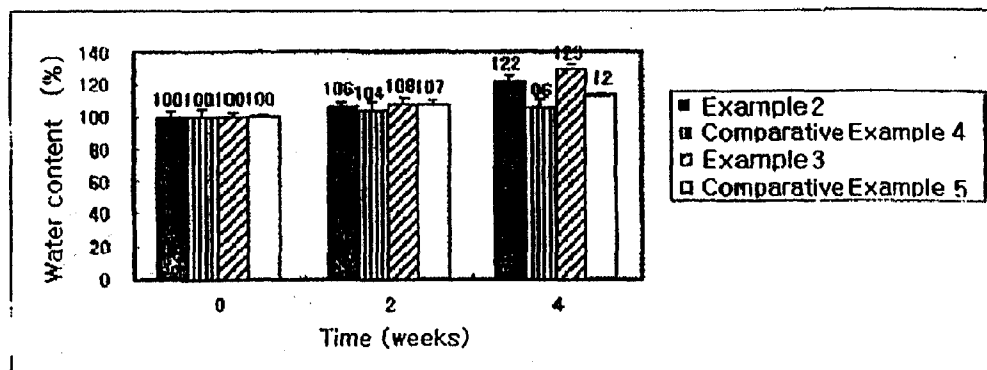
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[Continued on next page]

(54) Title: EMULSION COMPOSITION CONTAINING DOUBLE-STABILIZED CERAMIDE NANO CAPSULE, METHOD FOR MANUFACTURING THE SAME, AND COSMETIC COMPOSITION CONTAINING THE SAME

[Fig. 4]



(57) Abstract: Provided are an emulsion composition containing a nanosized (10 to 1000nm) ceramide capsule particle stabilized by doubly encapsulating with wax matrix and polymer, a preparation method of the emulsion composition, and a skin cosmetic composition using the emulsion composition. More particularly, provided is an emulsion composition having superior stability with time in spite of high ceramide content, which is attained by effectively inhibiting gelling between ceramide molecules through trapping ceramide in solid wax matrix and then encapsulating the wax matrix using polymer. In accordance with the present invention, ceramide, a skin lipid component with excellent moisturizing effect, is prepared into a stable emulsion through being trapped in a nanosized capsule particle, which provides improved dermal delivery and adhesion to skin, and improved and long-lasting moisturizing effect.



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Description

EMULSION COMPOSITION CONTAINING DOUBLE-STABILIZED CERAMIDE NANO CAPSULE, METHOD FOR MANUFACTURING THE SAME, AND COSMETIC COMPOSITION CONTAINING THE SAME

Technical Field

- [1] The present invention relates to an emulsion composition comprising nanosized (10 to 1000 nm) capsule particles in which ceramide is stabilized by double encapsulation with wax matrix and polymer, a preparation method of the emulsion composition, and a skin cosmetic composition using the emulsion composition. More particularly, the present invention relates to an emulsion composition having superior stability with time in spite of high ceramide content, which is attained by effectively inhibiting gelling between ceramide molecules through trapping ceramide in wax matrix and then encapsulating the wax matrix using polymer.

[2]

Background Art

- [3] In general, cosmetics are used to keep the human body clean, enhance appearance, and protect the skin or hair from UV radiation, dryness, or the like to prevent aging. As societies are industrialized and social activities increase, the self-consciousness of expressing oneself more actively and the desire of beautifying skin and maintaining it healthy are increasing significantly. As a result, basic and color cosmetics of various types and forms are researched and developed. Particularly, the customers needs on the skin moisturizing cosmetics that protect the skin from dryness are increasing consistently.
- [4] Skin is composed of three primary layers: the epidermis, the dermis and the hypodermis, and protects the human body from the physical and chemical stimulations from the external environment. Especially, the skin plays an important role of preventing water which takes up approximately 65-70% of the human body, carries various physiologically active substances needed for the human body, and keeps the skin soft and moist from evaporating out of the human body. The epidermis is divided into stratum corneum, stratum granulosum, stratum spinosum and stratum basale (at the junction with the dermis). Cells of the stratum corneum function as bricks, whereas lipids between the keratinocytes function as mortar. In this manner, they form a skin barrier together. The stratum corneum, which is the outermost layer of the epidermis, contains about 10 to 20% of water and prevents water inside the body from

evaporating and blocks excessive penetration of foreign materials into the body. The surface of the stratum corneum is covered by a thin natural protective film consisting of sebum secreted from the sebaceous gland and sweat secreted from the sweat gland, and prevents water from evaporating. It is as if sponge soaked in water (the stratum corneum) is enclosed by waterproof plastic wrap (the natural protective film). Also, the water-soluble natural moisturizing factors (NMF) highly concentrated in the cells of the stratum corneum keep the skin soft and hydrated.

