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Osipow et al.

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[54] **FATTY ACID LACTYLATES AND GLYCOLATES FOR CONDITIONING HAIR**

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[21] Appl. No.: **16,230**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 464,825, June 17, 1965, abandoned.

[52] **U.S. Cl.**.....**424/70**, 132/7, 252/DIG. 2, 252/DIG. 3, 252/DIG. 13, 252/545, 252/546, 252/547, 252/550, 252/558, 424/DIG. 1, 424/DIG. 2, 424/47, 424/71, 424/72

[51] **Int. Cl.**.....**A61k 7/06**

[58] **Field of Search**.....252/152, 161, 305; 424/47, 70, 71, DIG 1, DIG. 2; 260/410.9; 132/7

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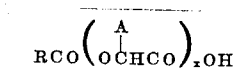
[57] **ABSTRACT**

Agents containing fatty acid lactylates and glycolates of the formula



wherein RCO is the acyl radical of a fatty acid of from six to 22 carbon atoms, A is either CH_3 or H and x is a number from about one to four and their ammonium, alkali metal and physiologically acceptable amine salts are used for conditioning hair, that is, for improving the texture and manageability as well as curl or wave retention of the hair.

16 Claims, No Drawings

FATTY ACID LACTYLATES AND GLYCOLATES FOR CONDITIONING HAIR

This application is a continuation-in-part of copending application Ser. No. 464,825, filed June 17, 1965, now abandoned.

The present invention relates to the treatment of hair for conditioning of such hair and/or cleansing the hair and preparations for carrying out such treatments. The expression "hair conditioning agent" is employed herein to include agents which when applied to the hair improve the texture, the manageability of the hair and/or the retention of wave or curl in the hair.

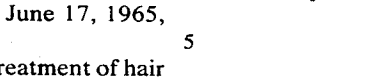
As is well known, the modern day hair dressing treatments, including permanent waving, bleaching, tinting and shampooing, have a tendency to cause undesirable changes in the texture of the hair so that it may appear dry, harsh and difficult to manage. While such changes in some instances may be caused by loss of oily components from the hair and scalp, in other instances it may be caused by changes in the actual structure of the hair. For example, the synthetic surface active agents, principally, lauryl sulfate salts, which now have practically displaced the previously customary soaps, such as coconut oil soaps in shampoos, are such effective cleansing agents that they are apt to remove practically all of the oily components from the hair and scalp with the consequence that the hair shampooed therewith appears dry and tends to become tangled when combed. Also, hair treatments involving permanent waving, bleaching, tinting and the like, often cause roughening, weakening and porosity in the hair which also impart a harsh texture to the hair.

As a consequence it has recently been customary to include conditioning agents in shampoos which deposit on the hair in place of the soil and sebum removed. Conditioning agents commonly used in shampoos, for example, are lecithin, lanolin, ethoxylated lanolin alcohols, water insoluble esters and amides of fatty acids and the like. The conditioning agents normally depress both the foaming and cleansing properties of the shampoos and it is therefore necessary that they only be used at relatively low concentrations where their conditioning action is borderline. Also, hair rinse preparations have been developed which are used in after-rinses for use after a shampoo, permanent wave, bleach or dyeing treatment. Thus far, the only materials which have met with commercial success as hair rinses are compositions which contain cationic surface active agents, particularly quaternary ammonium compounds. These materials are highly substantive to the hair and are effective conditioning agents. One serious disadvantage, though, is that they tend to cause eye irritation even at low concentrations and consequently considerable caution must be exercised to avoid contact with the eyes. The term "substantive" signifies that the agent is taken up from the solution by the hair and adsorbed on the hair in such a manner that it is not easily removed by a subsequent water rinse.

It is an object of the invention to provide novel improved methods and preparations for conditioning hair.

According to the invention it was unexpectedly found that fatty acid lactylates and fatty acid glycolates, when applied to the hair in the form of shampoo preparations, rinses, as well as hair setting or curling preparations, will substantially improve the texture, hand and manageability of the hair and furthermore that they are highly substantive to the hair.

