

DESCRIPTION

OIL-IN-WATER TYPE EMULSION COMPOSITION FOR CREAMY COSMETICS, AND COSMETIC

5 Technical Field

[0001]

The present invention relates to an oil-in-water emulsion composition for a creamy cosmetic, as well as to a cosmetic.

10 Background Art

[0002]

An emulsion composition is obtained by mixing oil components and water-soluble components, followed by homogeneous emulsification, and is mainly used in skin-care products such as cream or milky lotion in cosmetic application. These skin-care products are aimed at effectively compensate moisture and oil. Needless to say, they are required to realize excellent feeling in use. On the other hand, water contents may be separated with the passage of time after production. It is concerned that occurrence of such water separation may adversely affect the quality of an emulsion composition. Therefore, an emulsion composition is required to have not only excellent feeling in use but also stability of emulsification with the passage of time (hereinafter referred to as emulsification stability), and hence, it is essential that the so-called amphiphilic material be contained in a composition as an emulsifier. In particular, improving emulsification stability by using a synthetic surfactant that is highly effective as an emulsifier and can be produced at a low cost has been generally conducted.

[0003]

25 On the other hand, some synthetic surfactants easily induce an irritating reaction on skin, causing the skin to be rough. Therefore, for an emulsion composition for a cosmetic that is frequently used for skin, not a few consumers require products that have excellent emulsification stability and feeling in use without containing a synthetic surfactant.

[0004]

30 As the technology for producing an emulsion composition for a cosmetic without containing a synthetic surfactant, a method can be given in which a higher alcohol is contained, as disclosed in the cited documents 1 and 2. By producing an emulsion composition for a cosmetic by containing a higher alcohol, it is possible to improve its emulsification stability.

35 A method is also proposed in which an emulsion composition for a cosmetic is produced without containing a synthetic surfactant by using both oil components that are liquid at normal temperature and oil components that are solid at normal temperature, and stirring these oil components at a high speed under heating conditions with an aqueous solution (aqueous gel) of an alkali-neutralized salt of a carboxyvinyl polymer (see Patent Document 3).

40 Further, also proposed is production of an emulsion composition for a cosmetic without containing a synthetic surfactant by including a water-soluble polymer such as carrageenan (see

Patent Document 4).

Related Art Documents

Patent Documents

5 [0005]

Patent Document 1: JP-A-H06-271421

Patent Document 2: JP-A-H07-267814

Patent Document 3: JP-A-2004-224722

Patent Document 4: JP-A-H08-245363

10 Patent Document 5: Japan Patent No. 5658845

Patent Document 6: JP-A-S59-139920

Patent Document 7: JP-A-2014-125428

Summary of the Invention

15 Problems to be solved by the Invention

[0006]

However, stabilization of an emulsion composition with a higher alcohol requires incorporation of a relatively large amount of a higher alcohol. Therefore, depending on the composition, feeling in use may be deteriorated (e.g. feeling of being thickly coated or powdery feel).

20 Therefore, it is more preferable if stability of an emulsion composition can be improved without using a higher alcohol.

Further, in a method where oil components for a cosmetic which are liquid at normal temperature and oil components for a cosmetic which are solid at normal temperature are stirred at a high speed under heating conditions with an aqueous gel, the production process becomes slightly complicated since the adjustment of the aqueous gel is required. In addition, there is a problem that if a large amount of gel is contained in an emulsion composition, feeling in use becomes difficult to be controlled.

Further, when a water-soluble polymer is used, viscosity or hardness of an emulsion changes with the passage of time, causing a problem regarding storage. In addition, both an aqueous phase and an oil phase are not dissolved easily, and hence, an emulsion tends to be swollen to cause formation of lumps. As a result, a problem arises that it becomes necessary to dissolve it in a polyvalent alcohol such as glycerin in advance, or to apply a mechanical force by means of a homogenizer or the like, thus making steps complicated.

[0007]

35 The inventors of the present invention made intensive studies, and they successfully realized excellent emulsification stability without using a synthetic surfactant by containing, as fatty acids and fatty acid alkali salts, behenic acid, stearic acid and palmitic acid and alkali salts of these three types of fatty acids in an emulsion composition, and the invention was completed. The invention was already granted a patent (see Patent Document 5).

40 [0008]

Patent Document 6 discloses a technology of using, in cosmetics such as a milky lotion, cream and foundation, an oil-in-water emulsion containing three or more in total of fatty acids including at least one of straight-chain saturated fatty acids such as behenic acid, stearic acid and palmitic acid and at least one of fatty acids that are liquid at room temperature in an amount of 0.5 to 5 wt% in total in terms of salts. However, in this technology, since a synthetic surfactant is used or a large amount of a higher alcohol is contained, rough skin occurs or feeling in use is deteriorated.

Patent Document 7 states that an oil-in-water emulsion containing behenic acid, stearic acid and palmitic acid and these alkali salts are used as a cosmetic for eyelashes. However, in this technology, a synthetic surfactant is used, or a triethanol amine salt is used as an alkaline salt.

This emulsion has a composition that is substantially different from that in Patent Document 5.

[0009]

The inventors of the present invention made extensive studies continuously on an emulsion composition that does not contain a synthetic surfactant and can exhibit excellent emulsification stability. As a result, they have found that emulsification stability is strongly affected by the composition of fatty acids rather than the composition of fatty acid alkali salts in an emulsion composition.

