

TITLE OF THE INVENTIONCOSMETIC COMPOSITIONBACKGROUND OF THE INVENTION

1) Field of the Invention:

This invention relates to a cosmetic composition, and more particularly to a cosmetic composition which is mild to the skin and the hair, and provides stable and agreeable foams.

2) Description of the Background Art:

Recently, foaming cosmetic compositions of aerosol-type have become popular because of their easy handling and agreeable feel upon use. Most of the conventional foaming cosmetic compositions contain foam-suppressing or defoaming components such as ethanols and silicones for improving the finishing texture. However, they are accompanied by the drawbacks of inferior foamability (foam-producing ability) and unstable foams.

Conventional approaches for improving the foamability is to use a foam booster or a foam stabilizer such as nonionic surfactants or anionic surfactants including alkylsulfate; and an auxiliary agent such as higher fatty acids and higher alcohols. Furthermore, various viscosity increasing agents have also been used to stabilize the foams by increasing the viscosity. However, anionic surfactants and nonionic surfactants cannot provide a good stability of foams when used in compositions containing a

defoaming component such as silicones. Especially, use of such surfactants in a large volume, namely 10% or more, invites unagreeable feeling upon use; unagreeable touch of foam, persistent "soapy" and "slippery" feel after application to the skin or the hair. In the mean time the use of viscosity increasing polymers also invites unagreeable rough feeling upon use when applied and dried.

Accordingly, cosmetic compositions capable of generating creamy foams of fine texture with an excellent foam stability still stand demanded.

SUMMARY OF THE INVENTION

In one aspect of the present invention therefore there is provided a cosmetic composition comprising:

(A) a water-soluble silk peptide, and

(B) a surfactant selected from acylated amino acid surfactants, sulfosuccinic surfactants, isethionic surfactants, alkyl phosphate surfactants, amidoamino acid surfactants and amidobetaine surfactants.

In a different aspect of the invention, a cosmetic composition is provided comprising:

- (A) a water-soluble silk peptide,
- (B) an anionic or amphoteric surfactant,
- (C) one or more silicone derivatives and/or solvents,
and
- (D) an injection medium.

Other objects, features and advantages of the invention will become more readily apparent from the following description.

DETAILED DESCRIPTION OF THE INVENTION AND PREFERRED EMBODIMENTS

The silk peptide, which is component (A) in this invention is obtainable from ordinary silk fibers and

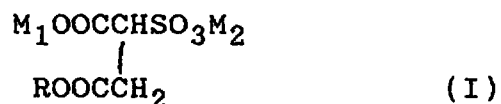
converted water-soluble by hydrolysis, oxidative decomposition or by reductive decomposition. Commercially available silk peptides can also be used. Preferred molecular range for the solubilized silk peptides is from 300 to 50,000, and more preferably, 20,000 to 40,000. In other words, any can be used so far as the decomposed silk peptides are dispersible as transparent and in micelles or soluble in 25°C purified water. The water-soluble silk peptides can be prepared according to the description of G.B. 2,121,281.

The amount of component (A) is preferably from 1 to 10 wt.% (hereinafter may simply referred to as %).

Anionic or amphoteric surfactants which are component (B) in this invention are preferably those which are mild to the skin and the hair, have good foamability and foam stability. Examples of such surfactants are anionic surfactants such as acylated amino acid surfactants, sulfosuccinic surfactants, isethionic surfactants, alkyl phosphate surfactants; and amphoteric surfactants such as amidoamino acid surfactants and amidobetaine surfactants. In more detail, the acylated amino acid surfactants include N-acylglutamate, acylated methyltaurine and acylated beta-alanine; the sulfosuccinic surfactants include salts of sulfosuccinic monoesters; the isethionic surfactants include acylated isethionates such as sodium or potassium

salts of lauroyl isethionic acid, myristoyl isethionic acid and cocoyl isethionic acid; the alkyl phosphate surfactants include mono- or di- alkyl phosphates, and sodium, potassium, alkanolamine salts of polyoxyalkylene mono- or di- alkyl phosphates; the ether carboxylate surfactants include carboxylated polyalkylene alkyl ethers such as carboxylated polyoxyethylene lauryl ethers having ethylene oxide addition moles of 2 to 10; amidoamino acid surfactants include secondary amidoamino acids and their salts such as demineralized secondary amidoamino acids described in Japanese patent application laid-open (Kokai) No. 128100/1988; and amidobetaine surfactants include alkylamidopropylbetaine having an alkyl group of 7 to 20 carbon atoms. Among these, N-acyl glutamates and salts of sulfosuccinic monoesters are preferred.

