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(54) Hairdye composition containing a metallic compound based on silver salts

Haarfärbemittel enthaltend eine auf Silbersalzen basierende metallische Verbindung

Produit pour la coloration des cheveux contenant un composé métallique à base de sels d'argent

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- **CHARLES ZVIAK: "The science of the hair care" 1986 , MARCEL DEKKER INC. , NEW YORK XP002258625 * page 235 - page 261 * * page 240, line 1 - page 241, line 29 ***
- **DATABASE EPODOC [Online] EUROPEAN PATENT OFFICE, THE HAGUE, NL; PARK HYUN-SUK: "hair dye composition" XP002258626 & KR 9 604 013 B (LG CHEMICAL LTD) 25 March 1996 (1996-03-25)**

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Description

Field of the Invention

[0001] The present invention relates to a hairdye composition containing a metallic dye, which colors a gray hair or decolored hair in a natural hair color, and more particularly to a hairdye composition including a metallic dye in which silver nitrate ($AgNO_3$) and silver lactate ($C_3H_5AgO_3$ are used as main components of the metallic dye.

Discussion of the Related Art

[0002] Generally, a hairdye is used to recover aged gray hair to an original hair color. Otherwise, the hairdye is used to change the original hair color to a desired color and vice versa.

[0003] The hairdye is divided into three types in accordance with its conditions fixed to hair; a temporary hairdye, a semi-permanent hairdye, and a permanent hairdye.

[0004] The permanent hairdye is constructed in such a manner that a coloring agent is permeated into epidermis of hair to precipitate coloring molecules into hair cortex. Also, the permanent hairdye enables decoloring and coloring of hair by means of permeation and oxidation. Examples of the permanent hairdye include a vegetable dye, a metallic dye, a mixture dye, and an oxidation dye (synthetic dye). Of them, the oxidation dye is mostly used as the permanent hairdye. However, since the oxidation dye is likely to stimulate the skin, it is difficult for people having a sensitive skin to use it. For this reason, the metallic dye which is relatively less susceptible to the skin is on an increasing trend.

[0005] An example of the metallic dye used since ancient times is based on lead. This metallic dye based on lead has been used in such a manner that hair is colored in a dark color using a comb made of lead deposited in vinegar. In addition to lead, various metallic compounds have been used to color hair. Mostly used metallic compounds are lead, silver, and copper.

[0006] The use of silver salts such as Nitrate, Acetate or sulphate for coloring keratin fibre is described in FR-A-2347038.

[0007] The metallic compounds used to color hair get mixed with sulfur, nickel, or iron to enhance color fixation power. Bismuth, manganese, and cobalt are also used to get mixed with the metallic dyes.

[0008] Ammonium thioglycolate, potassium hydrosulfide, ammonium hydrosulfide, sodium hydrosulfide, and pyrogallol are used as couplers when the metallic dye is applied to hair. To enhance coloring effect, there are provided two-type hairdyes divided depending on properties of couplers and contained in two separate vessels. In this case, inconvenience arises in that the hairdyes should separately be applied to hair.

[0009] Recently, there is provided one type hairdye made by mixing lead nitrate, ammonia, and sulfur with one another. This hairdye has several problems in that its color fixation power is weak and it may be concerned about lead poisoning in case of long time use in hair.

[0010] Furthermore, alkalizer such as ammonia and ammonium thioglycolate, which is used as the metallic dye, swells hair with a strong alkali and makes hair soft so that it is easy to permeate into hair. However, it has a problem in that it should be applied to hair all day and used repeatedly, thereby causing serious damage to hair.

SUMMARY OF THE INVENTION

[0011] Accordingly, the present invention is directed to a hairdye composition containing a metallic compound that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

[0012] An object of the present invention is to provide a hairdye composition containing a metallic compound in which $AgNO_3$ and $C_3H_5AgO_3$ are used as main components of the metallic compound.

[0013] Another object of the present invention is to provide a hairdye composition containing a metallic compound in which a surfactant such as polyglucoside is added to $AgNO_3$ and $C_3H_5AgO_3$ without a conventional coupler that causes damage to hair, thereby enhancing color fixation power.

[0014] Another object of the present invention is to provide a hairdye composition containing a metallic compound the o pH of which is adjusted to pH of hair, thereby avoiding damage to hair.