That is, it can be assumed that, in such an emulsion composition, since fatty acid alkali salts serve as an emulsifier, the composition of fatty acid alkali salts exerts strong effects on emulsification stability than the composition of fatty acids. However, surprisingly, the inventors have found that, actually, contrary to that mentioned above, emulsification stability is strongly affected by the composition of fatty acids rather than the composition of fatty acid alkali salts.

The inventors of the present invention have found that, by incorporating behenic acid, stearic acid and palmitic acid in an emulsified composition at a specific ratio, it is possible to obtain an oil-in-water emulsion composition for a creamy cosmetic having a significantly improved emulsification stability by using a wide variety of fatty acid alkali salts.

[0010]

The present invention has been made in view of the above-mentioned circumstances, and is aimed at providing an oil-in-water emulsion composition for a creamy cosmetic and a cosmetic that substantially do not contain any synthetic surfactant and has both excellent stability that resists water separation and excellent feeling in use.

Means for Solving the Problem

[0011]

In order to attain the subject, the oil-in-water emulsion composition for a creamy cosmetic of the present invention is an oil-in-water emulsion composition comprising water, oil components, fatty acids and fatty acid alkali salts, having a viscosity of 500 to 100,000 mPa·s,

the entire composition substantially comprising no synthetic surfactant,

behenic acid, stearic acid and palmitic acid being contained as the fatty acids,

the total content of the fatty acids and the fatty acid alkali salts being 3 to 11 wt%,

the weight ratio of the behenic acid/the stearic acid/the palmitic acid in the fatty acids being

15 to 65/5 to 85/0 to 80,

the fatty acid alkali salts being a sodium salt or a potassium salt of a C12-C22 saturated fatty acid, and

the fatty acid alkali salts being contained in an amount of 20 to 45 wt% relative to the total content of the fatty acids and the fatty acid alkali salts contained in the oil-in-water emulsion composition for a creamy cosmetic.

In the oil-in-water emulsion composition for a creamy cosmetic of the present invention, it is preferred that the oil components other than behenic acid, stearic acid and palmitic acid be contained in an amount of 2 to 20 wt% in the entire oil-in-water emulsion composition for a creamy cosmetic, and it is preferred that only behenic acid, stearic acid and palmitic acid be contained as the fatty acids.

Further it is preferred that the oil-in-water emulsion composition for a creamy cosmetic of the present invention be obtained by adding the oil phase containing a fatty acid to the water phase containing the fatty alkali salts, followed by emulsification.

[0012]

Furthermore, the cosmetic of the present invention comprises the above-mentioned oil-in-water emulsion composition for a creamy cosmetic.

Advantageous Effects of the Invention

[0013]

According to the present invention, it is possible to provide an oil-in-water emulsion composition for a creamy cosmetic and a cosmetic that substantially do not contain any synthetic surfactant and have both excellent stability that resists water separation and excellent feeling in use.

Brief Description of the Drawings

[0014]

Fig. 1 is a view showing the results of Experiment 1 conducted to confirm the effects on emulsification stability of the composition of the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic according to the embodiment of the present invention;

Fig. 2 is a view showing the results of Experiment 2 (fatty acid compositions P1 to P9) conducted for specifying a preferable amount ratio of the fatty acids in the oil-in-water emulsion composition for a creamy cosmetic according to the embodiment of the present invention;

Fig. 3 is a view showing the results of Experiment 2 (fatty acid compositions P10 to P18) conducted for specifying a preferable amount ratio of the fatty acids in the oil-in-water emulsion composition for a creamy cosmetic according to the embodiment of the present invention;

Fig. 4 is a ternary diagram showing a preferable amount ratio of the fatty acids in the oil-in-water emulsion composition for a creamy cosmetic according to the embodiment of the present invention;

Fig. 5 is a view showing the results of Experiment 3 conducted for specifying a preferable total content of the fatty acids and the fatty acid alkali salts in the oil-in-water emulsion composition

for a creamy cosmetic according to the embodiment of the present invention; and

Fig. 6 is a view showing the results of Experiment 4 for specifying a preferable amount ratio of the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic according to the embodiment of the present invention.

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Mode for Carrying out the Invention

[0015]

Hereinbelow, a detailed explanation will be made on a preferred embodiment of the present invention.

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The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment of the present invention is an oil-in-water emulsion composition comprising water, oil components, fatty acids and fatty acid alkali salts, having a viscosity of 500 to 100,000 mPa·s,

the entire composition substantially comprising no synthetic surfactant,

behenic acid, stearic acid and palmitic acid being contained as the fatty acids,

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the total content of the fatty acids and the fatty acid alkali salts being 3 to 11 wt%,

the weight ratio of the behenic acid/the stearic acid/the palmitic acid in the fatty acids being 15 to 65/5 to 85/0 to 80,

the fatty acid alkali salts being a sodium salt or a potassium salt of a C12-C22 saturated fatty acid, and

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the fatty acid alkali salts being contained in an amount of 20 to 45 wt% relative to the total content of the fatty acids and the fatty acid alkali salts contained in the oil-in-water emulsion composition for a creamy cosmetic.

[0016]

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That is, in an emulsion composition for a cosmetic, if a synthetic surfactant is not used or the amount of a higher alcohol is reduced, the emulsification stability thereof is significantly reduced. In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, by using, as the fatty acids, behenic acid, stearic acid and palmitic acid at a specific composition, and by using, as the fatty acid alkali salts, a sodium salt or potassium salt of a C12-C22 saturated fatty acid, formation of a liquid crystal is promoted in an outer phase, whereby emulsifiability and stability are significantly improved. At the same time, hardness is generated (increase in viscosity) in an emulsified product, and fluidity of the outer phase is suppressed, whereby emulsification can be prevented from becoming unstable.

