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LIQUID SHAMPOO

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8 Claims

ABSTRACT OF THE DISCLOSURE

Mild shampoo compositions comprising polyoxyethylene sorbitan mono fatty acid ester, triethanolamine alkyl sulfate, triethanolamine fatty acid soap, and fatty acid ethanolamide.

BACKGROUND OF THE INVENTION

The present invention relates to novel liquid shampoo compositions having highly desirable properties of mildness, conditioning, cleaning and foaming. Each constituent of the present shampoo is known in the prior art as a shampoo ingredient, but heretofore no one has combined the present constituents to formulate a shampoo of the present invention.

A recently marketed shampoo contained triethanolamine alkyl sulfate, triethanolamine coconut fatty acid soap and coconut ethanolamide, but this shampoo was not as mild as the shampoos of this invention. Applicants have discovered that the addition of a polyoxyethylene fatty acid ester to a shampoo of the same or similar components results in a shampoo which is unexpectedly mild and which has a highly desirable lather.

The use of polyoxyethylene fatty acid ester in a shampoo is not novel, having been disclosed as early as 1953 in A Guide to Cosmetic and Pharmaceutical Formulation With Atlas Products, Atlas Powder Company, 47 (1953). However, applicants have surprisingly discovered that polyoxyethylene fatty acid ester, when used in shampoos of the present invention, exerts an anti-irritant effect on the other shampoo ingredients. This reduces the irritation potential of the shampoo, resulting in a mild shampoo. The addition of polyoxyethylene fatty acid ester also increases the desirability of the lather of the shampoo. Further, these unexpected results are not obtained at the cost of reduced cleaning or conditioning.

The anti-irritant effect of polyoxyethylene fatty acid ester in a shampoo has previously been undiscovered, although "Relation of Surface-Active Properties to Irritation of the Rabbit Eye," Proceedings of Scientific Section Toilet Goods Association, No. 17, p. 5 (1952) disclosed that Tween 20, a polyoxyethylene sorbitan monolaurate, is a mild surface-active agent, and an article entitled "Use of Anti-Irritants in Cosmetic Formulating," by Robert L. Goldenberg in the Journal of the Society of Cosmetic Chemists, 16 at 317-340 (1965) disclosed that Tween 20 had an anti-irritant effect in an antiperspirant comprising aluminum chlorhydroxide and Hyamine 1622, a cationic antiseptic. The effectiveness of an anti-irritant is unpredictable since a compound which exhibits an anti-irritant effect in one composition may or may not exhibit such an effect in another composition. Furthermore, the mechanism by which Tween 20 exhibits an anti-irritant

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effect is unknown. Therefore, applicants' discovery of the anti-irritant effect of polyoxyethylene fatty acid esters in the present shampoo compositions is unobvious and a contribution of importance to the shampoo art.

SUMMARY OF THE INVENTION

A mild liquid shampoo made in accordance with the present invention consists essentially of:

- (A) From about 2% to about 20% of polyoxyethylene fatty acid ester wherein said fatty acid contains from about 8 to about 18 carbon atoms and from about 5 to about 50 oxyethylene moieties per molecule;
- (B) From about 3% to about 25% of a water-soluble alkyl sulfate wherein the alkyl group contains from about 8 to about 18 carbon atoms;
- (C) From about 1% to about 10% of triethanolamine fatty acid soap wherein said fatty acid contains from about 10 to about 18 carbon atoms;
- (D) From about 0.5% to about 5% of a fatty acid ethanolamide wherein said fatty acid contains from about 8 to about 16 carbon atoms; and
- (E) From about 40% to about 90% water.

The ratio of polyoxyethylene fatty acid ester to other surfactants is from about 1:1 to about 1:5 and the pH of the solution is from about 7.0 to about 8.4. The shampoo is surprisingly mild and produces voluminous rich lather when used on both soiled and unsoiled hair.

DESCRIPTION OF THE INVENTION

Applicants have discovered a surprisingly mild shampoo which consists essentially of:

- (A) From about 2% to about 20% of polyoxyethylene fatty acid ester wherein said fatty acid contains from about 8 to about 10 carbon atoms and from about 5 to about 50 oxyethylene moieties per molecule;
- (B) From about 3% to about 25% of triethanolamine or sodium alkyl sulfate wherein the alkyl group contains from about 8 to about 18 carbon atoms;
- (C) From about 1% to about 10% of triethanolamine fatty acid soap wherein said fatty acid contains from about 10 to about 18 carbon atoms;
- (D) From about 0.5% to about 5% of fatty acid mono- or di-ethanolamide wherein said fatty acid contains from about 8 to about 16 carbon atoms; and
- (E) From about 40% to about 90% water.

