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(54) Title: A TREATING METHOD FOR SCALP AND HAIR OF HUMAN

Fig. 1

(57) Abstract: Provided is a treating method for scalp and hair of a subject, comprising the steps of: (1) warming the scalp of the subject at a temperature from 40 °C to 60°C for 10 to 20 minutes; (2) cooling the scalp of the subject at a temperature from 4°C to 15 °C for 1 to 10 minutes; (3) warming the hair of the subject at a temperature from 15 °C to 60°C for 5 to 15 minutes; and (4) cooling the hair of the subject at a temperature from 4°C to 15°C for 1 to 10 minutes.

A treating method for scalp and hair of human

Technical Field

The present invention relates to a treating method for scalp and hair of a subject, especially human. In particular, the present invention relates to a multiple step method for treating scalp and hair of human by a cycling treatment.

Background

In the hairdressing field, there is always a problem for hairdressers of lacking treating methods to make high quality professional products perform more efficient although a variety of such professional products have been widely used. Nowadays, chemical treatments such as perm, straightening, and coloring which damage hair and/or scalp are applied for hairdressing consumers. It ultimately may cause hair and scalp disorders such as scalp redness, scalp irritation, scalp itching, poor combability of hair, less elasticity of hair and split on hair ends. Usually, hairdressers may use hair treatments and masks under elevated and room temperature to solve the problem.

Accordingly, there is still a need for a treating method for human scalp and hair which can solve at least part, desirably all of the problems and enhance the performance of professional scalp/hair care and conditioning products.

Summary of the Invention

One object of the present invention is to provide a treating method for scalp and hair of a subject, comprising the steps of:

(1) warming the scalp of the subject at a temperature from 40 ºC to 60 ºC for 10 to 20 minutes;

(2) cooling the scalp of the subject at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes;

(3) warming the hair of the subject at a temperature from 15 ºC to 60 ºC for 5 to 15 minutes; and

(4) cooling the hair of the subject at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes.

Other features and aspects of the subject matter are set forth in greater detail below.

Brief Description of the Drawings

Figure 1 illustrates a subject treated by step (1) of the treating method in one embodiment;

Figure 2 illustrates a subject treated by step (2) of the treating method in one embodiment;

Figure 3 illustrates a subject treated by step (3) of the treating method in one embodiment; and

Figure 4 illustrates a subject treated by step (4) of the treating method in one embodiment.

Detailed Description

The present invention provides a treating method for scalp and hair of a subject, comprising the steps of:

(1) warming the scalp of the subject at a temperature from 40 ºC to 60 ºC for 10 to 20 minutes;

(2) cooling the scalp of the subject at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes;

(3) warming the hair of the subject at a temperature from 15 ºC to 60 ºC for 5 to 15 minutes; and

(4) cooling the hair of the subject at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes.

As used herein, “a subject” means a target to be treated by a treating method for scalp/hair care and conditioning, and in particular means human.

In step (1) of the treating method according to the present invention, the warming in step (1) is preferably applied by spraying steam onto the scalp. There is no

limitation and any conventional devices useful for hairdressing can be applied in step (1) for providing steam spraying. For example, such streamer device includes but is not limited to the hair steamer commercially available from KD2328A of Hair Steamer.

According to the present invention, the warming in step (1) is performed at a temperature of 40 ºC to 60 ºC, preferably at a temperature of 50 ºC to 55 ºC, and more preferably at a temperature of 53 ºC to 54 ºC.

According to the present invention, the warming in step (1) is performed for 10 to 20 minutes, preferably for 12 to 18 minutes, and more preferably for 14 to 16 minutes.

Alternatively, the treating method may comprise a substep (1a) of washing the hair before step (1). In particular, the scalp and hair of the subject may be washed with or without shampoo by water for 1 to 10 minutes, preferably 2 to 8 minutes, more preferably 4 to 6 minutes. Accordingly, the scalp in step (1) of the treating method is in a wetted condition.

Alternatively, the treating method may comprise a substep (1b) of applying a scalp cleansing composition on the scalp before step (1). After applying the scalp cleansing composition, the subject may be messaged from about 1 to 5 minutes, preferably about 2 minutes for an improved spreading and dispersion of the scalp cleansing composition over the scalp.

There is no limitation to the scalp cleansing composition used in step (1) of the treating method so long as the scalp cleansing composition acts as the function of cleansing the scalp. One example of the scalp cleansing composition comprises at least one non-ionic surfactant, preferably a C_8-C_{22} alkyl mono- and oligo-glucoside, selected from the group consisting of octyl glucoside, decyl glucoside, lauryl glucoside, coco glucoside, palmityl glucoside, isostearyl glucoside, stearyl glucoside, arachidyl glucoside, behenyl glucoside, and mixtures thereof, and more preferably is lauryl glucoside. The scalp cleansing composition used in the step (1) may be in the form of gel and lotion. One example useful as the scalp cleansing

composition is commercially available under the trade name of BC-scalp-thermo cleanser from Schwarzkopf.

If substep (1b) is present in the treating method according to the present invention, the warming of scalp by spraying steam in step (1) allows the hair and pores of the scalp to open for a deeper and improved penetration of the scalp care composition (1).

Alternatively, the treating method according to the present invention may also comprise a substep (1c) of rinsing off scalp cleansing composition from the hair and scalp after step (1) and before step (2). The rinsing may be achieved by washing with or without shampoo in warm water so long as substantially free of scalp cleansing composition remains on the scalp after washing.