Examples of N-acylglutamates are sodium N-cocoyl glutamate, sodium N-lauroylglutamate and sodium N-myristoylglutamate. Examples of sulfosuccinic monoesters include sulfosuccinic monoesters of the following formula (I) or their ethylene oxide adducts (1-10 moles):



wherein R is a linear or branched alkyl or alkenyl group having 8 to 22 carbon atoms, polyoxyethylene alkyl ether group, polyoxyethylene alkenyl ether group,

polyoxypropylene alkyl ether group or polyoxypropylene alkenyl ether group, and M_1 and M_2 are respectively alkali metals, organic amines, and basic amines. Examples of the sulfosuccinic monoesters include disodium polyoxyethylene (1-3) alkylsulfosuccinates, disodium polyoxyethylene (1-3) laurylsulfosuccinates, disodium polyoxyethylene (1-3) myristyl sulfosuccinates, disodium laurylsulfosuccinate and disodium mono-(lauroylethanolamide polyoxyethylene) sulfosuccinate.

Component (B) is used solely or as a mixture. The preferable proportion of component (B) in total is 0.01 to 5% based on the total amount of the cosmetic composition.

The cosmetic compositions according to this invention may be charged in double-wall spray containers of non-gas emitting type or pumping type spray containers without use of a pressurized gas, and foams are generated upon use. It is preferred to use injection medium such as Freon (Registered Trade Mark) gas, carbonic acid gas, liquefied petroleum (LP) gas or dimethyl ether in such an amount to give an inner pressure of 2.0 to 6.0 kg/cm²G, namely, 1 to 30% of the total cosmetic composition in a pressure container.

As a second embodiment of this invention, silicone derivatives and/or solvents may optionally be used for enhancing the finishing texture. Examples of the silicone derivatives include dimethylpolysiloxane (polymerization degree: 3-20,000), methylphenylpolysiloxane (polymerization

degree:3-20,000), cyclic polysiloxane (polymerization degree: 3-6), polyether-modified silicone, polyalkylene modified silicone, amino-modified silicone, alkyl-modified silicone, among which defoaming silicone derivatives such as cyclic polysiloxane (polymerization degree: 3-6), polyalkylene-modified silicone, amino-modified silicone and alkyl-modified silicone are especially effective.

These silicone derivatives are preferably blended in the cosmetic composition of this invention in amounts of 0.05% - 50%. The solvent is preferably blended in amounts of 5 - 40% of the total cosmetic composition. Examples of the solvent include polyols and lower alcohols having an alkyl group of 1 to 4 carbon atoms, among which ethanol, propylene glycol, glycerol, polyethylene glycol, butylene glycol are preferred, and ethanol and propylene glycol are most preferred.

The cosmetic compositions of this invention can utilize, beside the silicone derivatives, solvents and injection media as mentioned above, other compatible ingredients so far as they don't impede the effects of the invention. Such other compatible components include oils, water-soluble polymers, skin conditioners, antioxidants, colorants and fragrances which are ordinarily used in the art. The cosmetic compositions of this invention are formulated by conventional methods into skin treatment

foams, hair treatment foams, setting foams, shaving foams and the like.

The cosmetic compositions of this invention are notably mild to the skin or the hair, and generate stable foams. The foams are creamy and soft to the touch, and very agreeable.

EXAMPLES

This invention will now be explained by way of examples, which should not be construed as limiting the invention thereto.

Example 1:

Cosmetic compositions shown in Table 1 were prepared, and foamability, foam stability and feeling upon use were organoleptically evaluated. The results are also shown in Table 1.