[0015] Another object of the present invention is to provide a hairdye composition containing a metallic compound in which a single hairdye composition simply is applied to hair, thereby coloring hair in a desired color.

[0016] Another object of the present invention is to provide a hairdye composition that can act as a hair refiner such as hair oil and at the same time can color hair.

[0017] Another object of the present invention is to provide a hairdye composition that can avoid heavy metal poisoning such as lead poisoning.

[0018] Another object of the present invention is to provide a single hairdye composition that can gradually color hair by repeatedly applying a hairdye to hair every day.

[0019] Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention will be realized and attained by the scheme particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0020] To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, a hairdye composition, which includes a metallic dye, a surfactant, alcohol, and a moisturizing agent, is provided, further characterized

in that the metallic dye comprises silver nitrate ($AgNO_3$ and silver lactate ($C_3H_5AgO_3$) each in an amount of 0.05 ~ 10.0 wt%, based on total weight of the composition..

[0021] The surfactant is composed of at least one group selected from glyceryl stearate/ceteareth-20/ceteareth-12/cetearyl alcohol/cetyl palmitate, ceteareth-20, ceteareth-12, lauryl glucoside, nonoxynol-10, and cocamide dea.

[0022] The alcohol is selected from cetyl alcohol, stearyl alcohol, oleyl alcohol, and hexyldecanol.

[0023] The moisturizing agent is selected from coco-caprylate/caprate and propylene glycol. In a further embodiment the composition can further comprise henna.

[0024] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE ATTACHED DRAWINGS

[0025] The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

FIG. 1 is a block diagram illustrating processing steps according to the first embodiment of the present invention;

FIG. 2 is a block diagram illustrating processing steps according to the second embodiment of the present invention;

FIG. 3 illustrate dyeing state of hair in temporal order using a hairdye composition according to the present invention; and

FIGS. 4a to 4d illustrate sectional structures of hair of FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0026] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

Example 1

[0027] In this embodiment of the present invention, a cream type hairdye composition containing a metallic compound will be described.

[0028] The cream type hairdye composition, as shown in FIG. 1, is composed in such a manner that a surfactant of 2.0~27.0wt%, alcohol of 1.0~25.0wt%, and a moisturizing agent of 10.0~26.0wt% are dissolved between 75°C and 85°C within a compounding tank. Subsequently, the dissolved product is mixed with purified water , $AgNO_3$ in a concentration of 0.05~10.0wt%, and $C_3H_5AgO_3$ in a concentration 0.05~10.0wt%. The resultant product is then dissolved again.

[0029] In more detail, the surfactant is composed of glyceryl stearate/ceteareth-20/ceteareth-12/cetearyl alcohol/cetyl palmitate of 6.0wt%, ceteareth-20 of 5.0wt%, ceteareth-12 of 1.0wt%, and lauryl glucoside of 1.0wt%. the alcohol is composed of cetyl alcohol of 3.0wt%, stearyl alcohol of 3.0wt%, and oleyl alcohol of 6.0wt%. The moisturizing agent is composed of coco-caprylate/caprate of 5.0wt%, propylene glycol of 1.0wt%. Henna is present in an amount of 20.0 wt%.

[0030] The dissolved product is sufficiently stirred so that it is cooled to reach about 65°C. A stabilizing agent such as dimethicone of 0.3wt% and cyclomethicone of 2.0wt% is added to the resultant product, thereby dispersing and dissolving the product.

[0031] Subsequently, once the product is cooled to reach 40°C, $AgNO_3$ and $C_3H_5AgO_3$ are added to the product by 3.5wt%, respectively. Other additives such as hydrogen peroxide of 0.04wt%, phenacetin of 0.05wt%, methylparaben of 0.15wt%, butylated hydroxy toluene (bht) of 0.05%, propylparaben of 0.10wt%, ethylhexyl methoxycinnamate of 2.0wt%, and mineral oil of 3.0wt% are added to the product and then stirred. The resultant product is cooled again to reach 30°C.

[0032] In this embodiment of the present invention, $AgNO_3$ and $C_3H_5AgO_3$ have been added to the product by 3.5wt%, respectively, thereby fabricating the cream type hairdye composition that can achieve the object of the present invention.

Example 2

[0033] In this embodiment of the present invention, a liquid type hairdye composition containing a metallic compound will be described.