The fatty acid lactylates and glycolates concerned are the free fatty acid lactylates and glycolates which essentially are of the following composition



and their ammonium, alkali metal and physiologically unobjectionable amine salts. In such fatty acid lactylates and glycolates, RCO is the acyl radical of a fatty acid of from six to 22 carbon atoms such as, for example, caproic, caprylic, capric, lauric, myristic, palmitic, stearic, oleic and behenic acids and A is either CH_3 or H. Where a lathering effect is desired the acyl group preferably is of a saturated fatty acid of 12 to 16 carbon atoms. x is a number from 1 – 4, preferably, about 1 – 2. In the nomenclature employed herein, as in sodium-lauryl-2-lactylate, the number 2 signifies the x in the above formula.

The fatty acid lactylates and glycolates concerned are produced by methods described in U.S. Pat. 2,733,252 directed to the production of salts of fatty acid esters of lactylic acids using the appropriate fatty acid and lactic acid or glycolic acid. The products in general are mixtures and therefore the values for x generally are average values. Nevertheless, separations such as on a chromatographic column can be effected. Also, even when salts are prepared, in practical scale processes, some free acids are present so that the product as obtained normally is acid when dispersed in water with a pH of about 3 to 5. The pH of such acid products can be adjusted, if desired, by addition of an appropriate amount of an alkaline compound, such as sodium hydroxide or sodium carbonate or triethanolamine or other suitable alkalizing agents. The fatty acid lactylates or glycolates employed according to the invention therefore can be in the form of free acids, their salts or mixtures thereof.

The presence of salts of the fatty acids per se, such as sodium laurate along with the salts of the fatty acid lactylates or glycolates is permissible and in the case of shampoo preparations will assist in the lathering effect. In some instances the quantity of the salts of the fatty acid per se which may be present are such that the composition when taken as a whole, that is, the salt of the fatty acid lactylate or glycolate plus the salt of the fatty acid per se, gives a product in which the value of x is less than one, for example, about 0.5 to 0.9. Such compositions can be prepared by simple mixture of the salts of the fatty acid lactylates or glycolates with salts of the fatty acids per se or by preparation of the fatty acid lactylates or glycolates using less than 1 mol of lactic acid or glycolic acid per mol of fatty acid.

The salts of the acyl lactylates or glycolates which are especially adapted for the purposes of the invention are the ammonium salts, the alkali metal salts, such as the sodium and potassium salts, as well as the physiologically unobjectionable water soluble or water dispersible amine salts, such as the morpholine, mono-, di- and tri-ethanolamine salts.

It was found that the substantivity and therefore the lasting conditioning effect depends to some extent upon the pH at which the fatty acid lactylate or glycolate containing preparations are applied to the hair as well as the concentration and presence or absence of other surface active agents.

In general the substantivity and hair conditioning effect decreases with increase in pH. Suitable results have been obtained with preparations having a pH within the range of about 4.0 to about 10.2. As hair rinses are primarily customarily employed to condition hair after shampooing, permanent waving, bleaching or dyeing operations which may cause to a varying degree loss of sebaceous compounds of the hair or even changes in the structure of the hair itself, such as roughening and increases in porosity, it is desirable that they provide as great a hair conditioning action as possible and it therefore is advantageous to provide such rinses with a pH around 4.0 to 6.5. Such low pH values are also advantageous in rinses for the neutralization of any deleterious alkaline residues on the hair resulting from hair dressing treatments. As low pH values normally reduce the foaming and cleansing action in shampoos, it is more advantageous to provide a higher pH of, for example, about seven to eight in shampoo preparations. Discernible conditioning action is still obtained with hair shampoos containing the fatty acid lactylates or glycolates according to the invention providing a pH of about seven to eight. The shampoo is easily rinsed out to leave the hair glossy. When the fatty acid lactylates or glycolates according to the invention are used in conjunction with other hair cleansing detergents, such as, the alkyl (C = 12 to 18) sulfates and alkyl benzene sulfonate detergents, the substantivity at the same pH and same concentration of fatty acid lactylate or glycolate may be somewhat lower in view of the stripping action exerted by the other detergent. However, with the proper other detergents, such as, for example, triethanolamine lauryl sulfate, it is possible to reduce the pH of the shampoo so as to counteract the stripping action of such detergent.

