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(54) Title of Invention

Dye composition for keratinous fibers

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TITLE OF THE INVENTION

DYE COMPOSITION FOR KERATINOUS FIBERS

The present invention relates to a dye composition for keratinous fibers, for example hair, and, in particular, to a dye composition for keratinous fibers comprising an acidic dye, exhibiting a good color fastness, and providing a long-lasting excellent conditioning effect. The present invention relates also to a process for dyeing keratinous fibers by the use of said dye composition.

Most popular oxidative hair dyes essentially consist of an oxidative dye and an oxidizing agent. Since they are used together with hydrogen peroxide under alkaline conditions, the dyeing operation involves risks of damaging hair and of giving primary irritation to the skin, producing red spots, small blisters, and the like. Acidic dyes have been proposed as hair dyeing agents to eliminate these risks to scalp and hair.

A number of hair dye compositions in which an acidic dye is used in combination with a penetration accelerator have been proposed, e.g., Japanese Patent Publication (ko-koku) Nos. 23911/1973, 12407/1980, 53211/1986, Japanese Patent Laid-open (ko-kokai) Nos. 124612/1987, 91028/1977, and 28913/1985. A problem in this type of hair dye compositions is giving a bad feel to the hair after use due to a large amount of an organic solvent used as a penetration accelerator.

Japanese Patent Laid-open (ko-kai) No. 157713/1983 discloses a method of providing a long-lasting conditioning effect to the hair by the combination of an oxidative/direct dye stuff, a cationic polymer, and an anionic surfactant. This hair dye composition, however, can be used only in an alkaline range of greater than pH 8, and cannot exhibit its effects in an acidic range, thus involving risks of damaging the hair or giving irritation to the skin.

Japanese Patent Laid-open (ko-kai) No. 35514/1988 discloses a composition comprising an acidic dye and a cationic polymer at an electric charge ratio of 0.2-1.0 and further comprising an amphoteric surfactant or an inorganic electrolyte as a solubilizer. It claims that the composition exhibits a strong dyeing power. However, the use of an acidic dye and a cationic polymer in the claimed electric charge ratio results in the formation of an oily complex which, when applied to hair, physically covers surface of the hair, prohibiting the dye from penetrating into the inside of the hair. The color dyed with the composition is easily removed by frictions or washing.

Thus, in spite of a strong desire by consumers a dye composition for keratinous fibers using an acidic dye which gives a good feel and a good color fastness by washing and friction has never been produced heretofore.

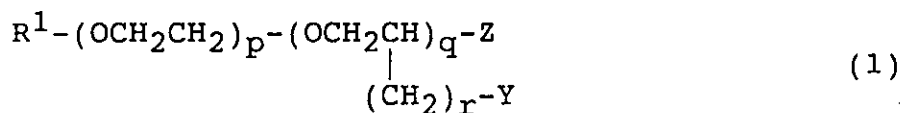
In view of this situation the present inventors have undertaken extensive studies and found that the use of an acidic dye and a cationic polymer with a nitrogen content of

0.5-3.0% together with a specific type of surfactant suppresses the formation of complexes between the acidic dye and the cationic polymer at a low level, well retains the color, and exhibits a lasting conditioning effect. This finding has led to the completion of the present invention.

Accordingly to the present invention there is provided a dye composition for keratinous fibers comprising (a) an organic solvent, (b) an acidic dye, (c) an acid, (d) a cationic polymer with a nitrogen content of 0.5-3.0%, and (e) one or more surfactants selected from the group consisting of betain derivatives and acylated glutamic acid derivatives, and having pH 2-4.

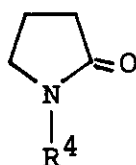
Other objects, features and advantages of the invention will hereinafter become more readily apparent from the following description.