Evaluation criteria

Stability of the foams:

- ◎ : Foams last for a very long time
- : Foams are difficult to disappear
- X : Foams quickly disappear

Feeling of the foams:

- ◎ : Very good feeling
- : Good feeling
- X : unagreeable feeling

Table 1

	Invention Product 1	Invention Product 2	Invention Product 3	Comparative Product 1	Comparative Product 2	Comparative Product 3	Comparative Product 4	Comparative Product 5
*Yukaformer AM75 (by Mitsubishi Yuka K.K.)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Polyether-modified silicone KF353A (by Shin-etsu Kagaku K.K.)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Sulfosuccinic surfactant *1)	0.3	0.01	5.0	—	—	—	0.3	0.3
Stearyl alcohol	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Silk peptide *2)	5.0	5.0	5.0	5.0	5.0	5.0	—	—
Keratin hydrolyzate (average molecular weight 2,000)	—	—	—	—	—	—	—	—
Ethanol	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Polyoxyethylene oleyl ether	—	—	—	0.3	—	—	—	—
Monostearic acid polyoxyethylene sorbitane	—	—	—	—	0.3	—	—	—
Polyoxyethylene-sec-tetradecylether	—	—	—	—	—	0.3	—	—
Water	Suitable amount	Suitable amount	Suitable amount	Suitable amount	Suitable amount	Suitable amount	Suitable amount	Suitable amount
LP gas/above-listed total	7/93	7/93	7/93	7/93	7/93	7/93	7/93	7/93
Foam stability	⊙	⊙	⊙	×	×	×	×	Δ
Foam texture	⊙	⊙	⊙	×	×	×	×	×

* N-methacryloylolethyl-N,N-dimethyl ammonium · alpha-N-methylcarboxybetaine · butyl methacrylate copolymer.

* 1) Rewopol SBFA (manufactured by Rewopol Chemicals Ltd.)

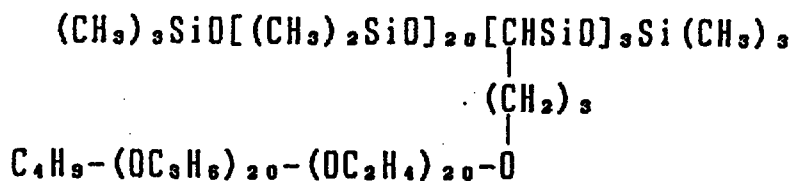
* 2) Water-ethanol solution containing 0.5 - 0.8% of silk protein having a molecular weight of about 35,000.

Example 2:

A foaming cosmetic composition (Invention product No. 4) having the following formula was prepared.

Dimethylpolysiloxane (1,000cs)	0.5%
Polyether-modified silicone *3)	0.5
Sulfosuccinic surfactant *1)	0.5
Silk peptide (Silkgen G Soluble K, manufactured by Ichimaru Pharcos Co., Ltd.)	5.0
Ethanol	10.0
Perfume	0.1
Water	suitable amount
LP gas/above-listed total	7/93

*3)



*1) Same as used in Example 1.

Comparative Example 1:

A foaming cosmetic composition (Comparative product No. 6) having the following formula was prepared.

Dimethylpolysiloxane (1,000cs)	0.5%
Polyether-modified silicone *3)	0.5
Sulfosuccinic surfactant *1)	0.5
Ethanol	10.0
Perfume	0.1
Water	suitable amount
LP gas/above-listed total	7/93

*3) Same as used in Example 2.

*1) Same as used in Example 1.

Comparative Example 2:

A foaming cosmetic composition (comparative product No. 7) having the following formula was prepared.

Dimethylpolysiloxane (1,000cs)	0.5%
Polyether-modified silicone *3)	0.5
Polyoxyethylene oleyl ether	0.5
Silk peptide (Silkgen G Soluble K, manufactured by Ichimaru Pharcos Co., Ltd.)	5.0
Ethanol	10.0
Perfume	0.1
Water	suitable amount
LP gas/above-listed total	7/93

*3) Same as used in Example 2.

Test Example 1:

Invention product No. 4, Comparative products Nos. 6 and 7 which were obtained in Example 2 and Comparative

Examples 1 and 2, respectively, were used by a panel of twenty women for sensory evaluation. The results are shown in Table 2.