In addition to improving the gloss, softness, combing ease and manageability of the hair, it was found that treatment of the hair with the fatty acid lactylates and glycolates according to the invention improves curl and wave retention by the hair, especially, under humid atmospheric conditions. Curl retention in hair treated with the fatty acid lactylates or glycolates according to the invention is comparable with that obtained with a commercial hair setting lotion based on an acrylic resin and superior to that observed with many commercial hair sprays based on polyvinyl pyrrolidone. Hair treated with the lactylates and glycolates have a glossy look and are not stiff or tacky as often observed with conventional hair sprays. The lactylates and glycolates providing the best setting effects on hair are obtained with lactylates and glycolates wherein the acyl group is derived from six to 12 carbon atom saturated fatty acids and from oleic acid. Consistently outstanding effects are obtained with the caproyl lactylate.

It furthermore was found that hair shampoo preparations containing the fatty acid lactylates or glycolates according to the invention provide a further unexpected result in that the oil build up on the hair is decreased between shampoos. Hair shampoo preparations can be of widely varying composition to a certain extent, depending upon the type of hair to be washed, that is, for example, whether the hair normally has a tendency for excessive dryness or oiliness. The fatty acid lactylates or glycolates wherein the acyl group is saturated and contains 12 – 16 carbon atoms according to the invention can be included in shampoos for their cleansing action in the absence of other cleansing detergents where high foaming or lathering action is not prescribed. Such shampoos, however, preferably also contain normal foam stabilizers used in shampoo preparations, such as, the fatty acid amides, for example, the mono- and di-ethanol or propanol amides of lauric, myristic or mixed coconut oil fatty acids or the corresponding fatty alkyl dimethylamine oxides. Preferably the pH of such shampoos is adjusted to around 7.5. The cleaning action of such shampoos is satisfactory and while the foam is minimal the lubricity of the lather and the conditioning effect on the hair is excellent. Where higher foaming action is desired other detergents, such as, sodium lauryl sulfate or triethanolamine lauryl sulfate may be used in order to boost the foaming and lathering action. It was found that the presence of the acyl lactylates and glycolates wherein the acyl group is saturated and contains 12 – 16 carbon atoms, in shampoos containing other hair cleansing detergents will improve the quantity and also the quality of the foam obtained in that the bubbles are finer so that a denser foam is obtained. It has also been observed that the inclusion of the acyl lactylates and especially the acyl glycolates in the normal shampoo preparations such as those containing lauryl sulfates tends to increase their viscosity desirably. Such boosted compositions in addition can also contain the conventional foam stabilizers. The foam stabilizers when used in the shampoos according to the invention are used in the customary concentration of about 1 to 5 percent where the shampoo is to be used without substantial dilution. When concentrates are involved which are to be diluted, the concentrations should be correspondingly higher. If desired, the shampoos according to the invention may also contain the usual opacifying agents, such as magnesium stearate, guanine stearyl amide, ethylene or propylene glycolmonostearate.

The quantity of fatty acid lactylate or glycolate included in the shampoo preparations depends upon whether or not a booster detergent is present. When used alone the concentration may be, for example, between 5 to 25 percent, preferably, about 8 – 15 percent by weight of the composition. When used in conjunction with a booster detergent the quantity can be reduced down to about 1 to 2 percent. Such low concentrations still exhibit substantial substantivity if the pH is reduced to about 5.5. Preferably the ratio of fatty acid lactylate or glycolate to the booster detergent is at least one to five. When foam stabilizers are employed in the shampoo compositions they can be present in quantities of about 20 to 100 percent by weight with reference to the detergent component.