There are no limitations as to the organic solvent (a) used in the dye composition of keratinous fibers of the present invention so long as the same can homogeneously dissolve the acidic dye (b) and accelerate the penetration of the dye into keratinous fibers. Examples of such organic solvents are compounds of the following formula (1) or (2).



wherein R^1 is a hydrogen atom, a linear or branched alkyl group having 1-4 carbon atoms, a group $R^2-C_6H_4-R^3-$ or $R^2-C_6H_5-$, wherein R^2 is a hydrogen atom, a methyl group, or a

methoxy group and R^3 is a group $-CH_2-$, $-C(CH_3)_2-$, $-CH_2-CH_2-$, $-CH_2-CH(CH_3)-$, $-CH_2-CH_2-CH_2-$, or $-CH=CH-CH_2-$; p, q and r individually represent an integer of 0-5, and Y and Z individually represent a hydrogen atom or a hydroxy group, provided that a compound with R^1 and Z are hydrogens and all p, q and r are zero is excluded.



wherein R^4 is a linear or branched alkyl group having 1-18 carbon atoms.

Especially preferable among compounds of formula (1) or (2) are ethanol, isopropanol, n-propanol, n-butanol, isobutanol, ethylene glycol, propylene glycol, 1,3-butane diol, benzyl alcohol, cynamyl alcohol, phenetyl alcohol, p-anicyl alcohol, p-methylbenzyl alcohol, phenoxy ethanol, 2-benzyloxy ethanol, methyl carbitol, ethyl carbitol, propyl carbitol, butyl carbitol, triethylene glycol monoethyl ether, triethylene glycol monobutyl ether, glycerine, N-methylpyrrolidone, N-octylpyrrolidone, N-laurylpyrrolidone, and the like.

A preferable amount of an organic solvent (a) to be incorporated into the dye composition of keratinous fibers of the present invention is 0.5-50% by weight ("% by weight" is hereinafter simple referred to as "%"), with an especially preferable range being 2-30%. A satisfactory effect cannot be obtained with the amount of less than 0.5%,

while the amount exceeding 50% does not bring about the effect proportionate to the excess amount. A preferable proportion of organic solvent (a) and water is 20:80 to 50:50, although a specific proportion depends upon the solubility in water of the solvent.

Any acidic dyes commonly used for dyeing hairs can be used as component (b) without specific limitations. Examples include CI Acid Red 27, 51, 18, 92, 94, 52, CI Acid Yellow 23, 3, CI Food Green 3, CI Food Blue 1, CI Pigment Red 57-1, CI Acid Blue 74, CI Acid Red 33, 87, 95, CI Acid Orange 7, CI Acid Yellow 73, 3, CI Acid Green 25, CI Solvent Green 7, CI Acid Green 5, CI Acid Orange 24, CI Acid Violet 9, CI Acid Blue 5, 9, CI Acid Red 26, CI Food Red 1, 6, CI Acid Red 88, CI Acid Orange 20, CI Acid Yellow 40, 1, 36, 11, CI Acid Green 1, 3, CI Acid Violet 43, CI Acid Black 1, and the like.

A preferable amount of an acidic dye (b) to be incorporated into the dye composition of keratinous fibers of the present invention is 0.1-5%, with an especially preferable range being 0.15-3%. A dyeing effect is weak with the amount of less than 0.1%, while the amount exceeding 5% does not bring about the effect proportionate to the excess amount.

A wide variety of common organic or inorganic acids can be used as component (c). They include, for example, organic acids such as citric acid, glycolic acid, succinic acid, tartaric acid, lactic acid, fumaric acid, malic acid,

levulinic acid, butyric acid, valeric acid, oxalic acid, maleic acid, mandelic acid, and the like; and inorganic acids such as phosphoric acid, hydrochloric acid, sulfuric acid, nitric acid, and the like. In addition to acids (c), their salts, e.g., sodium salt, potassium salt, ammonium salt, may be added in order to provide a buffering power to the composition.

A preferable amount of an acid (c) to be incorporated into the dye composition of keratinous fibers of the present invention is 0.1-15%, with an especially preferable range being 1-10%.