[5] However, because of a variety of reasons, including change in skin environment due to the change of living environment or life pattern, artificial temperature control such as heating and/or cooling, skin stress caused by various stresses occurring in social activities and environmental pollution, UV radiation, frequent washing due to makeup, natural aging of skin with time, and the like, the water content of the stratum corneum decreases and the skin tends to become dry, rough and dark, without luster. To solve this problem, researches are carried out actively to find a way to enhance the skin's moisturizing and barrier functions.

[6] Conventionally, humectants which absorb water or occlusive moisturizers which prevent evaporation of water have been used to increase the water content of the stratum corneum. For humectants, polyols have been mostly used. Examples include glycerine, propylene glycol, 1,3-butylene glycol, polyethylene glycol, and the like. However, these substances give wet and sticky sensations when applied to the skin, because of the viscosity and physical properties characteristic of the polyol. Further, the moisturizing effect is decreased in dry environment, and the moisturizing effect does not last long because they are water-soluble. For occlusive moisturizers, lipids such as emollient oil, ceramide, etc., essential fatty acids, lipid complexes, and the like have been used. Whereas emollient oils have somewhat insufficient moisturizing effect, ceramides provide excellent moisturizing effect. Ceramides are the lipid molecules rich in the stratum corneum and play a very important and effective role of preventing water inside the skin from being lost to outside and providing barrier to external environment. Therefore, they have drawn attentions as a material of choice for skin moisturization in cosmetics.

[7] However, the lipid substances including ceramides impair the product stability when prepared into emulsion, because they interfere with the membrane structure at the interface. Further, the properties of the product tend to change with time because of self-gelling. As such, there are problems to use them in cosmetics, and they have been used only in a very small quantity or restrictively in special product forms.

[8]

Disclosure of Invention

Technical Problem

- [9] The inventors of the present invention have worked to develop an emulsion composition having superior stability with time in spite of high ceramide content, through double encapsulation of ceramide. They doubly encapsulated ceramide using an adequate combination of wax and polymer and, thereby, inhibited interactions between ceramide molecules and prevented gelling with time. Further, they intended to improve dermal delivery and adhesion to skin through nanoparticulation and improve value as cosmetics by improving and sustaining moisturizing effect.
- [10] Accordingly, an object of the present invention is to provide an emulsion composition having superior stability with time and superior and long-lasting moisturizing effect, which comprises doubly encapsulated, nanosized ceramide capsule particles, and a preparation method thereof. Another object of the present invention is to provide a cosmetic composition using the emulsion composition.

[11]

Technical Solution

- [12] In an aspect, the present invention provides an emulsion composition comprising a ceramide capsule comprising: i) ceramide as core; ii) a wax matrix layer which traps the ceramide; and iii) a polymer layer which encapsulates the ceramide trapped wax matrix.
- [13] In another aspect, the present invention provides a preparation method of an emulsion composition containing a ceramide capsule, comprising: mixing ceramide, wax and polymer while heating and dispersing using a homogenizer to prepare a lipophilic mixture; and mixing aqueous ingredients while heating, and emulsifying the aqueous ingredients by slowly adding the lipophilic mixture to the aqueous ingredients.

[14]

Advantageous Effects

- [15] The emulsion composition according to one embodiment of the present invention, in which ceramide is doubly encapsulated by wax and polymer, can effectively prevent gelling of ceramide. Further, in accordance with another embodiment of the present invention, ceramide, a skin lipid component with excellent moisturizing effect, is prepared into a stable emulsion through being trapped in a nanosized capsule particle by general homomixing method, which provides improved dermal delivery and adhesion to skin, and improved and long-lasting moisturizing effect.

[16]

Brief Description of the Drawings

- [17] Fig. 1 shows the result of particle size analysis in Example 1;
- [18] Fig. 2 compares the change in TEWL (transepidermal water loss) value when

applying compositions with ceramide capsule or without ceramide capsule after treating with acetone in mouse;

[19] Fig. 3 compares the change in TEWL (transepidermal water loss) value when applying compositions with ceramide capsule or without ceramide capsule in human; and

[20] Fig. 4 compares the water content in human skin when applying compositions with ceramide capsule or without ceramide capsule.

[21]

Best Mode for Carrying Out the Invention

[22] Hereinafter, the present invention is described in more detail.

[23] In an embodiment of the present invention, the capsule particle in the emulsion composition may have a nanosized diameter in the range from 10 to 1000 nm. When the diameter is greater than 1000 nm, improvement of dermal delivery and adhesion to skin cannot be expected. And, a diameter smaller than 10 nm is not suited for commercialization of cosmetics because an expensive emulsifying apparatus is required, thereby, economical efficiency is low.