Compositions suitable as hair rinse or hair setting or hair curling compositions may also be of widely varied compositions. In some instances hair rinse compositions may also double for hair setting or curling compositions. In general, if the composition is to be used as a final rinse or as a hair setting or curling composition so that it is dried directly on the hair, it is advisable that such compositions contain between about 0.1 and 2 percent, preferably, about 0.2 to 1 percent of the fatty acid lactylate or glycolate as at higher concentrations than 2 percent the hair will appear oily unless the application is followed by a water rinse. When application is

to be followed by a water rinse concentrations can range up to about 10 percent. In general, the compositions are such that the fatty acid lactylate or glycolate is either in solution or in the form of a colloidal dispersion. For example, rinses and hair setting or curling compositions can be prepared as concentrated solutions in ethanol or isopropanol, preferably, at a pH of 4 – 6 which may be diluted with water to give solutions or dispersions at the desired concentrations. Solutions or dispersions in mixtures of water and alcohols, such as ethanol, isopropanol and propylene glycol, can be used as the solvent or dispersing medium. Also, various surface active agents can be used to enhance water solubility of the fatty acyl lactylates or glycolates, such as polyoxyethylene sorbitan monostearate, polyoxyethylene lanolin alcohols and the like. In hair setting or curling preparations it may be desirable to include a relatively small quantity, for example, about 2 percent of a thickening agent such as sodium carboxy methyl cellulose, methyl cellulose or carboxy vinyl polymer. Hair setting or curling preparations can be provided such as to be suitable for application as aerosol sprays, for example, by dissolving the fatty acyl lactylate or glycolate in ethanol and pressurizing such solution with propellants, such as the dichloro-,difluoro- or trichloromonofluoromethanes.

While lactylates or glycolates of fatty acids having 6 – 22 carbon atoms provide substantive hair conditioning effects, those with saturated fatty acids containing 6 – 12 carbon atoms were superior to those with a higher number of carbon atoms. The oleyl lactylate also exhibited excellent substantivity. Substantivity and hair conditioning action were discernible not only by subjective investigations but also by procedures indicating the amount of the lactylate or glycolate absorbed on hair. The latter test was conducted as follows:

Swatches of Caucasian hair were bleached a number of times with twenty volume hydrogen peroxide and ammonia until they were white and had a rough, strawlike feel. The swatches were then soaked for ten minutes in 0.75 percent aqueous solutions of sodium lauryl sulfate, of a conventional quaternary ammonium compound conditioning agent and of various acyl lactylates and glycolates. This was followed by at least a one-half minute rinse under running tap water (2-grain hardness). After air-drying, the swatches were placed in a sealed container along with crystals of iodine. Many types of lipids turn brown in the presence of iodine vapor. After this exposure period, the swatches were examined. A hair swatch that had been washed with water remained white. Similarly, a hair swatch that had been treated with the solution of sodium lauryl sulfate remained white. On the other hand that treated with a commercial hair rinse based on a quaternary ammonium compound, as well as swatches treated with the acyl lactylates and glycolates were stained by the iodine vapor.

The intensity of the stain produced is an indication of the relative amount of substantivity achieved. In general, at equal concentrations of the lactylates and the glycolates the substantivity achieved with the glycolates was somewhat less but this is easily compensated for by using increased concentrations of the glycolates. The tests indicated that whether the lactylate or glycolate group was monomeric or polymeric, that is, whether x is one or up to about four or somewhat higher, had no decided influence on the performance. Typical suitable fatty acid lactylates and glycolates, for instance, are as follows: the alkali metal or water soluble or water dispersible pharmacologically acceptable amine salts (or partial salts) of caproyl-2-lactylate, caprylyl-2-lactylate, capryl-2-lactylate, lauryl-1-lactylate, lauryl-2-lactylate, lauryl-3-lactylate, lauryl-4-lactylate, myristyl-1-lactylate, myristyl-2-lactylate, oleyl-2-lactylate, palmityl-2-lactylate, stearyl-2-lactylate, behenyl-2-lactylate, lauryl-1-glycolate, myristyl-1-glycolate, myristyl-2-glycolate, palmityl-1glycolate, lauryl/myristyl-1-glycolate, capryl-1-glycolate.

The following examples will serve to illustrate the present invention with reference to a number of embodiments thereof. The sodium salts of the fatty acid lactylates and glycolates are primarily used in such examples as they are the most common and most easily available. Ammonium salts, as well as other alkali metal salts and water soluble or water dispersible salts with physiologically acceptable amines give analogous results. Also it will be readily understood that free fatty acid lactylates are present in those compositions which have a low pH.

Examples 1 – 25

The following compositions have been found well suited for shampooing hair. In their preparation the ingredients which are given in parts by weight are combined and heated to give a clear solution and the pH adjusted as required with 10 percent NaOH or 10 percent HCl or with triethanolamine.