[0034] The liquid type hairdye composition, as shown in FIG. 2, is composed in such a manner that a surfactant, propylene glycol, and isopropylalcohol are added to a compounding tank and then stirred. Subsequently, hecyldecanol, coco-caprylate/caprate, and lauryl glucoside are added thereto and then stirred.

[0035] Afterwards, henna, a stabilizing agent, $AgNO_3$, and $C_3H_5AgO_3$ are added to the resultant product and then stirred. An aromatic is finally added thereto.

[0036] In more detail, the surfactant is composed of nonoxynol-10 of 22.0wt% and cocamide dea of 5.0wt%. the alcohol is composed of hexyldecanol of 6.0wt% and isopropylalcohol of 10.0wt%. the moisturizing agent is composed of coco-caprylate/caprate of 5.0wt%, propylene glycol of 3.0wt%. Henna is present in an amount of 18.0 wt%.

[0037] Also, $AgNO_3$ and $C_3H_5AgO_3$ are added to the product by 6.5wt%, respectively. Other additives include hydrogen peroxide of 0.04wt%, phenacetin of 0.05wt%, lauryl glucoside of 1.0wt%, an aromatic, and purified water.

[0038] In this embodiment of the present invention, $AgNO_3$ and $C_3H_5AgO_3$ have been added to the product by 6.5wt%, respectively.

[0039] Furthermore, pH of the hairdye composition according to the present invention is adjusted similarly to that of hair so that no damage to hair occurs.

[0040] After the one type hairdye composition containing a metallic compound, such as cream type and liquid type, was fabricated, it was subject to hair test repeatedly once every day for five days. As a result, it was noted that hair color was changed as shown in FIG. 3.

[0041] As will be apparent from FIGS. 4a to 4d showing a sectional structure of hair of FIG. 3, the hairdye composition was permeated into hair as time passes.

[0042] As aforementioned, the hairdye composition containing a metallic compound according to the present invention has the following advantages.

[0043] The hairdye composition containing a metallic compound according to the present invention is manufactured by adding a surfactant such as polyglucoside to $AgNO_3$ and $C_3H_5AgO_3$ without using a separate coupler. Thus, heavy metal poisoning can be avoided in the process of coloring hair, and damage to hair can be prevented from occurring, thereby enhancing color fixation power. At the same time, it is possible to dye hair in a desired color by simply applying a single hairdye composition to hair.

Claims

1. A hairdye composition comprising a metallic dye, a surfactant, alcohol, and a moisturizing agent, **characterized in that** the metallic dye comprises silver nitrate ($AgNO_3$) and silver lactate ($C_3H_5AgO_3$) each in an amount of 0.05~10.0wt%, based on total weight of the composition, and further **characterized in that** a separate coupler is absent.

2. The hairdye composition as claimed in claim 1, wherein the surfactant is selected from glyceryl stearate/ceteareth-20/ceteareth-12/cetearyl alcohol/cetyl palmitate, ceteareth-20, ceteareth-12, lauryl glucoside, nonoxynol-10, and cocamide dea.

3. The hairdye composition as claimed in claim 1, wherein the alcohol is selected from cetyl alcohol, stearyl alcohol, oleyl alcohol, and hexyldecanol.

4. The hairdye composition as claimed in claim 1, wherein the moisturizing agent is selected from coco-caprylate/caprate and propylene glycol.

5. The hairdye composition as claimed in any of the preceding claims, wherein the composition further comprises henna.

Patentansprüche

1. Eine Haarfärbemittelzusammensetzung umfassend einen metallischen Farbstoff, ein Tensid, einen Alkohol und ein Feuchtigkeitsmittel, **dadurch gekennzeichnet, dass** der metallische Farbstoff Silbernitrat ($AgNO_3$) und Silberlaktat ($C_3H_5AgO_3$), jeweils in einer Menge von 0.05 ~ 10.0 Gew.-% bezogen auf das Gesamtgewicht der Zusammensetzung, umfasst, und ferner **dadurch gekennzeichnet, dass** kein separates Kopplungsmittel vorhanden ist.

2. Die Haarfärbemittelzusammensetzung wie in Anspruch 1 beansprucht, wobei das Tensid aus Glycerylstearat/Ceteareth-20/Ceteareth-12/Cetearylalkohol/Cetylpalmitat, Ceteareth-20, Ceteareth-12, Laurylglucosid, Nonoxynol-10 und Cocamid DEA ausgewählt wird.