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In addition, by combined use of a higher alcohol that has conventionally been known as an approach for realizing stable emulsification without using a synthetic surfactant, since the amount of a higher alcohol is relatively large (1% or more), deterioration in feeling in use such as feel of being thickly coated or poor compatibility tends to occur. On the other hand, according to the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, since sufficient emulsification stability can be obtained in a state where no higher alcohol is added, it is possible to obtain an emulsion composition that is excellent both in emulsification stability and feeling in use.

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[0017]

The "oil-in-water emulsion composition for a creamy cosmetic" according to this embodiment includes a wide variety of emulsion compositions used for make-up or beauty.

As a product comprising the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, moisturizing cream, cleansing cream, cold cream, vanishing cream, nourishing cream, foundation cream, shaving cream, hair cream, hand cream, body cream, shampoo, conditioner, milky lotion or the like can be given.

[0018]

The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment comprises three acids, i.e. behenic acid, stearic acid and palmitic acid, as the "fatty acids".

Further, the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment comprises a sodium salt or a potassium salt of a C12-C22 saturated fatty acid such as behenic acid, stearic acid, palmitic acid, myristic acid, and lauric acid as the "fatty acid alkali salts".

[0019]

These fatty acid alkali salts can be contained in the oil-in-water emulsion composition for a creamy cosmetic by reacting a fatty acid and an alkali in a reaction system when producing the oil-in-water emulsion composition for a creamy cosmetic.

Further, the fatty acid alkali salts can be contained in the oil-in-water emulsion composition for a creamy cosmetic by blending fatty acid alkali salts that have been prepared in advance.

Further, by using in combination a reaction between a fatty acid and an alkali in a reaction system and blending of fatty acid alkali salts that have been prepared in advance, it is possible to allow the fatty acid alkali salts to be contained in the oil-in-water emulsion composition for a creamy cosmetic.

[0020]

The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment is preferably obtained by adding an oil phase containing the fatty acids to a water phase containing the fatty acid alkali salts, followed by emulsification. For example, it is preferable that the oil-in-water emulsion composition be produced as follows:

First, phase A containing behenic acid, stearic acid and palmitic acid as an oil component is prepared.

Further, phase B containing C12-C22 saturated fatty acids for obtaining the fatty acid alkali salts by reacting with an alkali is prepared.

[0021]

As for the saturated fatty acids in the phase B, only one or two or more thereof may be contained.

If the saturated fatty acids in the phase B consist of the behenic acid, the stearic acid and the palmitic acid, the amount ratio thereof may be different from the amount ratio of the fatty acids, i.e. behenic acid, stearic acid and palmitic acid in the phase A.

That is, if a behenic acid alkali salt, a stearic acid alkali salt and a palmitic acid alkali salt are contained as the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, the weight ratio of the behenic alkali salt, the stearic alkali

salt and the palmitic alkali salt may be different from the weight ratio of behenic acid, stearic acid and palmitic acid in the fatty acids.

[0022]

Further, as the water-soluble component, phase C containing an alkali in an amount equivalent to that of the saturated fatty acid in the phase B is prepared.

Then, the saturated fatty acids in phase B are added to phase C, mixed and stirred to prepare a mixture containing the fatty acid alkali salts. Subsequently, phase A is added to the resulting mixture, and emulsification is conducted homogeneously by using an emulsification equipment, whereby the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment can be produced.

[0023]

As the fatty acid alkali salt contained in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, a sodium salt or a potassium salt of a C12-C22 saturated fatty acid can be used. A potassium salt is particularly preferable.

The reason is that, by allowing the composition of the fatty acid alkali salts to be one as mentioned above, it is possible to allow the resulting oil-in-water emulsion for a creamy cosmetic to resist water separation, to have excellent feeling in use and to have an appropriate viscosity.

From such a point of view, it is more preferred that the fatty alkali acid salts be composed of a sodium salt or a potassium salt of a C12-C18 saturated fatty acid, with a sodium salt or a potassium salt of a C14-C18 saturated fatty acid being further preferable.

[0024]

The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment comprises 15 to 65 wt% of behenic acid, 5 to 85 wt% of stearic acid and 0 to 80 wt% of palmitic acid relative to 100 wt% of the total of the fatty acids.

That is, the fatty acids are contained in a weight ratio in a range surrounded by the following 4 points in Fig. 4: (B=65, S=35, P=0); (B=65, S=5, P=30); (B=15, S=5, P=80); and (B=15, S=85, P=0).

By allowing the amount ratio of behenic acid, stearic acid and palmitic acid to be in this range, the resulting oil-in-water emulsion for a creamy cosmetic can resist water separation, have excellent feeling in use and have an appropriate viscosity.

[0025]

From this point of view, it is more preferred that the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment comprise 20 to 60 wt% of behenic acid, 10 to 80 wt% of stearic acid and 0 to 70 wt% of palmitic acid relative to 100 wt% of the total of fatty acids.

That is, it is more preferred that fatty acids be contained in a weight ratio in a range surrounded by the following 4 points in Fig. 4: (B=60, S=40, P=0); (B=60, S=10, P=30); (B=20, S=10, P=70); and (B=20, S=80, P=0).