	Examples																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Sodium lauryl-2-lactylate		10	10	10	5	7	10	10	5	9	9	8	2					
Triethanolamine lauryl-2-lactylate	10																	
Sodium lauryl-1-lactylate																8	8	
Sodium lauryl-3-lactylate																		10
Sodium myristyl-2-lactylate														5				
Sodium palmityl-2-lactylate															5			
Lauryl diethanolamide	5	5	5	5	5	5		5	5	1	3	2	5	5	5	3		
Lauryl dimethylamine oxide																	3	2
Triethanolamine lauryl sulfate					5	3			5	1	3		10	5	5			
Sodium lauryl ether sulfate																5		
Sodium pentadecyl ether sulfate																	5	
Triethanolamine dodecyl benzene sulfonate																		10
Magnesium stearate		1																
Stearyl amide			1															
Sodium xylene sulfonate																0.8	1.2	
Water	84	84	84	85	85	85	90	85	85	89	85	90	88	85	85	84.2	82.8	78
pH	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.2	7.3	7.1

	Examples						
	19	20	61	22	23	24	25
Sodium lauryl-1-lactylate	10						
Sodium myristyl-1-lactylate		10					
Sodium lauryl-1-glycolate			10				
Sodium lauryl-myristyl-1-glycolate				10			
Sodium myristyl-1-glycolate					10		
Sodium palmityl-1-glycolate						10	
Sodium myristyl-2-glycolate							10
Methanol amine lauryl sulfate	16	16	16	16	16	16	16
Lauryl diethanolamide	4	4	4	4	4	4	4
Water	70	70	70	70	70	70	70
pH	7.45	7.50	7.40	7.42	7.50	7.40	6.0

Such compositions are adapted for shampooing the hair in the normal manner such as, for example, by wetting the hair down with water, applying the shampoo composition and rubbing and kneading the hair to raise a lather and then rinsing the hair. The fatty acid lactylates and glycolates rinse freely even in hard water and leave the hair glossy.

Examples 26 – 34

The following compositions have been found suited as concentrated hair rinse or hair setting or curling preparations. The proportions are in grams except for the ethanol and isopropanol which are in ml. Their preparation is analogous to that of the shampoo compositions.

	Examples											
	26	27	28	29	30	31	32	33	34	35	36	37
Sodium lauryl-2-lactylate	10											
Sodium lauryl-4-lactylate						10						
Sodium lauryl-1-lactylate								8				
Sodium oleyl-2-lactylate					8				10			
Sodium caproyl-2-lactylate			8				8					
Sodium myristyl-2-lactylate				8								
Sodium stearyl-2-lactylate		10										
Sodium lauryl-1-glycolate										10		
Sodium myristyl-1-glycolate											8	
Sodium palmityl-1-glycolate												8
Ethanol, 95% (SDA40)		50	25	25	25		55	25	40		55	55
Isopropanol	20											
Propylene glycol						25				25		
Tween 60*							2				2	2
Polychol 40*								2				
Water	70	40	67	67	67	85	85	65	50	85		
pH	6.0	7.5	5	6	6.5	5.9	4.8	6.4	5.1	6.65	5.95	6.40

*Tween 60=Polyoxyethylene(20)sorbitanmonostearate; Polychol 40=Polyoxyethylene(40)lanolin alcohols.

While such concentrates could be used as such as intermediate rinses which are followed by a water rinse, they preferably are diluted with water to provide a fatty acid lactylate or glycolate concentration between about 0.1 and 2 percent, preferably, between about 0.2 and 1 percent and used as a final rinse. When diluted to the 0.2 – 1 percent concentrations they provide the best curl retention effect which is evidenced if the hair still wet after a final rinse therewith is wound on a metal curler and permitted to dry. In most hair the resulting curled hair retained its curl much longer in humid atmospheres than with water alone (as is known, some types of hair are such that excellent retention of curl is attained using water alone as a wave set).

EXAMPLES 38 – 44

The following are compositions which are adapted to be used directly as hair setting or curling compositions, that is, not necessarily as a conditioning rinse after some other hair dressing operation. In use the hair to be curled is saturated with such compositions, combed, wound on curlers and permitted to dry.