The ratio of (A) to the total of (B), (C) and (D) is from about 1:1 to about 1:5 and the pH of the composition in aqueous solution is from 7.0 to 8.4. It is advantageous to control the pH by the addition of triethanolamine as this compound also prevents contamination of the solution by bacteria.

Applicants have discovered that polyoxyethylene fatty acid ester decreases the irritation potential of the other components of the above shampoo and results in a shampoo with increased mildness. The polyoxyethylene fatty acid ester apparently acts not only as an anti-irritant, but also acts to increase the desirability of the lather "feel." Thus, when subjects compare the lather of a shampoo of the present invention with a similar shampoo without polyoxyethylene sorbitan monolaurate, the lather of the shampoo of the present invention is preferred for its rich, smooth, creamy qualities.

Shampoos made in accordance with the present invention combine the qualities of excellent mildness and feel

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with qualities of excellent cleaning, conditioning of hair, and similar loaded and unloaded foam heights. Similar foam heights means that similar quantities of foam are obtained whether the hair is clean or is heavily soiled.

A preferred embodiment of the present invention consists essentially of:

- (A) From about 4% to about 15% of a polyoxyethylene fatty acid ester wherein said fatty acid contains from about 10 to about 14 carbon atoms and from about 10 to about 30 oxyethylene moieties per molecule;
- (B) From about 5% to about 20% triethanolamine alkyl sulfate wherein the alkyl group contains from about 10 to about 14 carbon atoms;
- (C) From about 2% to about 5% triethanolamine fatty acid soap wherein said fatty acid contains from about 10 to about 14 carbon atoms;
- (D) From about 2% to about 5% of fatty acid ethanolamide wherein said fatty acid contains from about 10 to about 14 carbon atoms; and
- (E) From about 55% to about 85% water.

The ratio of (A) to the total of (B), (C) and (D) is about 5:18 and the pH of the composition in aqueous solution is from about 7.2 to about 8.0. The triethanolamine alkyl sulfate may be replaced by an equivalent amount of sodium alkyl sulfate.

A further preferred embodiment of the present invention comprises:

- (A) About 5% of a polyoxyethylene sorbitan monolaurate which contains about 20 oxyethylene moieties per molecule;
- (B) About 10% triethanolamine alkyl sulfate wherein the alkyl is obtained from a coconut fatty alcohol;
- (C) About 7% triethanolamine coconut fatty acid soap;
- (D) About 2% coconut monoethanolamide; and
- (E) About 76% water.

The ratio of (A) to the total of (B), (C) and (D) is 5:18 and the pH of the composition in aqueous solution is from about 7.2 to about 8. The triethanolamine alkyl sulfate may be replaced by an equivalent amount of sodium ethanolamine alkyl sulfate. The use of coconut alkyls and fatty acids not only results in an excellent shampoo, but is also economical since they are commercially available.

A shampoo made in accordance with the present invention can, of course, contain other common shampoo ingredients, for example, a thickening agent, an antioxidant, and/or a perfume.

The following specific examples are further illustrative of the nature of the present invention; but it is to be understood that the invention is not limited thereto.

EXAMPLE I

A shampoo composition which was mild and characterized by a rich, creamy lather similarly voluminous on soiled or clean hair was formulated as follows:

Ingredients:	Percent by weight
Triethanolamine alkyl (coconut middle cut ¹) sulfate	10.00
Polyoxyethylene (20) sorbitan monolaurate	5.00
Triethanolamine	4.00
Coconut ² fatty acid	3.00
Coconut ² monoethanolamide	2.00
Sodium ethylenediamine tetra-acetate (conditioning aid)	1.00
Methyl cellulose (thickener)	1.00
Sodium sulfite (antioxidant)	0.46
Perfume	0.25
Distilled water, q.s.	

¹ A coconut middle cut consists essentially of about 67% C₁₂; about 25% C₁₄ and about 8% C₁₆.

