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(54) Title: HAIR COLORANT COMPOSITION

(57) Abrégé/Abstract:
Hair colorant compositions having improved wash fastness contain phytantriol, a dispersing agent, and a hair dye.

Abstract

Hair colorant compositions having improved wash fastness contain phytantriol, a dispersing agent, and a hair dye.

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The present invention relates to a hair colorant composition comprising phytantriol.

Phytantriol is chemically identified as 3,7,11,15-tetramethyl-1,2,3-hexadecanetriol and commercially available, e.g., from F. Hoffmann-La Roche AG, Basel, Switzerland.

US Patent 5,776,443 describes a hair care composition comprising 0.001-1wt% of phytantriol; 0.001-10 wt% of a silicone compound; and a carrier.

US Patent 5,834,013 describes a cosmetic or dermatological composition in the form of an aqueous and stable dispersion of cubic gel particles based on phytantriol and use thereof for hydrating the skin. Said composition essentially comprises: (a) from 0.1 to 15% by weight of phytantriol, and (b) from 0.1 to 3% by weight of a dispersing and stabilizing agent, e.g. Tween 20.

The above mentioned Patent Publications do not mention any effect of phytantriol concerning the wash fastness of hair dyes.

It has now been found that the addition of phytantriol to a hair colorant composition significantly improves the wash fastness of the hair dye, i.e., significantly improves the color durability of the dye on the hair upon washing.

Accordingly, the present invention relates to the use of phytantriol in a hair colorant composition to improve wash fastness of dyed hair.

In another aspect, the present invention relates to a hair colorant composition containing phytantriol in an effective amount to improve the wash fastness of hair dyed with the colorant composition.

More particularly, the present invention relates to a hair colorant composition comprising

from about 0.1 to about 5 % by weight of phytantriol, preferably from about 0.2 to about 1% by weight;

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from about 0.1 to about 3% by weight of a dispersing agent, preferably from about 0.1 to about 1 % by weight; and
from about 0.1 to about 5 % by weight of a hair dye, preferably from about 0.1 to about 1 % by weight;

the remainder of the composition being essentially a carrier conventionally used in hair colorant compositions, suitably an aqueous carrier.

The dispersing agent present in the compositions in accordance with the invention can be any dispersing agent (surfactant) conventionally used in hair dye compositions such as anionic, cationic, nonionic, amphoteric, zwitterionic (betain) surfactants and mixtures thereof.

Suitable dispersing agents are e.g. selected from:
(1) polyol alkyl or alkenyl ethers or esters,
(2) N-acylated amino acids and derivatives thereof and N-acylated peptides with an alkyl or alkenyl radical, and salts thereof,
(3) alkyl or alkenyl ether or ester sulfates, and derivatives and salts thereof,
(4) polyoxyethylenated alkyl or alkenyl fatty ethers or esters,
(5) polyoxyethylenated alkyl or alkenyl carboxylic acids and salts thereof,
(6) N-alkyl or N-alkenyl betaines,
(7) alkyltrimethylammonium or alkenyltrimethylammonium and salts thereof, and mixtures of the above dispersing agents.

In the compounds listed above, the alkyl and alkenyl radicals suitably have from 8 to 22 carbon atoms.

Preferred dispersing agents are polyol alkyl or alkenyl ethers or esters. Among these, there may in particular be mentioned sorbitan alkyl or alkenyl esters polyoxyethylenated with at least 20 units of ethylene oxide, such as sorbitan palmitate 20 EO or Polysorbate 40 marketed under the tradename Montanox 40 DF by the company Seppic, and sorbitan laurate 20 EO or Polysorbate 20 marketed under the tradename Tween 20 by the company ICI. Especially preferred is Tween 20.

Examples of suitable dyes include all conventional hair dyes, particularly permanent hair dyes, semipermanent hair dyes, and temporary hair dyes (or hair coloring rinses). Permanent (or oxidative) hair dyes comprise a component that requires an oxidizing agent for formation of a colour (said component being referred to also as primary intermediate, developer or precursor), usually a p-phenylenediamine, 2,5-diaminotoluene or 4-

aminophenol, and a second component (secondary intermediate or coupler), e.g., a m-phenylenediamine, 3-aminophenol, 5-amino-2-methylphenol or 1-naphthol, as particularly disclosed e.g., in WO 00/07550. Semipermanent hair dyes comprise compouznds having a chromophore system common in dye chemistry such as nitro, azo, anthraquinone, triphenylmethane and azomethine, which may be used as disperse dyes, cationic (basic) dyes, anionic (acidic) dyes and metal complex dyes, see also Ullmann's Encyclopedia of Industrial Chemistry Vol A 12, p. 584-586 and references cited therein. Of particular interest are e.g. anthraquinone dyes, especially those containing a dialkylaminoalkylamino (DAAA) group. Specific examples include the following compounds available under the trademark ARIANOR® from Warner Jenkinson Ltd.: ARIANOR Straw Yellow, ARIANOR Mahagony, ARIANOR Steel Blue, ARIANOR Madder Red, ARIANOR Ebony and ARIANOR Sienna Brown. Further examples of hair dyes for use in the present invention are those listed in the "Verordnung über kosmetische Mittel, Bundesgesetzblatt (Germany) I, 2410, 29. Aenderung vom 14.6.2000, Teil A, p. 846.

However any other hair dyes may be used. For example, semi-permanent (direct) hair dyes such as those commercially available under such tradenames as Irgalan, Cibalan, Vialon, Ortalan and Capracyl dyes. Natural direct dyestuffs, such as Henna, Camomile, Madder root, Sandalwood or Walnut, may also be used.