The following first four aqueous hair setting or curling compositions were respectively based on the hair rinse concentrates of Examples 31 – 37. The concentrations are given in parts by weight.

EXAMPLES

	38	39	40	41	42	43	44
Concentrate of Example 31	10						
Concentrate of Example 32		10					
Concentrate of Example 33			10				
Concentrate of Example 34				10			
Concentrate of Example 35					10		
Concentrate of Example 36						10	
Concentrate of Example 37							10
Carbopol 941 1% aqueous)	20	20	20	20	20	20	20
Water	70	70	70	70	70	70	70

Carbopol b **941** is a high molecular weight carboxy vinyl polymer and was added as a thickening agent as the users of hair setting or curling preparations are accustomed to somewhat viscous preparations. It was first prepared as a 1 percent solution in water and then mixed with other ingredients until a uniform mixture resulted. It is an optional ingredient which does not essentially affect the curl retaining properties of the hair set with such preparations. Other thickening gums, such as carboxymethyl cellulose or methyl cellulose can be used in place of the Carbopol.

The following three compositions are for use as aerosol wave sets:

EXAMPLES

	45	46	47
Sodium lauryl-1-lactylate	1.0 g		
Sodium oleyl-2-lactylate		1.0 g	
Sodium caproyl-2-lactylate			1.0 g
Ethanol, anhydrous	50 ml	50 ml	50 ml
Dichloro-difluoro methane	25 ml	25 ml	25 ml
Trichloro-monofluor	25 ml	25 ml	25 ml

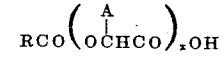
Such aerosol wave set compositions were prepared by heating the lactylate with alcohol to dissolve, cool-

ing the solution to room temperature and pressurizing with the propellants. Other customary aerosol spray propellants such as compressed nitrogen and propane can be used in place of the fluorocarbon propellants mentioned.

The term "homogeneously distributed" is employed herein to include solutions as well as colloidal dispersions of the distributed substance.

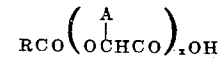
We claim:

1. A method of conditioning the hair which comprises contacting the hair with a liquid hair dressing composition containing homogeneously distributed therein, as the essential hair conditioning agent, about 0.1 to 10 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



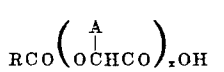
wherein RCO is the acyl radical of a fatty acid of from six to 22 carbon atoms, A is CH_3 or H and x is a number from one to four and their ammonium, alkali metal and physiologically acceptable amine salts.

2. A method of conditioning the hair which comprises giving the hair a rinse with an aqueous hair rinse liquid having a pH between about four and 10.2 containing homogeneously distributed therein, as the essential hair conditioning agent, about 0.1 to 10 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



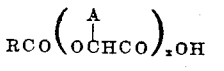
wherein RCO is the acyl radical of a fatty acid of from six to 22 carbon atoms, A is CH_3 or H and x is a number from about one to four and their ammonium, alkali metal and physiologically acceptable amine salts and subsequently rinsing the hair with water.

3. A method of conditioning the hair which comprises giving the hair a rinse with an aqueous hair rinse liquid having a pH between about four and 10.2 containing homogeneously distributed therein, as the essential hair conditioning agent, about 0.1 to 2 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



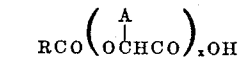
wherein RCO is the acyl radical of a fatty acid of from six to 22 carbon atoms, A is CH_3 or H and x is a number from about one to four and their ammonium, alkali metal and physiologically acceptable amine salts.

4. A method of conditioning the hair which comprises giving the hair a rinse with an aqueous hair rinse liquid having a pH between about four and 10.2 containing homogeneously distributed therein, as the essential hair conditioning agent, about 0.1 to 2 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



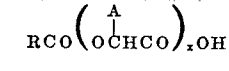
wherein RCO is the acyl radical of a saturated fatty acid of from six to 12 carbon atoms, A is CH_3 or H and x is a number from about one to four and their ammonium, alkali metal and physiologically acceptable amine salts.

