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SHAMPOO COMPOSITION

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10 Claims. (Cl. 252—152)

This invention relates to a shampoo composition and pertains more specifically to a hair shampoo composition containing certain sulfonated or sulfated surfactants in combination with an alkylolamide of a fatty acid and with certain alcohols.

One object of the present invention is to provide a hair shampoo composition having effective cleansing power in both hard and soft water.

Another object is to provide a hair shampoo containing an effective sulfonate or sulfate surfactant, which shampoo is free from turbidity and cloudiness.

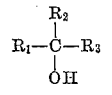
Still another object is to provide a shampoo of the type described which has good foaming properties and which at the same time provides effective cleansing of the hair and possesses the characteristic of leaving the hair in good condition. By "good condition" is meant that the hair is easy to comb both wet and dry with little tendency to snarl, has a soft handle both when wet and when dry, and is not harsh or rough to the touch.

Other and further objects will be apparent from the description which follows.

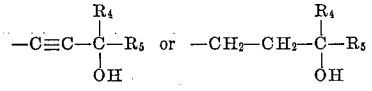
It has been found that the foregoing objects are attained and a highly satisfactory clear shampoo composition is provided by employing in combination three essential ingredients. The principal component of the shampoo composition is a sulfonated or sulfated surfactant which may consist entirely of the sodium salt of N-acyl-N-methyl taurine or which may consist of a mixture of the sodium salt of N-acyl-N-methyl taurine with up to an equal amount by weight of the sodium, magnesium or triethanolamine salt of an alkyl sulfuric acid. In either case each acyl or alkyl group present in the molecule is of moderate length, containing from 10 to 18 carbon atoms. The sulfonated or sulfated surfactant component should be from 8% to 20% by weight of the total weight of the aqueous shampoo composition. Among suitable sulfonated and sulfated surfactants that may be used are the sodium salts of N-decanoyl-N-methyl taurine, N-dodecanoyl-N-methyl taurine, N-tetradecanoyl-N-methyl taurine, N-octadecanoyl-N-methyl taurine, as well as the triethanolamine salts of n-decyl sulfuric acid, lauryl sulfuric acid, myristyl sulfuric acid, cetyl sulfuric acid, stearyl sulfuric acid, and the like.

While the foregoing sulfonated or sulfated surfactants are the principal ingredients of the shampoo composition of the present invention, it will be appreciated that the solubility of such surfactants in aqueous compositions is limited, particularly in the presence of salts such as sodium chloride which are frequently present as an impurity in the commercial product. Accordingly, in order to obtain a water-clear shampoo composition based on these surfactants, it is essential to employ in combination with said surfactants a solubilizer. While a variety of materials are commercially available as solubilizers, their effectiveness is in many cases quite limited. However, it has been found that by employing two selected solubilizers in combination a synergistic result is obtained, as evidenced by enhanced clarity of the finished composition. One of the solubilizers employed is an alkylolamide of a fatty acid, preferably a lower alkylolamide such as the mono- or di-ethanolamide, mono- or di-isopropanolamide, or the like of a fatty acid having from 10 to 14 carbon atoms in the chain, such as capric acid, lauric acid, myristic acid, or the like. Excess free alkylolamine may also be present along with the alkylolamide without deleterious results.

The second essential member of the solubilizing combination is an alcohol having the structure



in which R_1 and R_2 is each a lower alkyl group having from 1 to 4 carbon atoms and R_3 is a group having one of the following structures:



where R_4 and R_5 is each a lower alkyl group having from 1 to 4 carbon atoms. Particularly important and useful members of this class are 2,5-dimethyl-3-hexyne-2,5-diol; 3,6 - dimethyl - 4 - octyne - 3,6 - diol; 3,6 - diethyl - 4-octyne-3,6-diol; and 3,6-dimethyloctane-3,6-diol. All of these alcohols possess the desired low melting point, solubilizing effectiveness and lack of odor which are requisite for the purpose of the present invention.

Each of the foregoing solubilizers must be present in an amount from 6% to 50% by weight based on the weight of the total surfactant with the total weight of both solubilizers together being from 20% to 75% by weight of the surfactant. It has been found that this combination of solubilizers not only possesses enhanced solubilizing characteristics for the sulfonate surfactants of the present composition, but in addition imparts stability to the foam which is obtainable upon shaking the composition.

In addition to the foregoing essential ingredients, it is highly desirable in most cases to include in addition from 6% to 30% by weight, based on the weight of the surfactant, of a higher fatty alcohol; namely, a fatty alcohol containing from 10 to 14 carbon atoms, such as n-decyl alcohol, lauryl alcohol, myristyl alcohol, or the like. The presence of such a fatty alcohol not only enhances the stability of the foam produced upon shaking the shampoo composition, but indeed increases the volume of foam obtainable.