[0026]

It is further preferred that the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment comprise 20 to 60 wt% of behenic acid, 20 to 50 wt% of stearic acid

and 10 to 60 wt% of palmitic acid relative to 100 wt% of the total of fatty acids.

That is, it is further preferred that fatty acids be contained in a weight ratio in a range surrounded by the following 5 points in Fig. 4: (B=60, S=30, P=10); (B=60, S=20, P=20); (B=20, S=20, P=60); (B=20, S=50, P=30); and (B=40, S=50, P=10).

5 [0027]

In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, it is preferred that the total content of the fatty acids and the fatty acid alkali salts contained in the oil-in-water emulsion for a creamy cosmetic be 3 to 11 wt% relative to the total amount of the oil-in-water composition for a creamy cosmetic.

10 By allowing the total content of the fatty acids and the fatty acid alkali salts to be within this range, the resulting oil-in-water emulsion composition for a creamy cosmetic can resist ~~to~~ water separation, have excellent feeling in use and have an appropriate viscosity.

From this point of view, the total content of the fatty acids and the fatty acid alkali salts is more preferably 4 to 11 wt%, further preferably 5 to 11 wt% and still further preferably 8 to 10 wt% relative to the total amount of the oil-in-water emulsion composition for a creamy cosmetic.

15 [0028]

The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment is produced such that it has hardness in accordance with the viscosity thereof. It can be particularly preferably used when the viscosity is 500 to 100,000 mPa · s.

20 [0029]

In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, the fatty acid alkali salts serve as an emulsifier.

In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, it is preferred that the content of the fatty acid alkali salts be 20 to 45 wt% relative to the total content of the fatty acids and the fatty acid alkali salts.

25 The reason therefor is that, by allowing the content of the fatty acid alkali salts to be within this range, the resulting oil-in-water emulsion composition for a creamy cosmetic can resist ~~to~~ water separation, have excellent feeling in use and have an appropriate viscosity.

From this point of view, the content of the fatty acid alkali salts is more preferably 20 to 42 wt%, further preferably 20 to 40 wt%, relative to the total content of the fatty acids and the fatty acid alkali salts.

[0030]

In production of the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, when the fatty acid alkali salts are incorporated in the oil-in-water emulsion composition for a creamy cosmetic by reacting fatty acids and an alkali, the alkali is used in an amount equivalent to that of the amount of the C12-C22 saturated fatty acid for obtaining the fatty acid alkali salts.

As the alkali, potassium hydroxide, sodium hydroxide or the like can be used. Potassium hydroxide is preferably used.

40 [0031]

The oil components excluding behenic acid, stearic acid and palmitic acid, that are raw materials for the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, are not particularly restricted as long as they are oil components incorporated into a normal oil-in-water emulsion composition. For example, acyl glycerol such as olive oil, almond oil, sesame oil, avocado oil, castor oil, camellia oil, macadamia nut oil, hazelnut oil, kukui nut oil, rose hip oil, apricot kernel oil, rapeseed oil, baobab oil, argania spinosa kernel oil, sunflower oil, rice bran oil, linseed oil, corn oil, grape seed oil, wheat germ oil, rice germ oil, cotton seed oil, soybean oil, peanut oil, tea seed oil, evening primrose oil, mink oil, egg yolk oil, coconut oil, palm oil, palm kernel oil, shea butter, cocoa butter, beef tallow, mutton tallow, lard, and horse fat, hydrogenated oil, fractionated oil, and transesterified oil thereof, waxes such as jojoba oil, beeswax, candelilla wax, carnauba wax, Japan wax, jojoba wax, cotton wax, sunflower wax, rice wax and lanolin, hydrocarbon oil such as squalane and squalene, and a higher alcohol such as jojoba alcohol, hydrogenated jojoba alcohol, lauryl alcohol, cetyl alcohol, stearyl alcohol, behenyl alcohol, myristyl alcohol, oleyl alcohol and cetostearyl alcohol or the like can be appropriately contained.

In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, the content of the oil components excluding behenic acid, stearic acid and palmitic acid is preferably 2 to 20 wt%, for example, relative to the total amount of the oil-in-water emulsion composition for a creamy cosmetic.

[0032]

The water-soluble components that are raw materials of the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment are not limited to water. Other components such as a moisturizer can be contained. As the moisturizer, glycerin, propanediol, 1,3-butylene glycol, sorbitol, xylitol, inositol, trehalose, glucosyl trehalose, betaine, glucose, maltose, maltitol, D-mannitol, sucrose, fructose, raffinose, sodium hyaluronate, glucosyl ceramide, starch decomposition sugar, starch degradation reducing alcohol, or the like can be given.

In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, the content of the moisturizer may be 2 to 25 wt% relative to the total amount of the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment.

[0033]

In the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, various extracts having a variety of medical effects can be contained as other components of the water-soluble components. For example, aloe extract, fennel extract, chamomile extract, capillary artemisia extract, kuma bamboo grass extract, citrus unshiu peel, white birch extract, loquat extract, mint extract, fucus extract, moutan bark extract, loofah extract, soapberry extract, rehmannia glutinosa root extract, Japanese honeysuckle extract, houttuynia cordata extract, sanguisorba officinalis root extract, green tea extract, cork tree bark extract, sage extract, rosemary extract, clove extract, licorice extract, quince seed extract, persimmon leaves extract, peppermint extract, coix seed extract, hawthorn extract, rose canina fruit extract, bilberry extract, pomegranate extract, rice bran extract, ginseng extract, tomato extract, mulberry bark extract, peony root extract, saxifrage extract, eucalyptus extract, placenta extract, silk extract or the

like can be contained.