[24] In an embodiment of the present invention, a ceramide component of the emulsion composition may be included in an amount of 1.0 to 10.0 weight%, preferably 2.0 to 5.0 weight%, based on the total weight of an O/W (oil-in-water) composition. When the content is below 1.0 weight%, it is difficult to attain superior moisturizing effect. And, when the content exceeds 10.0 weight%, stability aggravates quickly with time because wax and polymer components cannot effectively encapsulate and stabilize the ceramide component.

[25] In an embodiment of the present invention, a solid wax component of the emulsion composition may be included in an amount of 3.0 to 30.0 weight%, preferably 5.0 to 20.0 weight%, based on the total weight of the O/W composition. When the content is below 3.0 weight%, stability with time becomes poor because the ceramide component cannot be trapped sufficiently. And, when the content exceeds 30.0 weight%, it is difficult to prepare the particle into nano size and to attain the advantages of the present invention superior appearance, physical properties, comfort in use, and moisturizing effect - because a hard cream is obtained.

[26] In an embodiment of the present invention, a polymer component of the emulsion composition may be included in an amount of 0.1 to 3.0 weight%, based on the total weight of the composition. When the content is below 0.1 weight%, it is difficult to effectively encapsulate the ceramide trapped wax matrix. And, when the content exceeds 3.0 weight%, application for cosmetics may be difficult because of deterioration of emulsion properties and comfort in use.

- [27] In an embodiment of the present invention, an emulsion composition may comprise: ceramide as effective ingredient of providing moisturizing effect; at least one wax matrix component which is solid at room temperature and selected from the group consisting of fatty alcohol, fatty acid, plant wax, synthetic wax, ozokerite, cetyl palmitate, beeswax, lipid and lipid peptide; and at least one polymer component selected from the group consisting of inulin, inulin derivative, xanthan gum, carbomer, polyacrylamide and PEG-PCL block copolymer.
- [28] In an embodiment of the present invention, the wax component of the emulsion composition may be beeswax, ozokerite, cetyl palmitate, stearic acid, cetostearyl alcohol, batyl alcohol or glyceryl monostearate. The wax component forms a hard crystal at room temperature and, thereby, prevents the ceramide component inside the capsule from diffusing to the aqueous phase or the interface and causing gelling. Therefore, the wax component solves the stability problem of the product due to ceramide. Further, it is safe for the skin and removes foreign body sensation.
- [29] In an embodiment of the present invention, the polymer component of the emulsion composition may be an inulin derivative such as inulin lauryl carbamate, or a block copolymer such as methoxy PEG-114/polyepsilon caprolactone. Since the polymer has surface activity, it effectively encapsulates the wax matrix by adsorbing at the interface between the ceramide trapped wax matrix and water.
- [30] In an embodiment of the present invention, a skin cosmetic composition comprising the emulsion composition may be any kind or type of cosmetics, without special limitation. For example, it may be in the form selected from the group consisting of softening lotion, astringent lotion, nourishing lotion, nourishing cream, massage cream, eye cream, eye essence, essence, cleansing cream, cleansing lotion, cleansing foam, cleansing water, pack, powder, body lotion, body cream, body essence, body cleaner, hair dye, shampoo, rinse, toothpaste, mouthwash, hair conditioner, hair tonic, lotion, ointment, gel, cream, patch and spray.

[31]

Mode for the Invention

- [32] Hereinafter, the present invention is described further in detail through examples. However, the following examples are not intended to limit the scope of the present invention.
- [33]
- [34] Example 1 and Comparative Examples 1-3: Preparation of stabilized ceramide emulsion composition using wax and polymer components
- [35] Oily components (# 1 to 3) given in Table 1 were mixed while heating to 70 °C in a separate container, and dispersed using a homogenizer to prepare a lipophilic mixture.

Aqueous components (# 4 to 6) were mixed while heating to 70 °C and emulsified at 70 °C by slowly adding the lipophilic mixture to the aqueous components. After emulsification followed by quenching in an ice bath, a preservative was added. At last, the emulsion composition was filled in an airtight container and cooled to room temperature using a cooler.