² "Whole cut" of coconut oil.

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EXAMPLE II

A first shampoo was made as in Example I and was compared to a second shampoo made without polyoxyethylene (20) sorbitan monolaurate but otherwise containing all of the components of Example I. Four two-inch square patches of gauze were soaked in the first shampoo and four were soaked in the second shampoo. The patches were applied for 24 hours to the upper arms of four human subjects. Each subject was exposed to one first shampoo patch and one second shampoo patch. At the end of 24 hours, the patches were removed; and the subjects were graded then and graded again 24 hours later. No irritation was observed under any of the "Example I" patches while mild irritation was observed under every "second shampoo" patch by the time of the second grading.

EXAMPLE III

A mild shampoo is made as follows:

Ingredients:	Percent by weight
Sodium alkyl (coconut middle cut) sulfate	10.00
Polyoxyethylene (20) sorbitan monolaurate	7.50
Triethanolamine	3.00
Myristic acid	2.00
Lauric diethanolamide	4.00
Sodium ethylenediamine tetra-acetate (conditioning aid)	1.00
Methyl cellulose (thickener)	1.00
Perfume	0.25
Distilled water, q.s.	

EXAMPLE IV

A shampoo is made as follows:

Ingredients:	Percent by weight
Triethanolamine alkyl (coconut cut) sulfate	15.00
Polyoxyethylene (20) sorbitan monolaurate	5.00
Triethanolamine	2.00
Coconut fatty acid	1.00
Myristic diethanolamide	2.00
Sodium EDTA	1.00
Methocel 60 HG	1.00
Na ₂ SO ₃	0.70
Perfume	0.50
Distilled water, q.s.	

Although the present invention has been described with reference to particular embodiments and examples, it will be apparent to those skilled in the art that variations and modifications can be substituted therefor without departing from the principles and the true spirit of the invention.

What is claimed is:

1. A mild shampoo consisting essentially of:

- (A) from about 2% to about 20% of polyoxyethylene sorbitan fatty acid ester wherein said fatty acid contains from about 8 to about 18 carbon atoms and comprises from about 5 to about 50 oxyethylene moieties per molecule;
- (B) from about 3% to about 25% of triethanolamine alkyl sulfate wherein said alkyl group contains from about 8 to about 18 carbon atoms;
- (C) from about 1% to about 10% of triethanolamine coconut fatty acid soap wherein said fatty acid contains from about 10 to about 18 carbon atoms;
- (D) from about 0.5% to about 5% of a fatty acid ethanolamide wherein said fatty acid contains from about 8 to about 16 carbon atoms; and
- (E) from about 40% to about 90% water, said shampoo having a pH of from about 7.0 to about 8.4.

2. A mild shampoo as recited in claim 1 wherein the ratio of polyoxyethylene sorbitan fatty acid ester to the total of triethanolamine alkyl sulfate, triethanolamine

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coconut fatty acid soap, and fatty acid ethanolamide is from 1:1 to 1:5.

3. A mild shampoo as recited in claim 2 wherein said polyoxyethylene sorbitan fatty acid ester contains from about 10 to about 14 carbon atoms and from about 10 to about 30 oxyethylene moieties per molecule.

4. A mild shampoo as recited in claim 3 wherein said triethanolamine alkyl sulfate contains from about 10 to about 14 carbon atoms.

5. A mild shampoo as recited in claim 4 wherein said triethanolamine coconut fatty acid soap contains from about 10 to about 14 carbon atoms.

6. A mild shampoo as recited in claim 5 wherein said fatty acid ethanolamide contains from about 10 to about 14 carbon atoms.

7. A mild shampoo as recited in claim 6 consisting essentially of from about 4% to about 15% of polyoxyethylene sorbitan fatty acid ester; from about 5% to about 20% of triethanolamine alkyl sulfate; from about 2% to about 5% of triethanolamine coconut fatty acid soap; and from about 2% to about 5% of fatty acid ethanolamide.

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8. A mild shampoo as recited in claim 1 consisting essentially of about 10% of triethanolamine alkyl sulfate; about 5% of polyoxyethylene sorbitan monolaurate; about 4% of triethanolamine; about 3% of coconut fatty acid; about 2% of coconut monoethanolamide; and the balance, water.

References Cited

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SAM ROSEN, Primary Examiner

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