Table 2

(persons)

	Invention Product No. 4 is the best	Comparative Product No. 6 is the best	Comparative Product No. 7 is the best	Cannot tell
Creaminess of Foams	17	2	1	0
Stability of Foams	19	1	0	0
Easy application to the hair	19	1	0	0
Finger combing upon application	18	2	0	0
Feeling after application (dry state)	17	1	2	0

As can be seen above, the invention product is much superior to the comparative products in terms of texture of the foams, foam lasting (stability of foams) and feeling upon use.

Example 3:

A hair cosmetic composition having the following formula was prepared.

Silicone KF 352A (manufactured by Shin-etsu Kagaku K.K.) 0.5%

Silicone KF 96(5cs) (manufactured by Shin-etsu Kagaku K.K.)	1.0
Polyethylene glycol	2.0
Silk peptide (Silkgen G Soluble K, manufactured by Ichimaru Pharcos Co., Ltd.)	15.0
Sulfosuccinic surfactant *1)	0.5
Ethanol	10.0
Water	Suitable amount

100.0

Above-listed total/LP gas 90/10

*1) Same as used in Example 1

This hair cosmetic composition generated creamy foams of fine texture with good stability. Feeling when applied to the hair was also agreeable.

Example 4:

A skin cosmetic composition having the following formula was prepared.

Squalane	5.0%
Jojoba oil	5.0
Glycerol	7.0
Polyoxyethylene (40) hydrogenated castor oil	1.5
Dimethylpolysiloxane (1,000cs)	0.3
Silk peptide (Silkgen G Soluble K, manufactured by Ichimaru Pharcos Co., Ltd.)	7.0

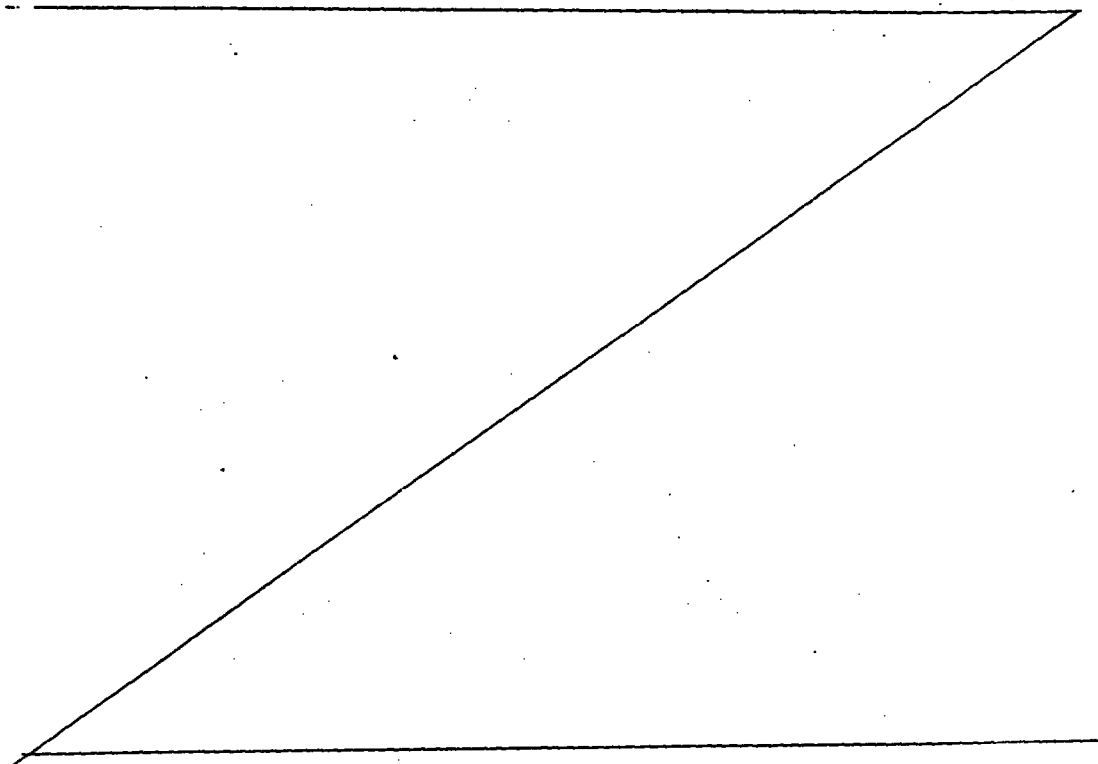
Sulfosuccinate surfactant *1)	1.5
Methyl paraben	0.3
Butyl paraben	0.1
Perfume	trace
Ethanol	2.0
Water	Suitable amount