The formulation may for example be in the form of a liquid, a gel or a mousse. Specific examples of such formulations include a shampoo, a conditioner, a styling mousse, a styling spray, a styling gel, a conditioning styling gel, or a gel mousse. These formulations may, in addition to a hair colorant, contain agents conventionally used in such formulations, such as amphoteric surfactants, thickeners, conditioning agents, sequestrants (to remove heavy metals), preservatives, perfumes and deionized water.

The compositions in accordance with the invention are suitably prepared by dissolving an appropriate amount of phytantriol in an appropriate amount of dispersing agent, and adding the mixture to an essentially aqueous hair care formulation, such as a solution of the hair dye, a styling mousse, gel or spray, or a shampoo or conditioner. It is not required that the compositions comprise any preferred molecular orientation of the phytantriol.

When the hair dye is a permanent (or oxidative) hair dye the composition according to the invention suitably comprises a kit of separately packed primary intermediate and secondary intermediate and, optionally, oxidising agent, at least one of the separate packs containing phytantriol and a dispersing agent in an amount defined earlier. Examples of

oxidizing agents are hydrogen peroxide and organic peroxy compounds such as peracetic acid which may be used in an amount known to those skilled in the art, e.g., in an amount of from 0.001 to 0.05 moles per 100 g of the composition. Therefore, the invention also relates to a hair colouring kit comprising

from about 0.1 to about 5 % by weight of phytantriol, preferably from about 0.2 to about 1% by weight;
from about 0.1 to about 3% by weight of a dispersing agent, preferably from about 0.1 to about 1 % by weight; and
from about 0.1 to about 5 % by weight of a hair dye, preferably from about 0.1 to about 1 % by weight;

wherein the hair dye consists of separately packed primary and secondary intermediate and wherein phytantriol and dispersing agent is present in at least one of the separate packs.

The composition according to the invention may be applied to the hair by conventional techniques used in this art. e.g. with a brush, sponge, or other means of contact, such as pouring the composition directly onto the hair until saturated and/or manually massaging or working through the hair.

The advantages and characteristics of the present invention will be apparent from the examples presented below.

Example 1

Preparation of the hair colorant composition

0.2 g Phytantriol was dissolved in 0.8 g dispersing agent (Tween 20) and this mixture was added to 99.0 g of a 0.5% aqueous solution of the hair dye.

Example 2

The coloring composition was applied to approximately 10 cm long hair swatches for 10 minutes. The hair swatches were then washed with water and allowed to dry in the air. This cycle was repeated 5 times and 10 times.

Example 3

Color measurement

Hair colorant compositions containing 0.1 wt% or 0.2 wt% phytantriol have been prepared according to Example 1 and applied according to Example 2.

Hair colors may be defined using the luminance (L), according to the colorimetric (L,a,b) coordinate system of the C.I.E (Comite International de l'Eclairage ›International Lighting Committee).

In this color measurement method the color along three mutually perpendicular axes is measured photometrically and the color differences between the initial sample of hair before washing and the samples after 5 and 10 washes are compared.

The difference between the two samples in the CIELAB space is given by

$$\Delta E = \sqrt{[\Delta\ (\Delta a)^2 + (\Delta b)^2 + (\Delta L)^2]}$$

ΔE is the color difference

Δa is the color difference along the a axis

Δb is the color difference along the b axis

ΔL is the difference in luminance

The following Table shows the results:

ARIANOR dye	% Phytantriol	ΔE after 10 washings
A. Straw Yellow	0	16.7
	0.1	15.5
	0.2	12.7
A. Mahogony	0	15.7
	0.1	15.4
	0.2	4.2
A. Steel Blue	0	27.0
	0.1	25.2

	0.2	14.3
A. Madder Red	0	35.8
	0.1	34.4
	0.2	20.7
A. Ebony	0	23.7
	0.1	23.4
	0.2	9.9
A. Sienna Brown	0	17.0
	0.1	16.9
	0.2	9.6

The above table clearly shows that the hair dye is more washfast when the hair dyeing treatment has been done using a hair colorant compositions containing phytantriol, especially in an amount of at least 0.2 wt%.

What is claimed is:

1. A use of phytantriol in a hair colorant composition comprising from about 0.1 to about 5% by weight of phytantriol;
from about 0.1 to about 3% by weight of a dispersing agent; and
from about 0.1 to about 5% by weight of a hair dye to improve the wash fastness of dyed hair.

2. The use according to claim 1, wherein the hair colorant composition comprises from 0.2 to 1% by weight of phytantriol;
from 0.1 to 1% by weight of the dispersing agent; and
from 0.1 to 1% by weight of the hair dye.

3. The use according to any one of claims 1 - 2, wherein the dispersing agent is a polyol alkyl ether or ester.

4. The use according to any one of claims 1 - 2, wherein the dispersing agent is a polyol alkenyl ether or ester.

5. The use according to any one of claims 1 - 3, wherein the dispersing agent is polysorbate 20.

6. The use according to any one of claims 1 - 5, wherein the hair dye is a permanent dye.

7. The use according to any one of claims 1 - 5, wherein the hair dye is a semipermanent dye.

8. The use according to claim 7 wherein the dye is an anthraquinone dye.

9. The use according to claim 8, wherein the anthraquinone dye contains a dialkylaminoalkylamino group.

10. A use of phytantriol in a hair coloring kit comprising a composition of from about 0.1 to about 5% by weight of phytantriol; from about 0.1 to about 3% by weight of a dispersing agent; and from about 0.1 to about 5% weight of a hair dye; wherein the hair dye consists of separately packed primary and secondary intermediate and wherein phytantriol and dispersing agent is present in at least one of the separate packs to improve the wash fastness of dyed hair.