[0034]

The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment can be produced without containing a synthetic surfactant. The "synthetic surfactant" means a component having both a hydrophilic group and a lipophilic group in a molecule, and is not naturally present among components having emulsification capability, solubility, dispersion power or the like.

Specifically, as synthetic surfactants, sucrose fatty acid esters, sorbitan fatty acid esters, POE-sorbitan fatty acid esters, fatty acid alkanolamides, POE-alkyl ether, POE-alkyl phenyl ethers, POE · POP-glycol, POE · POP-alkyl ethers and derivatives thereof can be given (POE indicates a polyoxyethylene chain and POP indicates a polyoxypropylene chain).

The fatty acid alkali salt contained in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment is a kind of surfactant, but it is a "pure soap component" that is clearly distinguished from a synthetic surfactant in the household goods quality labeling law, and is different from a synthetic surfactant.

[0035]

In producing the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, water is blended in an amount excluding the amounts of other components.

The content of water in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment can be 50 to 90 wt%, for example, relative to the total amount of the oil-in-water emulsion composition for a creamy cosmetic.

The oil-in-water emulsion composition according to this embodiment may comprise antioxidants, preservatives, thickeners, pH-adjusting agents, chelating agents, ultraviolet light scattering agents, ultraviolet absorbers, inorganic minerals, whitening agents, perfumes, dyes or the like that are commonly used.

[0036]

EXAMPLES

Hereinbelow, a detailed explanation will be made on experiments or the like conducted for specifying the composition of the fatty acids and the fatty acid alkali salts that is suitable for the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment. The present invention is not restricted to the following constitution.

[Experiment 1]

In order to confirm the effect of the composition of the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment on emulsification stability, oil-in-water emulsion compositions for a creamy cosmetic were produced according to the compositions of various fatty acid alkali salts, and evaluation was made on the emulsification stability, viscosity and feeling in use of each composition.

[0037]

Specifically, as shown in Fig. 1, an experiment was conducted for a composition (M1) in which potassium behenate, potassium stearate and potassium palmitate were contained as the fatty acid alkali salts and stearic acid was contained as the fatty acid, a composition (M2) in which the

same fatty acid alkali salts as those for M1 were contained, and behenic acid, stearic acid and palmitic acid were contained as the fatty acids, and a composition (M3) in which potassium stearate was contained as the fatty acid alkali salt and the same fatty acids as those for M2 were contained.

Further, an experiment was conducted for compositions (M4 to M8) in which potassium laurate, potassium myristate, potassium palmitate, potassium behenate and potassium oleate were respectively contained as the fatty acid alkali salt, and the same fatty acids as those for M2 were contained as the remaining fatty acid.

[0038]

In Fig. 1, "behenic acid (K)", "stearic acid (K)", "palmitic acid (K)", "myristic acid (K)", "lauric acid (K)" and "oleic acid (K)" respectively indicate the amount of the fatty acid blended in order to obtain the fatty acid alkali salt by respectively reacting with potassium hydroxide.

[0039]

The oil-in-water emulsion composition for a creamy cosmetic was produced as follows.

First, for each of M1 to M8, as an oil component, 7.5 wt% of a fatty acid, as other oil components, 8 wt% of a liquid oil comprising high oleic sunflower oil, jojoba oil and olive squalane, 0.12 wt% of a preservative, and 0.05 wt% of an antioxidant were added, and these oil components were mixed to prepare phase A.

Further, phase B that contained about 2.5 wt% of a fatty acid for obtaining a fatty acid alkali salt in M1 to M8 by reacting with an alkali such that the content of the fatty acid alkali salt relative to total content of the fatty acid and the fatty acid alkali salt became 29 wt% was prepared.

Further, as the water-soluble components, 18 wt% of glycerin, 0.1 wt% of an extract component, and an aqueous 48% KOH solution in an amount equivalent to the fatty acid of the phase B were added, and the remainder of the total was allowed to be water, and these water-soluble components were mixed to prepare phase C.

[0040]

Then, phase B and phase C were each heated to 75°C, and phase B was added to phase C. The resultant was mixed and stirred for 30 minutes by means of a vacuum emulsification equipment (PVQ-3UN, manufactured by Mizuho Industry Co., Ltd.). Subsequently, phase A warmed to 70°C was added to the obtained mixture and emulsified homogeneously. Thereafter, the obtained emulsified composition was cooled to room temperature while stirring and mixing, thereby to obtain an oil-in-water emulsion composition for a creamy cosmetic.

[0041]

Evaluation of emulsification stability of the oil-in-water emulsion composition for a creamy cosmetic was conducted by the following testing method.

That is, 40g of the oil-in-water emulsion composition for a creamy cosmetic one day after the production thereof was put in the bottom of Lamizip LZ-9 (a stand pack bag equipped with a zipper, manufactured by Seisannipponsha Ltd.). The zipper was closed in a state where the bag was swollen to some extent, and then the bag was sealed by heat sealing. The bag was put in a thermostat chamber of 10°C and was allowed to stand for 3 hours or longer. Subsequently, a lifting table for a rheometer to which a pressurizing rod was fixed was put in the thermostat chamber, and

the bag was fixed to the table with a double-sided tape. The table was driven to adjust so that the pressing rod could fully press the cream at the bottom of the bag. Then, by using this pressing machine, pressurizing was conducted for 24 hours (24 times per minute). After completion of the pressurizing, the cream was gathered at the bottom and the bag was turned upside down. In that state, the bag was stored in the thermostat of 10°C until water separation occurred.