[36] Table 1

[Table 1]

[Table]

Components	Comparative Example 1	Comparative Example 2	Comparative Example 3	Example 1
1. Ceramide	3.0	3.0	3.0	3.0
2. Beeswax	-	10.0	-	10.0
3. Inulin lauryl carbamate	-	-	1.0	1.0
4. Purified water	To 100	To 100	To 100	To 100
5. Glycerine	10.0	10.0	10.0	10.0
6. Butylene glycol	10.0	10.0	10.0	10.0
7. Phenonip (preservative)	0.1	0.1	0.1	0.1

[37]

[38] Test Example 1: Analysis of stability with time, appearance and particle size of stabilized ceramide capsules of Example 1 and Comparative Examples 1-3

[39] Samples were taken from the compositions of Example 1 and Comparative Examples 1-3 the day after the preparation. Stability, appearance and particle size were analyzed on the next day of the preparation and after storing at constant temperature of 45 °C for 30 days. The result is given in Table 2. Particle size was measured after storing at constant temperature of 45 °C for 30 days, using a particle size analyzer.

[40] Table 2

[Table 2]

[Table]

Components	Stability upon preparation	Stability after storing at 45 °C for a month	Appearance	Particle size
Comparative Example 1	Creaming occurred	Complete separation of oil phase	Double layer phase	Immeasurable
Comparative Example 2	Creaming occurred	Complete separation of oil phase	Double layer phase	Immeasurable
Comparative Example 3	Stable	Interparticular aggregation	Cream phase	Immeasurable
Example 1	Stable	Stable	Low-viscosity emulsion phase	250 nm

[41]

[42]

As seen from Table 2, stability was affected by the presence of wax and polymer components. When double encapsulation was not carried out using wax and polymer (Comparative Examples 1-3), preparation was impossible or stability with time was poor. When wax was not used (Comparative Example 3), the ceramide component migrated to the interface and caused gelling. When polymer was not used (Comparative Examples 1 and 2), effective nanoparticulation could not be attained because of high interfacial tension and the oil phase was separated, thereby preparation as cosmetics was impossible. In Example 1, a milk-like emulsion was produced, and the particles uniformly dispersed in the emulsion were entrapping ceramide. Particle size of Example 1 was analyzed with Zetasizer 3000HS (Malvern Instruments Ltd.). As seen in Fig. 1, the result was very good, with the average particle diameter being 148.4 nm, and the polydispersity, a measure of the deviation of particle size, being 0.215.

[43]

[44]

Examples 2-3 and Comparative Example 4-5: Preparation of cosmetic composition comprising emulsion containing stabilized ceramide nanocapsule

[45]

In order to evaluate the moisturizing effect of the stabilized ceramide nanocapsule, a ceramide capsule base (emulsion type) was prepared with the composition of Example 1, and added to a common emulsion (O/W) type cosmetic composition (Example 2 and Comparative Example 4) and a gel type cosmetic composition (Example 3 and

Comparative Example 5), prepared with the composition in Table 3 (unit: weight%) at a concentration of 10%. However, the concentration of the stabilized ceramide capsule is not limited to this specific example.

[46] Table 3

[Table 3]

[Table]

	Ingredients	Ex. 2	Ex. 3	Comp. Ex. 4	Comp. Ex. 5
Oily component	Stearic acid	1.0	-	1.0	-
	Cetearyl alcohol	0.2	-	0.2	-
	Hydrogenated oil	0.7	-	0.7	-
	Lipophilic glyceryl stearate	0.5	-	0.5	-
	Hydrogenated lecithin/C ₁₂ -C ₁₆ alcohol/palmitic acid	1.0	-	1.0	-
	Preservative	0.3	-	0.3	-
	Polydecene	4.0	-	4.0	-
	Meadowfoam seed oil	1.0	-	1.0	-
	Pentaerythrityl tetraisostearate	3.0	-	3.0	-
	Dimethicone	0.5	-	0.5	-
	Cetyl octanoate	2.0	-	2.0	-
	Decyl cocoate	1.0	-	1.0	-
	Cyclomethicone	3.0		3.0	
	Tocopheryl acetate	0.1	-	0.1	-
Aqueous component 1	Purified water	To 100	To 100	To 100	To 100
	Glycerine	4.0	4.0	4.0	4.0
	Butylene glycol	5.0	3.0	5.0	3.0
	Disodium EDTA	0.02	0.02	0.02	0.02
	TEA	0.15	-	0.15	-
	Preservative	0.2	-	0.2	-
	Trehalose	-	1.0	-	1.0
	Hyaluronic acid	-	2.0	-	2.0
	PEG-75	-	1.0	-	1.0
	Potassium hydroxide	-	0.08	-	0.08
	Stabilized ceramide capsule	10.0	10.0	-	-

Aqueous component 2	Carbomer 1% aqueous solution	12.0	20.0	12.0	20.0
	Xanthan gum	-	0.1	-	0.1
Alcohol component	95% ethanol	-	5.0	-	5.0
	Polyoxyethylene hydrogenated castor oil	-	0.3	-	0.3
	Preservative	-	0.3	-	0.3
	Fragrance	-	Adequate	-	Adequate

[47]

[48] 1. Preparation of emulsion (O/W) in Example 2 and Comparative Example 4

[49] (1) Oily component was mixed uniformly while heating (70-75 °C).