As a cationic polymer with a nitrogen content of 0.5-3.0%, which is component (d) of the composition of the present invention, polymers not containing nitrogen, such as cellulose, hydroxyethyl cellulose, guar -gum, etc., can be used after having been cationized. The cationization is carried out by combining a polymer not containing nitrogen with a quarternary ammonium group, such as tetraalkyl ammonium group, hydroxyalkyl trimethyl ammonium group, dialkyl diallyl ammonium group, or the like. Cationized cellulose derivatives, hydroxyethylcellulose dimethylallyl ammonium chloride copolymers, cationized guarh-gum derivatives, and the like are given as specific cationized polymers (d). Hydroxyethylcellulose hydroxypropyltrimethyl ammonium chloride (CTFA, polyquaternium 10), and Polymer JR-125, Polymer JR-400, and Polymer LR-400 (trademarks, all products of Union Carbide Corp.) are typical examples of

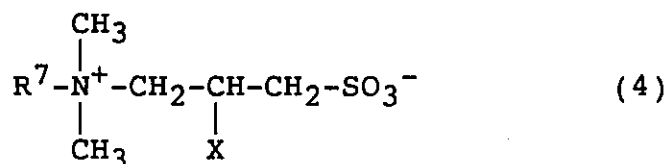
cationized cellulose derivatives. The content of nitrogen in the hydroxyethylcellulose hydroxypropyltrimethyl ammonium chlorides is 0.5 to 2.5% according to the nitrogen measurement method (the first method) described in the note for Standard of Cosmetic Raw Materials. Cellcoat L-200 and Cellcoat H-60 (trademarks, products of national Starch Co.) are given as commercially available hydroxyethylcellulose dimethyldiallyl ammonium chloride copolymers (CTFA, polyquaternium-4). The content of nitrogen in the hydroxyethylcellulose dimethyldiallyl ammonium chloride copolymers is 1.4 to 2.2% according to the nitrogen measurement method (the first method) described in the note for Standard of Cosmetic Raw Materials. Hydroxyethylcellulose hydroxypropyltrimethyl ammonium chloride guarh-gum and the like are given as examples of cationized guarh-gums. Jaguarh C-13-S and Jaguarh C-15-S (trademarks, products of Cellenese Steinhall Co.) are examples of commercially available guarh-gums of this type. The content of nitrogen in these hydroxypropyltrimethyl ammonium chloride guarh-gums is 1.0 to 3.0% according to the nitrogen measurement method (the first method) described in the note for Standard of Cosmetic Raw Materials. Since these types of cationized polymers have a low nitrogen content of 0.5-3.0%, formation of complexes with acidic dyes are suppressed at a low level. Addition of these cationized polymers was found to promote the color fastness. The amount of these cationized polymers to be incorporated is preferably 0.1-0.5%, and particularly

preferably 0.2-0.4%. If the amount of a cationized polymer is less than 0.1%, the good conditioning effects of the composition to be derived from the combination of this component with component (e), one or more surfactants selected from the group consisting of betain derivatives and acylated glutamic acid derivatives, illustrated later in detail, cannot be retained for a sufficient period of time. If greater than 0.5%, the proportion of complexes of this component with acidic dye increases, resulting in low color fastness.

Given as examples of betain derivatives among surfactants (e) are compounds of the following formula (3) or (4).



wherein R^5 is a linear or branched alkyl group having 10-24 carbon atoms or a group, $\text{R}^6\text{-CO-NH-(CH}_2\text{)}_m\text{-}$, wherein R^6 is a linear or branched alkyl group having 9-23 carbon atoms and m is an integer of 1-5.