100.0

Above-listed total/LP gas 90/10

*1) Rewon A5000, manufactured by Sanyo Kasei K.K.

This skin cosmetic composition generated creamy foams of fine texture with good stability. Feeling when applied to the skin was also agreeable.



CLAIMS

1. A cosmetic composition comprising:

(A) a water-soluble silk peptide, and

(B) a surfactant selected from acylated amino acid surfactants, sulfosuccinic surfactants, isethionic surfactants, alkyl phosphate surfactants, amidoamino acid surfactants and amidobetaine surfactants.

2. A cosmetic composition comprising:

(A) a water-soluble silk peptide,

(B) an anionic or amphoteric surfactant,

(C) one or more silicone derivatives and/or solvents,
and

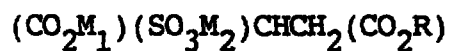
15.



(D) an injection medium.

3. A cosmetic composition as claimed in Claim 1 or Claim 2, wherein the water soluble silk peptide is obtained by hydrolysis, oxidative decomposition or reductive decomposition of silk fibers.
4. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is an acylated amino-acid surfactant selected from N-acyl glutamate, acylated methyltaurine and acylated β -alanine.
5. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is selected from sodium N-cocoyl glutamate, sodium N-lauroyl glutamate and sodium N-myristoyl glutamate.
6. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is a sulfosuccinic surfactant selected from sulfosuccinic monoesters having the formula:





wherein: R is a linear or branched alkyl or alkenyl group (C₈₋₂₂), or

a polyoxyethylene (1-10 moles) alkyl ether group, or
a polyoxyethylene (1-10 moles) alkenyl group, or
a polyoxypropylene (1-10 moles) alkyl ether group, or
a polyoxypropylene (1-10 moles) alkenyl group;

and wherein : M_1 and M_2 are individually selected from alkali metals, organic amines and basic amines.

7. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is a sulfosuccinic monoester selected from disodium POE(1-3) alkylsulfosuccinates, disodium POE(1-3) laurylsulfosuccinates, disodium POE(1-3) myristyl sulfosuccinates, disodium laurylsulfosuccinate and disodium mono-(lauroylethanolamide POE) sulfosuccinate.



8. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is an isethionic surfactant selected from potassium and sodium salts of acylated isethionates and lauroyl, myristoyl and cocoyl isethionic acids.
9. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is an alkyl phosphate surfactant selected from mono- and di-alkyl phosphates; and sodium, potassium and alkanolamine salts of polyoxyalkylene mono- and di-alkyl phosphates.
10. A cosmetic composition as claimed in Claim 1, Claim 2 or Claim 3 wherein the surfactant is a carboxylated polyoxyalkylene alkyl ether.
11. A cosmetic composition as claimed in any of Claims 1 to 3 wherein the surfactant is carboxylated POE-(2-10 moles) lauryl ether.
12. A cosmetic composition as claimed in any of Claims 1 to 3 wherein the surfactant is a secondary amidoamino acid salt.



13. A cosmetic composition as claimed in any of Claims 1 to 3 wherein the surfactant is an alkyl (C₇₋₂₀) amidopropylbetaine.
 14. A cosmetic composition as claimed in any preceding Claim wherein the amount of silk peptide ranges from 1 - 10 wt.% based on the total composition.
 15. A cosmetic composition as claimed in any preceding Claim wherein the amount of surfactant ranges from 0.01 to 5 wt.% based on the total composition.
 16. A cosmetic composition as claimed in any preceding Claim wherein the composition generates foams upon use.
 17. A cosmetic composition as claimed in Claim 1 and substantially as described in the Examples.
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