While the foregoing composition with or without the higher fatty alcohol provides a satisfactory shampoo, it has been found that the hair conditioning properties of the shampoo, i.e., its ability to leave the hair in good condition, are greatly enhanced by including in the composition a triethanolamine soap, that is, a triethanolamine salt of a fatty acid having from 10 to 18 carbon atoms. The fatty acid present in the soap may be any of those enumerated above as suitable for forming the alkylolamide solubilizer. The amount of such soap may vary from 10% to 65% by weight of the total surfactant.

The following specific examples are intended to illustrate more clearly the nature of the present invention without any limitation upon the scope thereof.

Example 1

A shampoo composition was prepared by dissolving in water the following ingredients in the proportions speci-

fied, the ingredients being added to an aqueous medium in the order named:

	Parts by weight
Sodium N-methyl-N-coconut oil fatty acid taurate (Igepon TC–42)	12.0
Lauryl alcohol	1.0
Lauric diethanolamide	5.0
3,6-dimethyl-4-octyne-3,6-diol	2.0
Water, to 100 parts by weight.	

It will be understood that any of the usual additives such as perfumes, germicides, sequestering agents, etc., may be added to the foregoing composition if desired.

The shampoo thus prepared when employed on the hair was found to provide a satisfactorily large volume of foam of good stability and, in addition to being an effective cleansing agent, was found to leave the hair upon drying in good condition. The shampoo remained water clear even when cooled well below room temperature.

Example 2

The following composition was prepared, in which the parts are by weight:

	Parts
Sodium N-methyl-N-coconut oil fatty acid taurate	8.0
Triethanolamine lauryl sulfate	4.0
Lauryl alcohol	1.0
3,6-dimethyl-4-octyne-3,6-diol	2.0
Lauric diethanolamide	5.0
Water, to 100 parts.	

The foregoing composition was found to be substantially equivalent to the composition of Example 1 as a hair shampoo.

Example 3

The following composition was prepared, in which the parts are by weight:

	Parts
Sodium N-methyl-N-coconut oil fatty acid taurate	12.0
Ninol AA62 (mixture of lauric diethanolamide and diethanolamine)	5.0
3,6-dimethyl-4-octyne-3,6-diol	1.0
Triethanolamine soap of a mixture of 3 parts of coconut oil fatty acid with 1 part of oleic acid	3.8
Lauryl alcohol	1.0
Water, to 100 parts.	

The foregoing composition was found to be substantially equivalent to the compositions of Examples 1 and 2 so far as cleaning effectiveness, volume of foam, and foam stability were concerned and to be superior in hair conditioning properties.

Example 4

The following composition was prepared, in which the parts are by weight:

	Parts
Sodium N-methyl-N-coconut oil fatty acid taurate	8.0
Triethanolamine lauryl sulfate	4.0
Lauric diethanolamide	4.0
3,6-dimethyl-4-octyne-3,6-diol	1.0
Triethanolamine soap of a mixture of 3 parts of coconut oil fatty acid with 1 part of oleic acid	3.8
Water, to 100 parts.	

The foregoing shampoo composition was found to be substantially equivalent to the composition of Example 3.

Example 5

The following composition was prepared, in which the parts are by weight:

	Parts
Sodium N-methyl-N-coconut oil fatty acid taurate	12.0
Lauryl alcohol	1.0
Lauric diethanolamide	5.0
2,5-dimethyl-3-hexyne-2,5-diol	2.0
Water, to 100 parts.	

This composition was found to be substantially equivalent to the composition of Example 1 as a hair shampoo, the composition remaining water-clear even at temperatures well below normal room temperature.

Example 6

The following composition was prepared, in which the parts are by weight:

	Parts
Sodium N-methyl-N-coconut oil fatty acid taurate	12.0
Lauryl alcohol	1.0
Lauric diethanolamide	5.0
3,6-dimethyloctane-3,6-diol	2.0
Water, to 100 parts.	

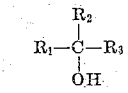
This composition was found to be substantially equivalent to the composition of Example 1 as a hair shampoo, the composition remaining water-clear even at temperatures well below normal room temperature.

Similar results can be achieved by varying the nature of the specific ingredients within the scope of the present invention as set forth hereinabove. Any of the conventional additives, such as perfumes, sequestering agents, germicides, dyes, stabilizers, and the like, may be added in accordance with conventional practice.

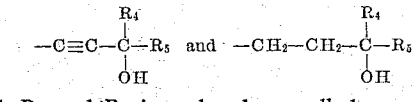
Although specific embodiments of the invention have been described herein, it is not intended to limit the invention solely thereto, but to include all of the obvious variations and modifications within the spirit and scope of the appended claims.