[0042]

The criteria for evaluation of the emulsification stability of the oil-in-water emulsion composition for a creamy cosmetic in the above-mentioned experiment was stipulated as follows based on a period from the day on which the storage started to the day on which occurrence of the water separation was confirmed (a period until water separation occurred in the figures).

- Water separation occurred during pressurizing: Very poor (× in the figures)
- Water separation occurred within 1 to 3 days: Relatively poor (△ in the figures)
- Water separation occurred within 4 to 9 days: Relatively high (○ in the figures)
- Water separation occurred within 10 to 29 days: High (◎ in the figures)
- Water separation occurred after the lapse of 30 days or longer: Extremely high (☆ in the figures)

[0043]

In this experiment, emulsification stability was evaluated by a pressurizing test. The oil-in-water emulsion composition for a creamy cosmetic according to this embodiment has sufficient emulsification stability to use as a cosmetic if the period until water separation occurred in the pressurizing test was 4 days or longer.

Further, the period until water separation occurred in this pressurizing test was the result of the evaluation of the emulsification stability of the oil-in-water emulsion composition for a creamy cosmetic in an accelerated manner. The composition which could resist water separation for a long period in the pressurizing test exhibits excellent effects for emulsion stability, e.g. being suited to a significantly long-term storage.

[0044]

Evaluation on the viscosity of the oil-in-water emulsion composition for a creamy cosmetic was conducted for the cream on the next day of the production by measuring the viscosity [mPa·s] by using a viscometer (manufactured by Brookfield Ametek, Inc.), and No. 3 rotor or No. 4 rotor.

[0045]

Evaluation on feeling in use of the oil-in-water emulsion composition for a creamy cosmetic was conducted by a sensory evaluation by 5 panelist as for feeling in use when the creamy cosmetic was applied to the skin on the next day of the production thereof. Specifically, based on the average value of the five grade evaluation by 5 panelists for each index, i.e. appearance, spreadability, no white residue, feeling of being thickly coated and moist feeling, evaluation was made in accordance with the following criteria.

- 3.1 or more: Excellent (◎ in the figure)
- 2.6 to 3.0: Good (○ in the figure)
- 2 to 2.5: Not good (△ in the figure)
- 1.9 or less: Bad (× in the figure)

[0046]

As a result, as shown in Fig. 1, the oil-in-water emulsion composition for a creamy cosmetic having the composition (M1) that contained potassium behenate, potassium stearate and potassium palmitate as the fatty acid alkali salts, and contained stearic acid as the fatty acid had almost good feeling in use, had an appropriate viscosity but had very poor emulsification stability.

On the other hand, the oil-in-water emulsion composition for a creamy cosmetic having a composition (M2) that contained the same fatty acid alkali salts as those for M1 and contained behenic acid, stearic acid and palmitic acid as the fatty acids had almost good feeling in use, had an appropriate viscosity and had extremely high emulsification stability.

Furthermore, the oil-in-water emulsion composition for a creamy cosmetic with a composition (M3) that contained potassium stearate as the fatty acid alkali salt and contained the same fatty acids as those for M2 had almost good feeling in use, had an appropriate viscosity and had extremely high emulsification stability.

[0047]

That is, when M1, M2 and M3 are compared, by incorporation of behenic acid, stearic acid and palmitic acid as the fatty acids in M2 and M3, emulsification stability was dramatically improved.

On the other hand, when comparing M2 and M3, no significant effects exerted by the composition of the fatty acid alkali salts were observed, and M2 and M3 exhibited almost equivalent emulsification stability.

From these results, it can be understood that the composition of the fatty acids strongly affects the emulsification stability rather than the composition of the fatty acid alkali salts as the emulsifier.

[0048]

Further, the oil-in-water emulsion compositions for a creamy cosmetic with compositions (M4 to M7) that as the fatty acid alkali salts respectively contained potassium laurate, potassium myristate, potassium palmitate and potassium behenate which are alkali salts of saturated fatty acids and the same fatty acids as those for M2 had almost good feeling in use, had an appropriate viscosity and extremely high or high emulsification stability.

On the other hand, the oil-in-water emulsion composition for a creamy cosmetic with a composition (M8) that contained, as the fatty acid alkali salt, potassium oleate that is an alkali salt of an unsaturated fatty acid, and the same fatty acids as those for M2 had almost good feeling in use and had an appropriate viscosity, but had very poor emulsification stability.

Accordingly, it was revealed that it is preferable to use an alkali salt of a C12-C22 saturated fatty acid such as lauric acid, myristic acid, palmitic acid, stearic acid and behenic acid.

[0049]

[Experiment 2]

An experiment was conducted in order to specify a preferable amount ratio range of three components, i.e. behenic acid, stearic acid and palmitic acid as the fatty acids, contained in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment.

Specifically, for each of the 18 fatty acid compositions of P1 to P18 shown below, an

oil-in-water emulsion composition for a creamy cosmetic was produced by using potassium palmitate as the fatty acid alkali salt, allowing the total content of the fatty acid and the fatty acid alkali salt to be 9.3 wt% and allowing the content of the fatty acid alkali salt relative to the total content of the fatty acids and the fatty acid alkali salts to be 29 wt%, and evaluation was conducted for emulsification stability, viscosity and feeling in use.