3. Die Haarfärbemittelzusammensetzung wie in Anspruch 1 beansprucht, wobei der Alkohol aus Cetylalkohol, Stearylalkohol, Oleylalkohol und Hexyldekanol ausgewählt wird.

4. Die Haarfärbemittelzusammensetzung wie in Anspruch 1 beansprucht, wobei das Feuchtigkeitsmittel aus Coco Caprylat/Caprat und Propylenglykol ausgewählt wird.

5. Die Haarfärbemittelzusammensetzung wie in einem der vorhergehenden Ansprüche beansprucht, wobei die Zusammensetzung ferner Henna umfasst.

Revendications

1. Composition de teinture pour cheveux comprenant une teinture métallique, un agent tensioactif, un alcool, et un agent hydratant, **caractérisée en ce que** la teinture métallique comprend du nitrate d'argent ($AgNO_3$) et du lactate d'argent ($C_3H_5AgO_3$) chacun en une quantité de 0,05 à 10,0 % en poids, sur la base du poids total de la composition, et **caractérisée de plus en ce qu'**un agent couplant séparé est absent.

2. Composition de teinture pour cheveux selon la revendication 1, dans laquelle l'agent de surface est choisi parmi du stéarate de glycéryle/cétéareth-20/cétéareth-12/alcool cétéarylique/palmitate de cétyle, cétéareth-20, cétéareth-12, glucoside de lauryle, nonoxynol-10, et cocamide diéthanolamine.

3. Composition de teinture pour cheveux selon la revendication 1, dans laquelle l'alcool est choisi parmi de l'alcool cétylique, de l'alcool stéarylique, de l'alcool oléylique, et de l'hexyldécanol.

4. Composition de teinture pour cheveux selon la revendication 1, dans laquelle l'agent hydratant est choisi parmi du coco-caprylate/caprate, et du propy-

lèneglycol.

5. Composition de teinture pour cheveux selon l'une quelconque des revendications précédentes, dans laquelle la composition comprend également du henné.