[50] (2) Aqueous component 1 was mixed uniformly while heating (70-75 °C).

[51] (3) The oily component of (1) was added to the aqueous component 1 of (2) while stirring at 70-75 °C. Aqueous component 2 was added continuously to the resultant emulsion type cosmetic composition, and cooled to 28-30 °C.

[52]

[53] 2. Preparation of gel in Example 3 and Comparative Example 5

[54] (1) Aqueous component 1 was mixed uniformly.

[55] (2) Alcohol component was mixed uniformly.

[56] (3) Aqueous component 2 was slowly added to the aqueous component 1 of (1) while stirring. After thickening, the alcohol component was added continuously to obtain a gel type cosmetic composition.

[57]

[58] Test Example 2: Evaluation of skin moisturizing effect of prepared cosmetic composition

[59] 1. Animal test

[60] Acetone was periodically applied on the back of 8-10 weeks old young nude mice, twice a day, for 5 days, to damage the skin barrier function. TEWL (transepidermal water loss) was measured using an evaporimeter. Only the mice that showed a TEWL value of 40 g/m²/hr or more were subjected to the following experiment. TEWL was measured at predetermined intervals, while applying the compositions of Examples 2-3 and Comparative Examples 4-5 at a dose of 200 µL per 5 cm² of skin area, twice a day, for 3 consecutive days. The measurement result is shown in Fig. 2.

[61] As seen in Fig. 2, TEWL was lower in the cosmetic compositions containing the stabilized ceramide capsule (Examples 2-3) with time. This indicates that the compositions containing the stabilized ceramide capsule (Examples 2-3) provide better

moisturizing effect and better skin barrier effect than those not containing the capsule (Comparative Examples 4-5).

[62] 2. Human test

[63] Fifteen male and female adults complaining about skin dryness or suspected of dry skin were divided into two groups. Subjects of each group applied the cosmetic compositions of Example 2 & Comparative Example 4, and Example 3 & Comparative Example 5 on the face, twice a day, for 4 weeks. Moisturizing effect was compared by measuring TEWL under constant-temperature, constant-humidity condition (24 °C, R.H. 40%), prior to starting application and at 1 week, 2 weeks and 4 weeks. The result is shown in Fig. 3. Additionally, skin's water content was measured using a corneometer. The result is shown in Fig. 4.

[64] (1) Measurement of TEWL

[65] TEWL is measured by calculating the content of water evaporating from the skin on area and time from the readout of temperature and humidity sensors. TEWL is measured as follows.

[66] 1) Maintain temperature and humidity constant and allow only the measurer and the subject to stay in the measuring room in order to prevent the flow of air.

[67] 2) Place the TEWL probe on the measurement area of the subject.

[68] 3) Softly touch the probe on the skin and maintain the angle with the surface at 90 degrees.

[69] 4) After waiting for 1-3 minutes, record the TEWL value when it does not change any more.

[70] 5) Grip the handle as far from the probe as possible, in order not the body temperature of the measurer to be transferred.

[71] 6) Calculate the quantity of water evaporated per unit area per unit time ($\text{g}/\text{m}^2/\text{h}$).

[72] As seen in Fig. 3, TEWL was lower in the cosmetic compositions containing the stabilized ceramide capsule (Examples 2-3) with time, as in Fig. 2. Accordingly, it can be confirmed that the compositions containing the stabilized ceramide capsule (Examples 2-3) provide better moisturizing effect than those not containing the capsule (Comparative Examples 4-5).

[73] Comparing Example 2 and Example 3, Example 2 showed slightly better moisturizing effect at the same stabilized ceramide capsule content. It may be because a emulsion type composition provides better moisturizing effect than an gel, in general.

[74] (2) Measurement of skin's water content using corneometer

[75] A corneometer is an apparatus which measures the water content in the epidermis by measuring an water ion concentration using a sensor. Skin's water content is measured as follows.

[76] 1) Place the probe of a corneometer on the measurement area.

[77] 2) Touch the probe on the skin, then the capacitance of the skin measured through a sensor is displayed on the screen.

[78] 3) Repeat measurement at different measurement areas.

[79] 4) Wipe the sensor after each measurement using a tissue or Kim-Wipes.