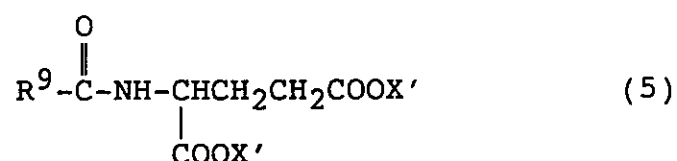


wherein R^7 is a linear or branched alkyl group having 10-24 carbon atoms or a group, $\text{R}^8\text{-CO-NH-(CH}_2\text{)}_n\text{-}$, wherein R^8 is a linear or branched alkyl group having 9-23 carbon atoms and

n is an integer of 1-5; and X is a hydrogen atom or a hydroxy group.

Specific betain derivatives are cocoamidopropyl betain, oleamidopropyl betain, lauramidopropyl betain, coco-betain, oleyl betain, lauryl betain, cetyl betain, cocoamidopropyl-hydroxy saltin, lauryl saltin, and the like. Especially preferable among these are cocoamidopropyl betain and lauramidopropyl betain. Hear, "coco" means a C₁₂ fatty acid mixture derived from coconut oil.

Compounds of the following formula (5) are given as acylated glutamic acid derivatives.



wherein R⁹ is a linear or branched alkyl group having 9-23 carbon atoms and X' is a hydrogen, potassium, sodium, NH₄, or an alkanolamine.

Specific examples include cocoyl glutamic acid, lauroyl glutamic acid, oleoyl glutamic acid, and their potassium salts, sodium salts, alkanolamine salts, and ammonium salts.

The above betain derivatives and acylated glutamic acid derivatives can be used either singly or two or more are used together.

The amount of component (e) to be incorporated in the composition of the present invention is preferably 0.1-0.5%, and particularly preferably 0.2-0.4%. If the amount is less

than 0.1%, the good conditioning effects of the composition do not last long. On the other hand, the effect proportionate to the amount exceeding 0.5% cannot be obtained.

An aqueous solution of the dye composition for keratinous fibers of the present invention must be pH 2-4. The pH of the composition can be adjusted by the amounts of components (b), (c), (d), and (e). However, providing the composition with a buffering power by the use of sodium salt, potassium salt, or ammonium salt is more preferable.

Other components commonly used in cosmetic compositions can optionally be added to the composition of the present invention to the extent that such an addition does not impair the effects of the present invention. Included in such optional components are thickeners, e.g., hydroxyethyl cellulose; silicones, perfumes, preservatives, UV absorbers, antiseptics, water, and the like.

For dyeing keratinous fibers, e.g., hairs, by using the dye composition for keratinous fibers of the present invention, the composition is applied to the keratinous fibers, and warmed at a temperature of 20-50°C, and preferably 30-45°C, for 5-30 minutes, and preferably for 10-20 minutes. After this, the keratinous fibers are washed according to a common method, e.g., with a shampoo, to wash off the remaining composition.

Other features of the invention will become apparent in

the course of the following description of the exemplary embodiments which are given for illustration of the invention and which are not intended to be limiting thereof.

EXAMPLES

In the examples below, concentrations of each component designate the effective concentrations, and compositions of the present invention and comparative compositions are evaluated according to the following standards.

(1) Dyeing power (after one shampooing)

0.5 g of compositions of the present invention and comparative compositions were applied to tresses of white hair (each tress weighing about 1 gm). Hair tresses were warmed at 45°C for 15 minutes, allowed to cool for 5 minutes, washed with a tap water, shampooed, rinsed, and dried. L, a, and b values of the dyed hairs were measured by a colorimeter, CR200 (trademark, manufactured by Minolta Co.), to determine color differences (ΔE_1) between the dyed hair and the undyed hair, evaluating the dyeing power. The larger the ΔE_1 , the greater is the degree of dyeing.

(2) Feel of hair upon dyeing (after one shampooing)

5 gm of hair dyeing composition samples was applied to tresses of black hair of a Japanese, each tress weighing about 10 gm, and tresses were treated in the same manner as above. The finishing feel was evaluated by 5 expert panelists.