What is claimed is:

1. A shampoo composition consisting essentially of water and (A) from 8% to 20% by weight, based on the total weight of the shampoo, of a surface active agent selected from the class consisting of (1) the sodium salt of N-acyl-N-methyl taurine and (2) a mixture of said sodium salt with up to an equal amount by weight of a member of the class consisting of the sodium, magnesium and triethanolamine salts of an alkyl surfuric acid, the acyl and alkyl groups of said surface active agents each having from 10 to 18 carbon atoms, (B) from 6% to 50% by weight, based on the weight of said surface active agent, of an alkylolamide of a fatty acid having from 10 to 14 carbon atoms in the chain, and (C) from 6% to 50% by weight, based on the weight of said surface active agent, of a compound having the structure



in which R_1 and R_2 is each a lower alkyl group having from 1 to 4 carbon atoms and R_3 is a member of the class consisting of



in which R_4 and R_5 is each a lower alkyl group having from 1 to 4 carbon atoms, the total weight of (B) and (C) together being from 20% to 75% by weight of said surface active agent.

2. A shampoo composition as defined in claim 1 comprising in addition from 6% to 30% by weight, based on the weight of said surface active agent, of a fatty alcohol containing from 10 to 14 carbon atoms.

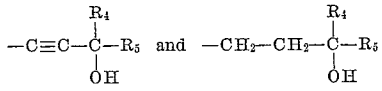
3. A shampoo composition as defined in claim 2 comprising in addition from 10% to 65% by weight, based on the weight of said surface active agent, of a triethanolamine salt of a fatty acid having from 10 to 18 carbon atoms.

4. A shampoo composition consisting essentially of water and (A) from 8% to 20% by weight, based on the total weight of the shampoo, of the sodium salt of N-acyl-N-methyl taurine in which said acyl group contains from 10 to 18 carbon atoms, (B) from 6% to 50% by weight, based on the weight of said sodium salt, of a lower alkyl-

olamide of a fatty acid having from 10 to 14 carbon atoms in the chain, and (C) from 6% to 50% by weight, based on the weight of said sodium salt, of a compound having the structure



in which R_1 and R_2 is each a lower alkyl group having from 1 to 4 carbon atoms and R_3 is a member of the class consisting of



in which R_4 and R_5 is each a lower alkyl group having from 1 to 4 carbon atoms, the total weight of (B) and (C) together being from 20% to 75% by weight of said sodium salt.

5. A shampoo composition as defined in claim 4 including in addition from 6% to 30% by weight based on the weight of said sodium salt, of a fatty alcohol containing from 10 to 14 carbon atoms.

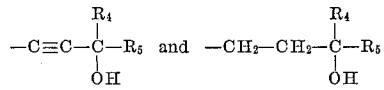
6. A shampoo composition as defined in claim 5 in which said fatty alcohol comprises lauryl alcohol.

7. A shampoo composition as defined in claim 4 in which said sodium salt is the salt of N-methyl-N-coconut oil fatty acid taurine.

8. A shampoo composition consisting essentially of water and (A) from 8% to 20% by weight, based on the total weight of the shampoo, of a surface active agent consisting of a mixture of the sodium salt of N-acyl-N-methyl taurine with up to an equal amount by weight of the triethanolamine salt of an alkyl sulfuric acid, the acyl and alkyl groups of said salts each having from 10 to 18 carbon atoms, (B) from 6% to 50% by weight, based on the weight of said surface active agent, of an alkylolamide of a fatty acid having from 10 to 14 carbon atoms in the chain, and (C) from 6% to 50% by weight, based on the weight of said surface active agent, of a compound having the structure



in which R_1 and R_2 is each a lower alkyl group having from 1 to 4 carbon atoms and R_3 is a member of the class consisting of



in which R_4 and R_5 is each a lower alkyl group having from 1 to 4 carbon atoms, the total weight of (B) and (C) together being from 20% to 75% by weight of said surface active agent.

9. A shampoo composition consisting essentially of water and (A) from 8% to 20% by weight, based on the total weight of the shampoo, of the sodium salt of N-methyl-N-coconut oil fatty acid taurine, (B) from 6% to 50% by weight, based on the weight of said sodium salt, of the diethanolamide of lauric acid, (C) from 6% to 50% by weight, based on the weight of said sodium salt, of 3,6-dimethyl-4-octyne-3,6-diol, the total weight of (B) and (C) together being from 20% to 75% by weight of said sodium salt, and (D) from 6% to 30% by weight, based on the weight of said sodium salt, of lauryl alcohol.

10. A shampoo composition as defined in claim 9 comprising in addition from 10% to 65% by weight, based on the weight of said sodium salt, of the triethanolamine salt of a fatty acid having from 10 to 18 carbon atoms.

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