[80] As seen in Fig. 4, the water content was higher in Example 2-3 than in Comparative Examples 4-5 with time. This indicates that Examples 2-3 provide better and long-lasting moisturizing effect than Comparative Examples 4-5.

[81]

[82] Apart from the TEWL and water content measurements, subjective effect evaluation was also carried out by making the subjects to fill out a questionnaire on the improvement effect of skin dryness, at the end of the test. The result of the questionnaire is given in Table 4.

[83] Table 4

[Table 4]

[Table]

Test groups	Number of respondents			
	Very good	Good	Moderate	Poor
Example 2	7	7	1	0
Comparative Example 4	3	10	2	0
Example 3	3	7	3	2
Comparative Example 5	0	5	6	4

[84]

[85] As seen in Table 4, the subjects who applied the compositions of Examples 2-3 felt better moisturizing effect than those who applied the compositions of Comparative Examples 4-5.

[86]

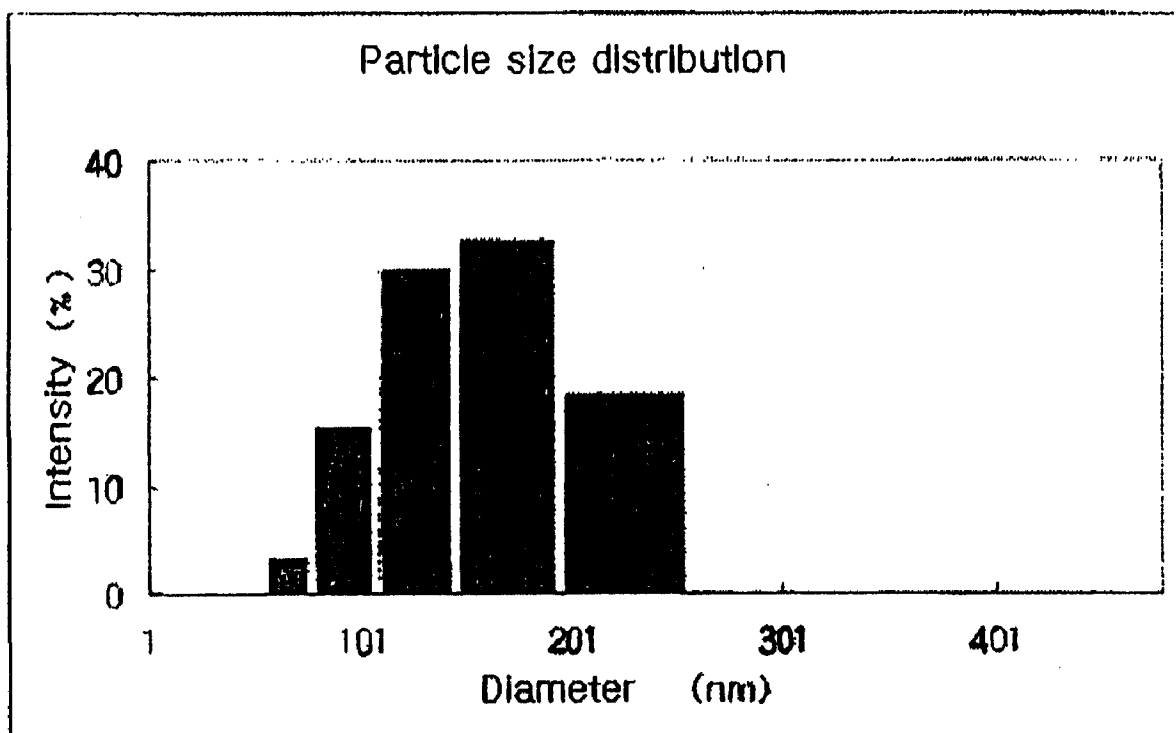
[87] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