Fig 1

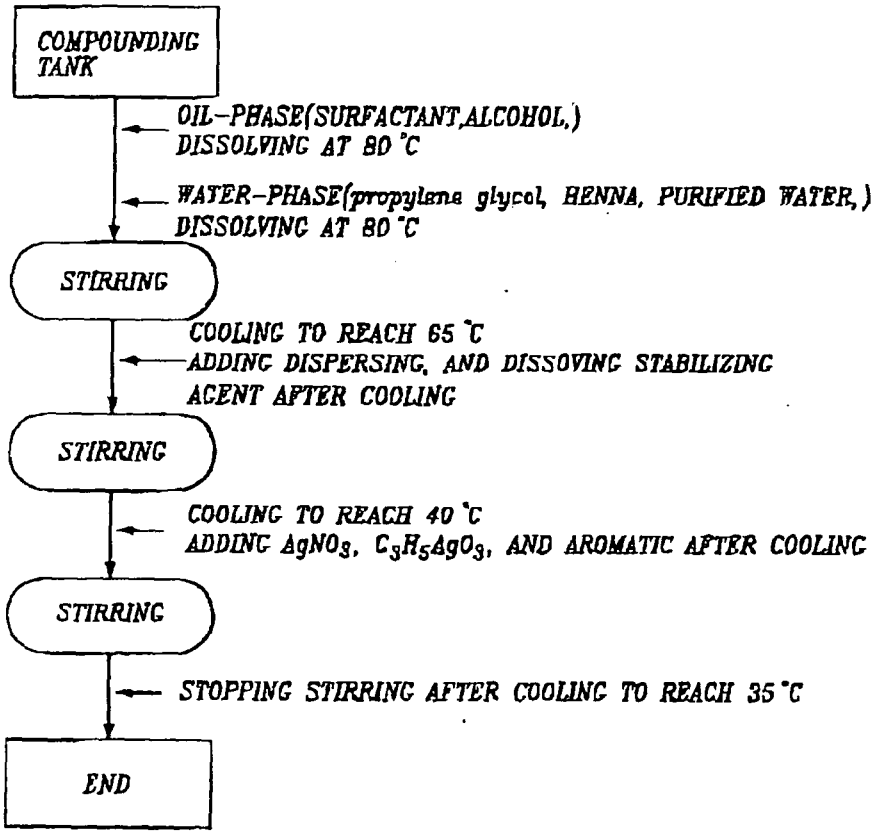

COMPOUNDING TANK
OIL-PHASE(SURFACTANT,ALCOHOL,)
DISSOLVING AT 80 °C
WATER-PHASE(propylene glycol, HENNA, PURIFIED WATER,)
DISSOLVING AT 80 °C
STIRRING
COOLING TO REACH 65 °C
ADDING DISPERSING, AND DISSOVING STABILIZING
ACENT AFTER COOLING
STIRRING
COOLING TO REACH 40 °C
ADDING $AgNO_3$, $C_3H_5AgO_3$, AND AROMATIC AFTER COOLING
STIRRING
STOPPING STIRRING AFTER COOLING TO REACH 35 °C
END

Fig 2

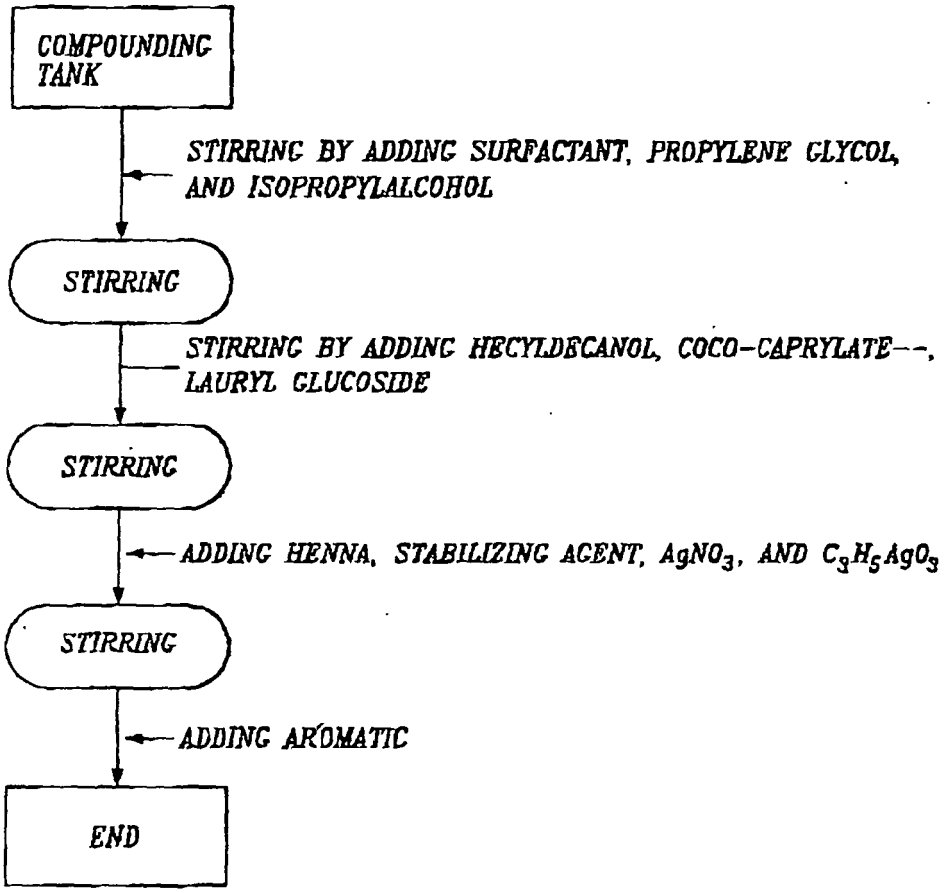
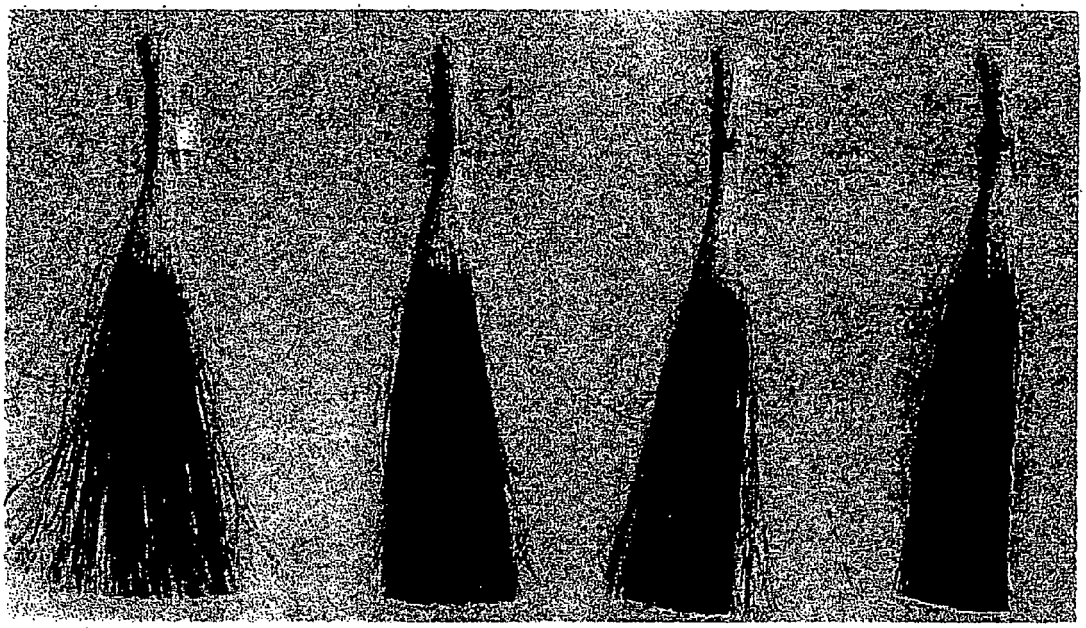