AAA: Very smooth with excellent finger combing.

BBB: Smooth and good finger combing.

CCC: Hair is not slippery with slight rough touch.

DDD: Hair is frictional with considerable rough touch.

(3) Color after 4 time shampoos

Tresses dyed in (1) above were washed repeatedly with a commercially available shampoo and dried, four times in total. Color differences (ΔE_2) between the dyed hair and the undyed hair were determined to evaluate the dyeing performance. The larger the ΔE_2 , the greater is the degree of dyeing and the smaller is the color fading by washing.

(4) Feel of hair after 4 time shampooing

Black hair of Japanese was treated in the same manner as in (3) above to evaluate the feel by 5 expert panelists.

AAA: Smoothness and finger combing have been almost retained.

BBB: Smoothness and good finger combing have been retained.

CCC: Hair becomes slight rough touch.

DDD: Hair becomes frictional with considerable rough touch.

Examples 1-4 and Comparative Examples 1-2

Composition were prepared according to formulations shown in Table 1. In Example 1, for example, a gel-like dye composition for keratinous fibers (Invention Product No. 1) was prepared by dissolving CI Acid Red 18, sodium lactate, and lactic acid into water, dispersing Polymer JR400 (trademark, a product of Union Carbide Corp.) into the

solution, adding to the solution a dispersion of hydroxyethyl cellulose in a small amount of water, heating the mixture to about 60°C to increase the viscosity, allowing the mixture to cool to room temperature, adding ethanol, benzyl alcohol, Softazoline LPB (trademark, a product of Kawaken Finechemical Co.), and homogenizing the mixture.

Dye compositions for keratinous fibers of Examples 2-4 (Invention Product Nos. 2-4) and Comparative Examples 1-2 (Comparative Product Nos. 1-2) were prepared in the same manner.