5. A method of conditioning the hair which comprises giving the hair a rinse with an aqueous hair rinse liquid having a pH between about four and 10.2 containing homogeneously distributed therein, as the essential hair conditioning agent, about 0.1 to 2 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



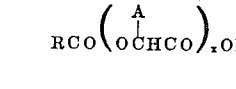
wherein RCO is the acyl radical of oleic acid, A is CH_3 or H and x is a number from about one to four and their ammonium, alkali metal and physiologically acceptable amine salts.

6. A method of curling the hair which comprises wetting the hair with an aqueous hair setting liquid having a *p*H between about four and 10.2 containing homogeneously distributed therein, as the essential hair setting agent, about 0.2 to 1 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



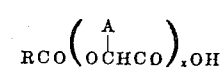
wherein RCO is the acyl radical of a saturated fatty acid of from six to 12 carbon atoms, A is CH_3 or H and x is a number from about one to four, and their ammonium, alkali metal and physiologically acceptable amine salts, winding the wetted hair on a hair curler and drying the thus wound hair on the hair curler.

7. A method of curling the hair which comprises wetting the hair with an aqueous hair setting liquid having a pH between about four and 10.2 containing homogeneously distributed therein, as the essential hair setting agent, about 0.2 to 1 percent by weight of at least one member selected from the group consisting of fatty acid lactylates and glycolates of the formula



wherein RCO is the acyl radical of oleic acid, A is CH_3 or H and x is a number from about one to four, and their ammonium, alkali metal and physiologically acceptable amine salts, winding the wetted hair on a hair curler and drying the thus wound hair on the hair curler.

8. A process of cleansing and conditioning the hair, which comprises shampooing the hair with a liquid aqueous shampoo composition containing homogeneously distributed therein an effective amount of a cleansing detergent component selected from the group consisting of ammonium, alkali metal and physiologically acceptable amine salts of fatty acid lactylates and glycolates of the formula



wherein RCO is the acyl radical of a saturated fatty acid of from 12 – 16 carbon atoms, A is CH_3 or H and x is a number from about one to four and such salt of a fatty acid lactylate or glycolate in combination with another hair cleansing detergent selected from the group consisting of sodium lauryl sulfate, triethanolamine lauryl sulfate, sodium pentadecyl sulfate, triethanolamine dodecyl benzene sulfonate, sodium xylene sulfonate, methanol amine lauryl sulfate and mixtures thereof, at a pH between about 5.5 and about 10, the ratio of said salt of the fatty acid lactylate or glycolate to said other hair cleansing detergent in said combination being at least one to five, said fatty acid lactylate or glycolate component also being the essential hair conditioning component and being present in said liquid shampoo composition in a quantity of about 0.1 to 10 percent.

9. The process of claim **8** in which said hair cleansing component is a combination of said fatty acid lactylate or glycolate and another hair cleansing detergent and said other hair cleansing detergent is a physiologically acceptable water soluble lauryl sulfate salt.

10. A process of cleansing and conditioning the hair, which comprises shampooing the hair with an aqueous shampoo composition containing homogeneously distributed therein, as the cleansing detergent and hair conditioning component, an effective amount of a salt selected from the group consisting of ammonium, alkali metal and physiologically acceptable amine salts of a fatty acid lactylate and glycolate of the formula

$$RCO\left(\begin{matrix}A\\|\\OCHCO\end{matrix}\right)_xOH$$

wherein RCO is the acyl radical of a saturated fatty acid of from 12 – 16 carbon atoms, A is CH_3 or H and x is a number from about one to four and about 20 to 100 percent by weight of a foam stabilizer based upon the salt of fatty acid lactylate or glycolate at a *p*H between about seven and about eight, said foam stabilizer being selected from the group consisting of a fatty acid amide and the corresponding fatty alkyl dimethylamine oxide thereof.