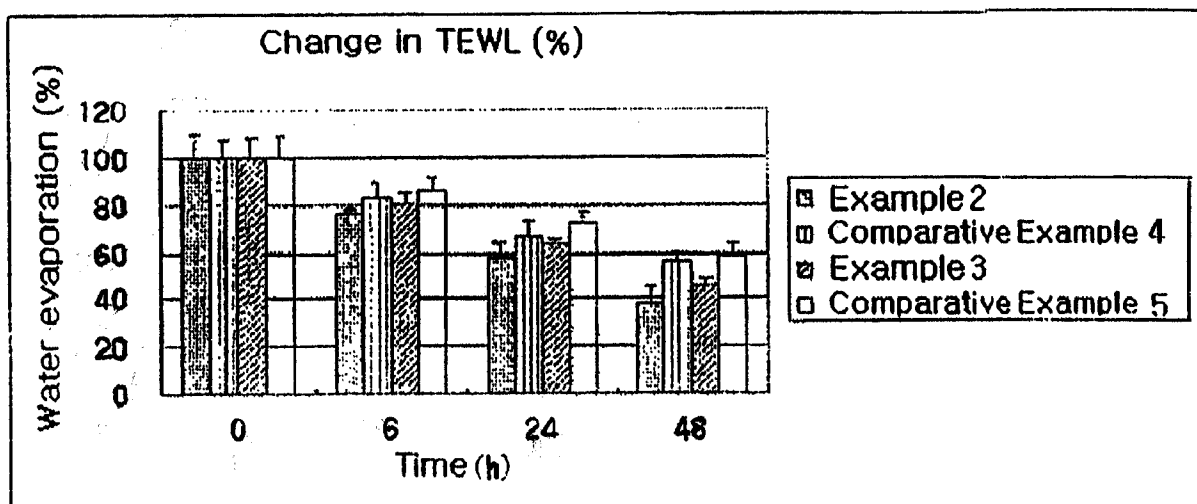
- [1] An emulsion composition comprising a ceramide capsule comprising:
i) ceramide as core;
ii) a wax matrix layer which traps the ceramide; and
iii) a polymer layer which encapsulates the ceramide trapped wax matrix.
- [2] The emulsion composition of claim 1, wherein the ceramide capsule has a diameter in the range from 10 to 1000 nm.
- [3] The emulsion composition of claim 1, wherein the ceramide is present in an amount of 1.0 to 10.0 weight% based on the total weight of the composition.
- [4] The emulsion composition of claim 1, wherein the wax is present in an amount of 3.0 to 30.0 weight% based on the total weight of the composition.
- [5] The emulsion composition of claim 1, wherein the polymer is present in an amount of 0.1 to 3.0 weight% based on the total weight of the composition.
- [6] The emulsion composition of claim 1, wherein the wax is solid at room temperature.
- [7] The emulsion composition of claim 6, wherein the wax is at least one selected from the group consisting of fatty alcohol, fatty acid, plant wax, synthetic wax, ozokerite, cetyl palmitate, beeswax, lipid and lipid peptide.
- [8] The emulsion composition of claim 1, wherein the polymer is at least one selected from the group consisting of inulin, xanthan gum, inulin lauryl carbamate, carbomer, polyacrylamide and PEG/polyepsilon polycaprolactone block copolymer.
- [9] A skin cosmetic composition comprising the emulsion composition of any of claims 1 to 8.
- [10] The skin cosmetic composition of claim 9, the composition being in the form selected from the group consisting of softening lotion, astringent lotion, nourishing lotion, nourishing cream, massage cream, eye cream, eye essence, essence, cleansing cream, cleansing lotion, cleansing foam, cleansing water, pack, powder, body lotion, body cream, body essence, body cleaner, hair dye, shampoo, rinse, toothpaste, mouthwash, hair conditioner, hair tonic, lotion, ointment, gel, cream, patch and spray.
- [11] A preparation method of an emulsion composition comprising a ceramide capsule, comprising:
mixing ceramide, wax and polymer while heating and dispersing using a homogenizer to prepare a lipophilic mixture; and
mixing aqueous ingredients while heating and emulsifying the aqueous ingredients by slowly adding the lipophilic mixture to the aqueous ingredients.

- [12] The preparation method of claim 11, wherein the ceramide is included in an amount of 1.0 to 10.0 weight% based on the total weight of the composition.
- [13] The preparation method of claim 11, wherein the wax is included in an amount of 3.0 to 30.0 weight% based on the total weight of the composition.
- [14] The preparation method of claim 11, wherein the polymer is included in an amount of 0.1 to 3.0 weight% based on the total weight of the composition.
- [15] The preparation method of claim 11, wherein the wax is solid at room temperature.
- [16] The preparation method of claim 15, wherein the wax is at least one selected from the group consisting of fatty alcohol, fatty acid, plant wax, synthetic wax, ozokerite, cetyl palmitate, beeswax, lipid and lipid peptide.
- [17] The preparation method of claim 11, wherein the polymer is at least one selected from the group consisting of inulin, xanthan gum, inulin lauryl carbamate, carbomer, polyacrylamide and PEG/polyepsilon polycaprolactone block copolymer.
- [18] The preparation method of claim 11, wherein the aqueous ingredients comprise purified water, glycerine or alkylene glycol.