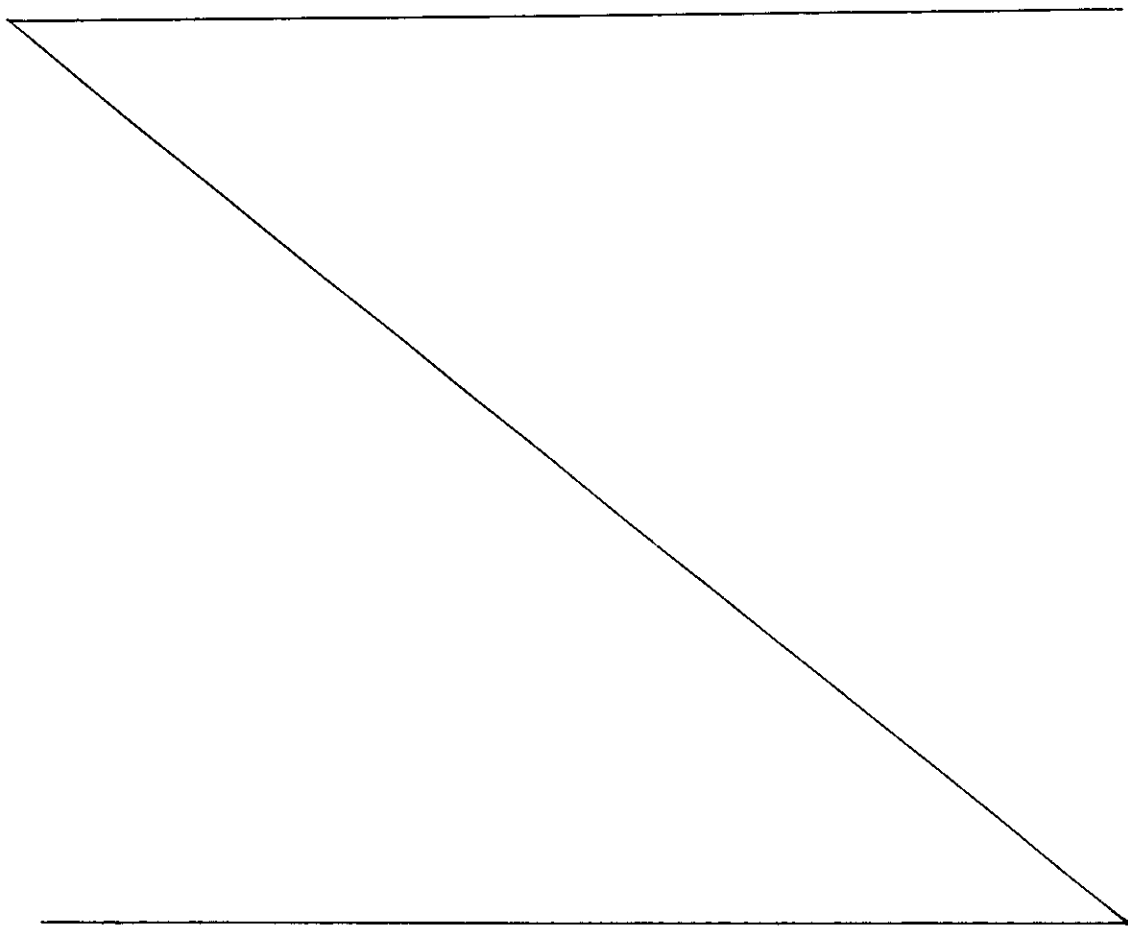


TABLE 1

	Comparative Product		Invention Product			
	No. 1	No. 2	No. 1	No. 2	No. 3	No. 4
(1) Ethanol	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
(2) Benzyl alcohol	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
(3) Marcoat 100 *1	-	0.5%	-	-	-	-
(4) Polymer JR400 *2	0.5%	-	0.3%	-	-	0.3%
(5) Polymer LR400 *3	-	-	-	0.4%	-	-
(6) Cellcoat L-200 *4	-	-	-	-	0.3%	-
(7) Softazoline LPB *5	-	0.3%	0.3%	0.3%	0.3%	-
(8) Amisoft LS-11 *6	-	-	-	-	-	0.3%
(9) Sodium lactate	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
(10) Lactic acid	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
(11) CI Acid Red 18	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
(12) Hydroxyethyl cellulose	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
(13) Purified water	balance	balance	balance	balance	balance	balance
pH	2.8	2.8	2.8	2.8	2.8	2.8

TABLE 1 (Continued)

	Comparative Product		Invention Product			
	No. 1	No. 2	No. 1	No. 2	No. 3	No. 4
Color upon dyeing (δE_1)	48	11	54	55	46	53
Sensation of hair upon dyeing (after one shampooing)	CCC	BBB	AAA	AAA	AAA	AAA
Color after 4 time shampooing (δE_2)	45	not tested	50	48	41	52
Sensation of hair after dyeing (after 4 shampooings)	DDD	CCC	AAA	AAA	AAA	AAA

*1 Homopolymer of dimethyldiallylammonium chloride (act 40%), manufactured by Merk Co.;

Nitrogen content: 9.5%

*2 Nitrogen content: 1.7%

*3 Nitrogen content: 0.9%

*4 Nitrogen content: 2.0%

*5 Lauramidepropyl betain (act 31%) manufactured by Kawaken Finechemical Co.

*6 Monosodium salt of lauroyl glutamate manufactured by Ajinomoto Co.

Example 5

A dye composition for keratinous fibers was prepared according to the same method as the method of preparing Invention Product No. 1.

Component	%
(1) Ethanol	15.0
(2) N-Methylpyrrolidone	10.0
(3) Polymer JR400 *1	0.4
(4) Softazoline LPB *2	0.3
(5) Sodium lactate	1.2
(6) Lactic acid	6.0
(7) CI Acid Orange 7	0.18
(8) Hydroxyethyl cellulose	1.6
(9) Water	Balance pH 2.8

*1 Cationized cellulose manufactured by Union Carbide
Nitrogen content: 1.7%

*2 N-Lauramidepropyl betain (act 31%) manufactured by
Kawaken Finechemical Co.