COMPOUNDING TANK
STIRRING BY ADDING SURFACTANT, PROPYLENE GLYCOL, AND ISOPROPYLALCOHOL
STIRRING
STIRRING BY ADDING HECYLDECANOL, COCO-CAPRYLATE--, LAURYL GLUCOSIDE
STIRRING
ADDING HENNA, STABILIZING ACENT, $AgNO_3$, AND $C_3H_5AgO_3$
STIRRING
ADDING AROMATIC
END

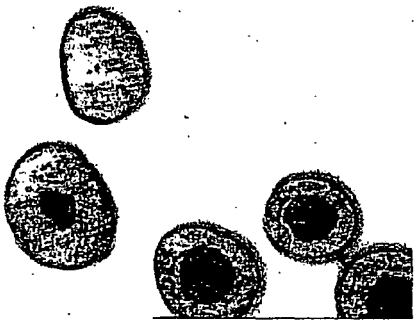
Fig 3



After 1 day 2 days 3 days 5 days

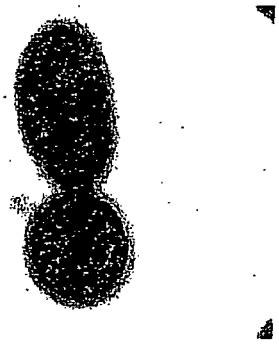
(condition: leave eight hours a day as it is after applied)

Fig 4a



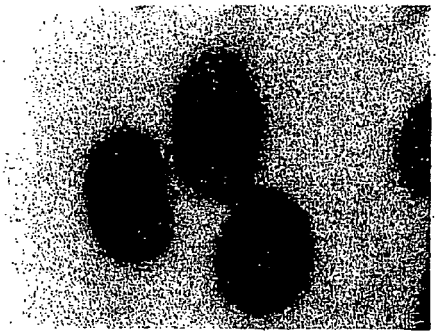
sectional structure of hair on the first day after applied

Fig 4b



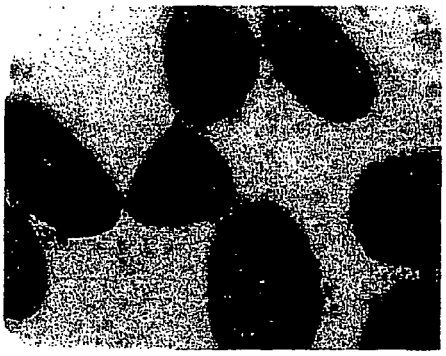
sectional structure of hair on the second day after applied

Fig 4c



sectional structure of hair on the third day after applied

Fig 4d



sectional structure of hair on the fifth day after applied

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR 2347038 A **[0006]**