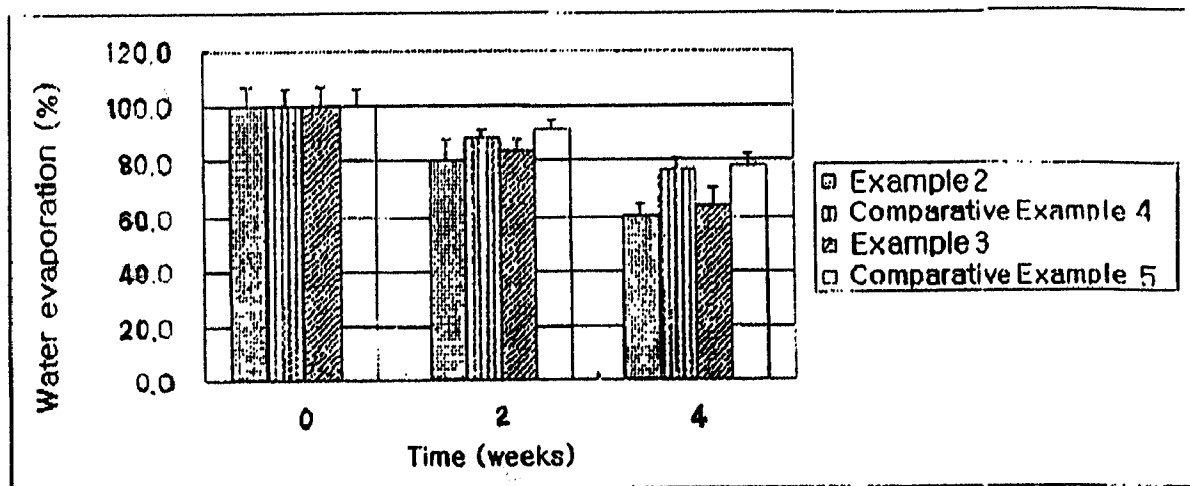
[Fig. 1]



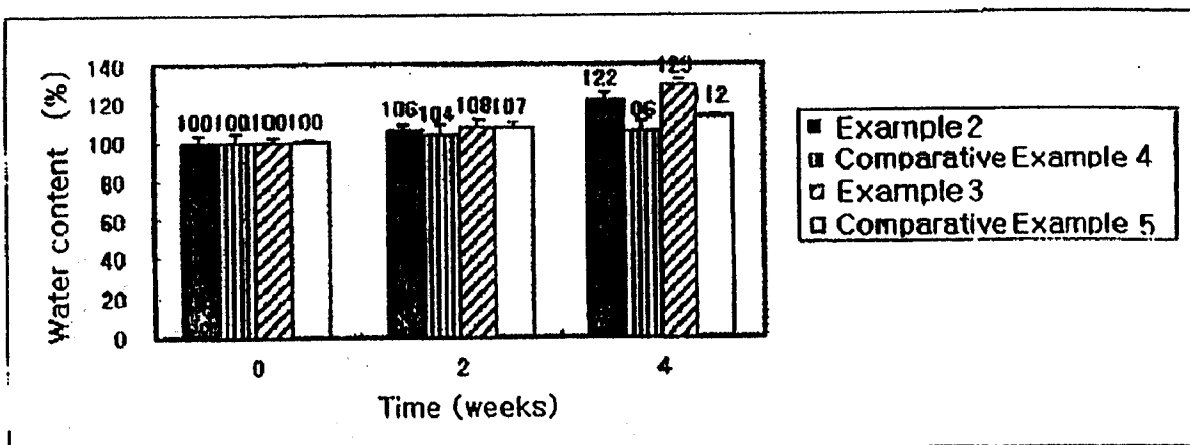
[Fig. 2]



[Fig. 3]



[Fig. 4]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/002464**A. CLASSIFICATION OF SUBJECT MATTER***A61K 8/68(2006.01)i, A61Q 1/12(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)

IPC 8 A61K 8/68, 7/00, 7/06, 7/027, A61Q 1/12

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)

eKIPASS(KIPO internal), PubMed, JPO, USPTO, Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 0182599 B1 (JEIL-JEDANG LTD. Co.) 1 May 1999 See Abstract, Claims 1, 4 and 6	1-18
A	JP 2004-244387 A (FUJI CAPSULE Inc. Co.) 2 September 2004 See Abstract, Paragraph 0003, 0009 and 0010, Example 1	1-18
A	FR 2759902 A1 (CLARINS) 28 August 1998 See Abstract	1-18
A	JP 2003-183125 A (LORET AL Co.) 3 July 2003 See Abstract, Claims 1-4	1-18



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

14 OCTOBER 2008 (14.10.2008)

Date of mailing of the international search report

14 OCTOBER 2008 (14.10.2008)

Name and mailing address of the ISA/KR

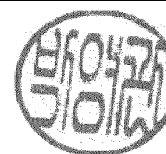
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2008/002464

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