5 gm of the above composition was applied to about 10 gm of a shampooed white hair bundle. The hair was warmed at 45°C for 15 minutes, allowed to cool for 5 minutes, rinsed with water, and shampooed. The white hair was dyed in a deep orange color. The hair was smooth and could be combed very well with finger. The performance was retained after 4 time shampooing.

Example 6

A dye composition for keratinous fibers was prepared according to the same method as the method of preparing Invention Product No. 1.

Component	%
(1) Isopropanol	25.0
(2) Benzyl alcohol	5.0
(3) Polymer JR400 *1	0.4
(4) Softazoline LPB *2	0.3
(5) Sodium lactate	1.2
(6) Lactic acid	6.0
(7) CI Acid Blue 9	0.2
(8) Hydroxyethyl cellulose	1.6
(9) Water	Balance pH 2.8

The same notes as in Example 5 apply to *1 and *2.

5 gm of the above composition was applied to about 10 gm of a shampooed white hair bundle. The hair was warmed at 45°C for 15 minutes, allowed to cool for 5 minutes, rinsed with water, and shampooed. The white hair was dyed in a dark blue. The hair was smooth and could be combed very well with finger. The performance was retained after 4 time shampooing.

Example 7

A dye composition for keratinous fibers was prepared according to the same method as the method of preparing Invention Product No. 1.

Component	%
(1) Ethanol	25.0
(2) 2-Benzyloxy ethanol	10.0
(3) Polymer JR400 *1	0.4
(4) Softazoline LPB *2	0.3
(5) Sodium lactate	1.2
(6) Lactic acid	6.0
(7) CI Acid Violet 43	0.2
(8) Hydroxyethyl cellulose	1.6
(9) Water	Balance pH 2.8

The same notes as in Example 5 apply to *1 and *2.

5 gm of the above composition was applied to about 10 gm of a shampooed white hair bundle. The hair was warmed at 45°C for 15 minutes, allowed to cool for 5 minutes, rinsed with water, and shampooed. The white hair was dyed in a dark purple. The hair was smooth and could be combed very well with finger. The performance was retained after 4 time shampooing.

Example 8

A dye composition for keratinous fibers was prepared according to the same method as the method of preparing Invention Product No. 1.

Component	%
(1) Ethanol	25.0
(2) Benzyl alcohol	5.0
(3) Polymer JR400 *1	0.4
(4) Amisoft SL-11 *2	0.3

(5) Sodium citrate	0.1
(6) Citric acid	0.5
(7) Lactic acid	5.0
(8) CI Food Green 3	0.16
(9) Hydroxyethyl cellulose	1.6
(10) Water	Balance pH 2.7

*1 The same as note *1 in Example 5.

*2 Monosodium salt of lauroyl glutamate manufactured by Ajinomoto Co.

5 gm of the above composition was applied to about 10 gm of a shampooed white hair bundle. The hair was warmed at 45°C for 15 minutes, allowed to cool for 5 minutes, rinsed with water, and shampooed. The white hair was dyed in a dark green. The hair was smooth and could be combed very well with finger. The performance was retained after 4 time shampooing.

Example 9

A dye composition for keratinous fibers was prepared according to the same method as the method of preparing Invention Product No. 1.

Component	%
(1) Ethanol	25.0
(2) 2-Benzyloxy ethanol	10.0
(3) Jaguarh C-15-S *1	0.3
(4) Softazoline LPB *2	0.3
(5) Sodium lactate	1.2
(6) Lactic acid	6.0

(7) CI Acid Violet 43	0.09
(8) CI Acid Black 1	0.08
(9) CI Acid Orange 7	0.17
(10) Hydroxyethyl cellulose	1.6
(11) Water	Balance pH 2.8

*1 Hydroxypropyltrimethyl ammonium chloride guarh-gum,
a product of Jaguarh Co.; Nitrogen content: 1.5%

*2 The same as note *2 in Example 5.