The method for producing the oil-in-water emulsion composition for a creamy cosmetic, and the method for evaluating the emulsification stability, viscosity and feeling in use in this experiment are the same as those in Experiment 1.

[0050]

Hereinbelow, the ratio of the behenic acid, the stearic acid and the palmitic acid relative to the total 100 wt% of the behenic acid, the stearic acid and the palmitic acid to be contained in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment are shown in terms of (behenic acid (wt%): stearic acid (wt%), palmitic acid (wt%)). The fatty acid composition of P1 to P18 are as follows.

[0051]

P1 (80:10:10)

P2 (10:80:10)

P3 (10:10:80)

P4 (45:45:10)

P5 (10:45:45)

P6 (45:10:45)

P7 (33:33:33)

P8 (56:22:22)

P9 (22:56:22)

P10 (22:22:56)

P11 (20:70:10)

P12 (70:20:10)

P13 (70:10:20)

P14 (20:10:70)

P15 (60:30:10)

P16 (20:80:10)

P17 (50:50:0)

P18 (50:0:50)

[0052]

The results of evaluating emulsification stability, viscosity and feeling in use of the oil-in-water emulsion composition for a creamy cosmetic for P1 to P18 are shown in Figs. 2 and 3.

In this figures, the oil-in-water emulsion compositions for a creamy cosmetic with fatty acid compositions of P4 (45:45:10) (Example 7), P6 (45:10:45) (Example 8), P7 (33:33:33) (Example 9), P8 (56:22:22) (Example10), P9 (22:56:22) (Example 11), P10 (22:22:56) (Example 12), P11 (20:70:10) (Example 13), P14 (20:10:70) (Example14), P15 (60:30:10) (Example15), P16 (20:80:0)

(Example 16) and P17 (50:50:0) (Example 17) had almost good feeling in use, had an appropriate viscosity, and extremely high or high stability.

[0053]

(Specifying a range where stable emulsification is attained)

5 The composition of the fatty acids that has been proven to show excellent emulsification stability, viscosity and feeling in use by Experiment 2 is shown in a ternary diagram. The results are shown in Fig. 4.

10 In the ternary diagram in Fig. 4, (B) indicates behenic acid, (S) indicates stearic acid and (P) indicates palmitic acid, and the right hypotenuse side indicates the wt% of behenic acid, the left hypotenuse side indicates the wt% of stearic acid and the bottom side indicates the wt% of palmitic acid, respectively. By an arbitrary point in the ternary diagram, it is possible to indicate a fatty acid composition that allows the total of the three fatty acids to be 100 wt%.

[0054]

15 It can be understood that the fatty acid composition that has been proven to exhibit excellent emulsification stability, viscosity and feeling in use is present in a weight ratio range surrounded by the following 4 points:

(B=65,S=35,P=0); (B=65,S=5,P=30); (B=15,S=5,P=80); and (B=15,S=85,P=0), i.e. in a range of 15 to 65 wt% of behenic acid, 5 to 85 wt% of stearic acid and 0 to 80 wt% of palmitic acid.

[0055]

20 Further, compositions which exhibited high emulsification stability are present in a weight ratio range surrounded by the following 4 points:

(B=60,S=40,P=0); (B=60,S=10,P=30); (B=20,S=10,P=70); and (B=20,S=80,P=0); i.e. in a range of 20 to 60 wt% of behenic acid, 10 to 80 wt% of stearic acid and 0 to 70 wt% of palmitic acid.

[0056]

25 Further, compositions which exhibited extremely high emulsification stability are concentrated in a weight ratio range surrounded by the following 5 points: (B=60,S=30,P=10); (B=60,S=20,P=20); (B=20,S=20,P=60); (B=20,S=50,P=30); and (B=40,S=50,P=10); i.e. in a range of 20 to 60 wt% of behenic acid, 20 to 50 wt% of stearic acid and 10 to 60 wt% of palmitic acid.

30 As shown above, it was revealed that the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment exhibit preferable emulsification stability, excellent viscosity and feeling in use in the above-mentioned fatty acid amount ratio range.

[0057]

[Experiment 3]

35 An experiment was conducted in order to specify a preferable total content of the fatty acids and the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment.

40 Specifically, for each of the cases where the total content of the fatty acids and the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic was 2.1 wt%, 4.2 wt%, 8.4 wt%, 9.2 wt%, 10.5 wt% and 12.6 wt%, oil-in-water emulsion compositions for a creamy cosmetic were produced by using potassium stearate as the fatty acid alkali salt, by allowing the

content of the fatty acid alkali salt relative to the total content of the fatty acids and the fatty acid alkali salts to be 29 wt%, and by allowing the fatty acid composition to be (B=33, S=33, P=33), and evaluation was conducted for each composition for emulsification stability, viscosity and feeling in use. The other points of this experiment regarding the method for producing the oil-in-water emulsion composition for a creamy cosmetic, and the method for evaluating the emulsification stability, viscosity and feeling in use in this experiment are the same as those in Experiment 1. The results are shown in Fig. 5.

[0058]

As shown in Fig. 5, the oil-in-water emulsion composition for a creamy cosmetic in which the total content of the fatty acids and the fatty acid alkali salts was 2.1 wt% had an extremely low viscosity, exhibited relatively poor stability and hence, was not suited for practical use (Comparative Example 10).