11. A process of cleansing and conditioning the hair, which comprises shampooing the hair with an aqueous shampoo composition containing homogeneously distributed therein, as the cleansing detergent, an effective amount of a combination of a salt selected from the group consisting of ammonium, alkali metal and physiologically acceptable amine salts of a fatty acid lactylate and glycolate of the formula

$$RCO\left(\begin{matrix}A\\|\\OCHCO\end{matrix}\right)_xOH$$

wherein RCO is the acyl radical of a saturated fatty acid of from 12 – 16 carbon atoms, A is CH_3 or H and x is a number from about one to four with a physiologically acceptable water soluble lauryl sulfate salt, the proportion of said salt of the fatty acid lactylate or glycolate to said lauryl sulfate salt being at least one to five, and 20 to 100 percent by weight of a foam stabilizer based upon the cleansing detergent combination at a *p*H between about 5.5 and 10.2, said foam stabilizer being selected from the group consisting of a fatty acid amide and the corresponding fatty alkyl dimethylamine oxide thereof, said fatty acid lactylate or glycolate salt also being the essential hair conditioning component and being present in said shampoo composition in a quantity of about 0.1 t0 10 percent.

12. An aqueous liquid hair shampoo and hair conditioning composition containing homogeneously distributed therein an effective amount of a cleansing detergent component selected from the group consisting of ammonium, alkali metal and physiologically acceptable amine salts of a fatty acid lactylate and glycolate of the formula

$$RCO\left(\begin{matrix}A\\|\\OCHCO\end{matrix}\right)_xOH$$

wherein RCO is the acyl radical of a saturated fatty acid of from 12 – 16 carbon atoms, A is CH_3 or H and x is a number from about one to four and such salt of a fatty acid lactylate or glycolate in combination with another hair cleansing detergent selected from the group consisting of sodium lauryl sulfate, triethanolamine lauryl sulfate, sodium pentadecyl sulfate, triethanolamine dodecyl benzene sulfonate, sodium xylene sulfonate, methanol amine lauryl sulfate and mixtures thereof, at a *p*H between about 5.5 and eight, the ratio of said salt of the fatty acid lactylate or glycolate to said other hair cleansing detergent in said combination being at least one to five and 20 to 100 percent by weight of a foam stabilizer based upon the cleansing detergent component, said foam stabilizer being selected from the group consisting of a fatty acid amide and the corresponding fatty alkyl dimethylamine oxide thereof, said fatty acid lactylate or glycolate component being the essential hair conditioning component and being present in an effective amount to condition the hair when the composition is used in shampooing the hair.

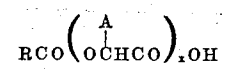
13. An aqueous liquid hair shampoo and hair conditioning composition containing homogeneously distributed therein, as the cleansing detergent, an effective amount of a salt selected from the group consisting of ammonium, alkali metal and physiologically acceptable amine salts of a fatty acid lactylate and glycolate of the formula

$$RCO\left(\begin{matrix}A\\|\\OCHCO\end{matrix}\right)_xOH$$

wherein RCO is the acyl radical or a saturated fatty acid of from 12 – 16 carbon atoms, A is CH_3 or H and x is a number from about one to four and about 20 to 100 percent by weight of a foam stabilizer based upon the salt of fatty acid lactylate or glycolate at a pH between about seven and about eight, said foam stabilizer being selected from the group consisting of a fatty acid amide and the corresponding fatty alkyl dimethylamine oxide thereof, said fatty acid lactylate or glycolate component being the essential hair conditioning component and being present in an effective amount to condition the hair when the composition is used in shampooing the hair.

14. An aqueous liquid hair shampoo and hair conditioning composition containing homogeneously dis-

tributed therein, as the cleansing detergent, an effective amount of a combination of a salt selected from the group consisting of ammonium, alkali metal and physiologically acceptable amine salts of a fatty acid lactylate or glycolate of the formula



wherein RCO is the acyl radical of a saturated fatty acid of from 12 – 16 carbon atoms, A is CH_3 or H and x is a number from about one to four with a physiologically acceptable water soluble lauryl sulfate salt, the proportion of the salt of the fatty acid lactylate or glycolate to said lauryl sulfate salt being at least one to five, at a pH between about 5.5 and 10.2, said fatty acid lactylate or glycolate component being the essential hair conditioning component and being present in an effective amount to condition the hair when the composition is used in shampooing the hair.

15. A composition according to claim **14** in which said hair conditioning component is a salt of a fatty acid lactylate.

16. A composition according to claim **14** in which said hair conditioning component is a salt of a fatty acid glycolate.

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