5 gm of the above composition was applied to about 10 gm of a shampooed white hair bundle. The hair was warmed at 45°C for 15 minutes, allowed to cool for 5 minutes, rinsed with water, and shampooed. The white hair was dyed in a dark brown. The hair was smooth and could be combed very well with finger. The performance was retained after 4 time shampooing.

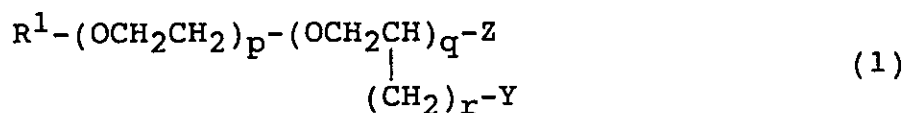
A dye composition for keratinous fibers with superior dyeing capability, exhibiting good color retention performance against repeated washing, and providing an excellent long-lasting conditioning effect is provided by the present invention.

Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

WHAT IS CLAIMED IS:

1. A dye composition for keratinous fibers comprising (a) an organic solvent, (b) an acidic dye, (c) an acid, (d) a cationic polymer with a nitrogen content of 0.5-3.0%, and (e) one or more surfactants selected from the group consisting of betain derivatives and acylated glutamic acid derivatives, and having pH 2-4.

2. A composition according to Claim 1, wherein said organic solvent (a) is a compound of the following formula (1) or (2):



wherein R^1 is a hydrogen atom, a linear or branched alkyl group having 1-4 carbon atoms, a group $\text{R}^2-\text{C}_6\text{H}_4-\text{R}^3-$ or $\text{R}^2-\text{C}_6\text{H}_5-$, wherein R^2 is a hydrogen atom, a methyl group, or a methoxy group and R^3 is a group $-\text{CH}_2-$, $-\text{C}(\text{CH}_3)_2-$, $-\text{CH}_2-\text{CH}_2-$, $-\text{CH}_2-\text{CH}(\text{CH}_3)-$, $-\text{CH}_2-\text{CH}_2-\text{CH}_2-$, or $-\text{CH}=\text{CH}-\text{CH}_2-$; p, q and r individually represent an integer of 0-5, and Y and Z individually represent a hydrogen atom or a hydroxy group, provided that a compound with R^1 and Z are hydrogens and all p, q and r are zero is excluded; or



wherein R^4 is a linear or branched alkyl group having 1-18

carbon atoms.

3. A composition according to Claim 1 or Claim 2, wherein said cationic polymer (d) is a polymer not containing nitrogen but cationized with a quarternary ammonium group, said polymer being selected from the group consisting of cellulose, hydroxyethyl cellulose and guar gum.

4. A composition according to any one of preceeding Claims, comprising 0.5-50% by weight of component (a), 0.1-5% by weight of component (b), 0.1-15% by weight of component (c), and 0.1-0.5% by weight of component (d).

5. A composition according to Claim 1 and substantially as described in the Examples.

6. A process for dyeing keratinous fibers comprising: applying to said keratinous fibers a dye composition comprising (a) an organic solvent, (b) an acidic dye, (c) an acid, (d) a cationic polymer with a nitrogen content of 0.5-3.0%, and (e) one or more surfactants selected from the group consisting of betain derivatives and acylated glutamic acid derivatives, and having pH 2-4; and

warming said keratinous fibers at a temperature of 20 to 50°C for 5-30 minutes.

7. A dye composition for keratinous fibers substantially as hereinbefore described.

8. A process for dyeing keritanous fibers substantially as hereinbefore described.

REGISTER ENTRY FOR GB2254341

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Priority claimed:

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Title DYE COMPOSITION FOR KERATINOUS FIBRES

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