On the other hand, the oil-in-water emulsion for a creamy cosmetic in which the total content of the fatty acids and the fatty acid alkali salts was 4.2 to 10.5 wt% had almost good feeling in use, had an appropriate viscosity and exhibited extremely high or relatively high stability (Examples 18 to 21).

Further, the oil-in-water emulsion composition for a creamy cosmetic in which the total content of the fatty acids and the fatty acid alkali salts was 12.6 wt% exhibited extremely high stability, but had an extremely high viscosity and hence was not suited to practical use (Comparative Example 11).

Accordingly, it was revealed that, in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment, it is preferable to allow the total content of the fatty acids and the fatty acid alkali salts contained in the oil-in-water emulsion composition for a creamy cosmetic to be 3 to 11 wt%.

[0059]

[Experiment 4]

An experiment was conducted in order to specify a preferable amount ratio of the fatty acid alkali salts in the oil-in-water emulsion composition for a creamy cosmetic according to this embodiment.

Specifically, for each of the cases where the content of the fatty acid alkali salts relative to the total content of the fatty acids and the fatty acid alkali salts (soap component ratio) in the oil-in-water emulsion composition for a creamy cosmetic was 17 wt%, 21 wt%, 29 wt%, 36 wt%, 43 wt% and 50 wt%, oil-in-water emulsion compositions for a creamy cosmetic were produced by using potassium stearate as the fatty acid alkali salt, and by allowing the fatty acid composition to be (B=33, S=33, P=33), and evaluation was conducted for each composition for emulsification stability, viscosity and feeling in use. As for the other points of this experiment regarding the method for producing the oil-in-water emulsion composition for a creamy cosmetic, and the method for evaluating the emulsification stability, viscosity and feeling in use in this experiment are the same as those in Experiment 1. The results are shown in Fig. 6. The oil-in-water emulsion composition for a creamy cosmetic indicated of S3 in Fig. 6 is the same as that indicated of T4 (Example 20) in Fig.

5.

[0060]

As shown in Fig. 6, the oil-in-water emulsion composition for a creamy cosmetic having a soap component ratio of 17 wt% (Comparative Example 12) had almost good feeling in use, and had an appropriate viscosity, but had relatively poor stability.

On the other hand, the oil-in-water emulsion composition for a creamy cosmetic having a soap content of 21 to 43 wt% (Examples 22, 20, 23 and 24) had almost good feeling in use, had an appropriate viscosity and exhibited an extremely high, high or relatively high stability.

Further, the oil-in-water emulsion composition for a creamy cosmetic having a soap content of 50 wt% (Comparative Example 13) had an appropriate viscosity, but had a poor appearance and exhibited relatively poor stability.

[0061]

Accordingly, it was revealed that, in the oil-in-water emulsion composition according to this embodiment, it is preferable to allow the fatty acid alkali salts to be contained in an amount of 20 to 45 wt% relative to the total content of the fatty acids and the fatty acid alkali salts contained in the oil-in-water emulsion composition for a creamy cosmetic.

[0062]

Hereinabove, the preferable embodiments and examples of the oil-in-water emulsion composition of the present invention are explained. The oil-in-water emulsion composition for a creamy cosmetic of the present invention is not restricted to these embodiments and the examples, and it is needless to say that various modifications are possible within the scope of the present invention.

As such appropriate modifications, incorporation of other liquid oils than those used in the examples can be given, for example.

Industrial Applicability

[0063]

The present invention can be preferably used when an emulsion composition for a cosmetic is produced without incorporating a synthetic surfactant.

[0064]

The documents described in this specification and the Japanese application specification claiming priority under the Paris Convention are incorporated herein by reference in its entirety.

CLAIMS

1. An oil-in-water emulsion composition for a creamy cosmetic comprising water, oil components, fatty acids and fatty acid alkali salts, having an viscosity of 500 to 100,000 mPa·s,
5 the entire composition substantially comprising no synthetic surfactant,
behenic acid, stearic acid and palmitic acid being contained as the fatty acids and the total content of the fatty acids and the fatty acid alkali salts being 3 to 11 wt%,
the weight ratio of the behenic acid/the stearic acid/the palmitic acid in the fatty acids being
15 to 65/5 to 85/0 to 80,
10 the fatty acid alkali salts being a sodium salt or a potassium salt of a C12-C22 saturated fatty acid, and
the fatty acid alkali salts being contained in an amount of 20 to 45 wt% relative to the total content of the fatty acids and the fatty acid alkali salts contained in the oil-in-water emulsion composition for a creamy cosmetic.
15
2. The oil-in-water emulsion composition for a creamy cosmetic according to claim 1, comprising the oil components other than behenic acid, stearic acid and palmitic acid in an amount of 2 to 20 wt% in the entire oil-in-water emulsion composition for a creamy cosmetic.
- 20 3. The oil-in-water emulsion composition for a creamy cosmetic according to claim 1 or 2, comprising only behenic acid, stearic acid and palmitic acid as the fatty acids.
4. The oil-in-water emulsion composition for a creamy cosmetic according to any of claims 1 to 3, being obtained by adding an oil phase containing the fatty acids to a water phase containing
25 the fatty acid alkali salts, followed by emulsification.
5. A cosmetic comprising the oil-in-water emulsion composition for a creamy cosmetic according to any of claims 1 to 4.