In step (2) of the treating method according to the present invention, the scalp of the subject is cooled at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes. The effect of scalp cooling can be obtained by wearing a device containing cooling medium surrounding the scalp of the subject. Preferably, the cooling device is in the form of a cap which is known as a cooling cap, and operates by means of a mechanism similar to a refrigerator. One example of the cooling device useful in the step (2) includes but is not limited to the cooling cap commercially available from Model HT007 of Hairtech.

According to the present invention, the cooling in step (2) is performed at a temperature of 4 ºC to 15 ºC, preferably at a temperature of 4 ºC to 7 ºC, and more preferably at a temperature of 4 ºC to 6 ºC.

According to the present invention, the cooling in step (2) is performed for 5 to 10 minutes, preferably for 3 to 8 minutes, and more preferably for 4 to 6 minutes.

Alternatively, the treating method according to the present invention may comprise a substep (2a) of applying a hair care composition on the scalp after step (1) and before step (2).

There is no limitation to the scalp care composition used in step (2) of the treating method so long as the scalp care composition comprises hair care components and has the effect of hair care. One example of the scalp care composition used in step (2) comprises at least one animal or vegetable protein hydrolyzates selected from the group consisting of elastin, collagen, keratin, milk protein, soya protein, silk protein, oat protein, pea protein, almond protein and wheat protein hydrolyzates, condensation products thereof with fatty acids, quaternized protein hydrolyzates, , and mixture thereof ,and preferably is wheat protein hydrolyzates. As typical examples of suitable protein hydrolyzates and/or derivatives, the commercially available products known by the following INCI names should be mentioned: cocodimonium hydroxypropyl hydrolyzed collagen, cocodimonium hydroxypropyl hydrolyzed casein, cocodimonium hydroxypropyl hydrolyzed collagen, cocodimonium hydroxypropyl hydrolyzed hair keratin, cocodimonium hydroxypropyl hydrolyzed keratin, cocodimonium hydroxypropyl hydrolyzed rice protein, cocodimonium hydroxypropyl hydrolyzed silk, cocodimonium hydroxypropyl hydrolyzed soy protein, cocodimonium hydroxypropyl hydrolyzed wheat protein, cocodimonium hydroxypropyl silk amino acids, hydroxypropyl arginine lauryl/myristyl ether hcl, hydroxypropyltrimonium gelatin, hydroxypropyltrimonium hydrolyzed casein, hydroxypropyltrimonium hydrolyzed collagen, hydroxypropyltrimonium hydrolyzed conchiolin protein, hydroxypropyltrimonium hydrolyzed keratin, hydroxypropyltrimonium hydrolyzed rice bran protein, hydroxypropyltrimonium hydrolyzed silk, hydroxypropyltrimonium hydrolyzed soy protein, hydroxypropyl hydrolyzed vegetable protein, hydroxypropyltrimonium hydrolyzed wheat protein, hydroxypropyltrimonium hydrolyzed wheat protein/siloxysilicate, laurdimonium hydroxypropyl hydrolyzed soy protein, laurdimonium hydroxypropyl hydrolyzed wheat protein, laurdimonium hydroxypropyl hydrolyzed wheat protein/siloxysilicate, lauryldimonium hydroxypropyl hydrolyzed casein, lauryldimonium hydroxypropyl hydrolyzed collagen, lauryldimonium hydroxypropyl hydrolyzed keratin, lauryldimonium hydroxypropyl hydrolyzed silk, lauryldimonium hydroxypropyl hydrolyzed soy protein, steardimonium hydroxypropyl hydrolyzed casein, steardimonium hydroxypropyl hydrolyzed collagen, steardimonium hydroxypropyl hydrolyzed keratin, steardimonium hydroxypropyl hydrolyzed rice protein, steardimonium

hydroxypropyl hydrolyzed silk, steardimonium hydroxypropyl hydrolyzed soy protein, steardimonium hydroxypropyl hydrolyzed vegetable protein, steardimonium hydroxypropyl hydrolyzed wheat protein steartrimonium hydroxyethyl hydrolyzed collagen, Quaternium-76 hydrolyzed collagen, Quaternium-79 hydrolyzed collagen, Quaternium-79 hydrolyzed keratin, Quaternium-79 hydrolyzed milk protein, Quaternium-79 hydrolyzed silk, Quaternium-79 hydrolyzed soy protein and Quaternium-79 hydrolyzed wheat protein. The hair care composition used in the step (2) may be in the form of gel and lotion. One example useful as the scalp cleansing composition is commercially available under the trade name of BC fluid nutrition essence from Schwarzkopf.

If substep (2a) is present in the treating method according to the present invention, the cooling of scalp by wearing a cooling cap in step (2) allows to close the scalp pores for a consistent blood circulation combining with the warming step (1).

After step (2) of the treating method according to the present invention, there is no need to rinse off hair care composition from the scalp. Preferably, the scalp treated in step (2) is in a wetted condition.

In step (3) of the treating method according to the present invention, the hair of the subject is warmed at a temperature from 15 ºC to 60 ºC for 5 to 15 minutes. There is no limitation for the warming device useful in step (3) and any conventional devices useful for hairdressing can be applied. In particular, the warming device useful in step (3) increases the temperature of the hair by heating the air between the device and the surface of hair. For example, such device includes but is not limited to the heating cap commercially available from Dying hood CF6000 of Krups.

According to the present invention, the warming of the hair in step (3) is performed at a temperature of 15 ºC to 60 ºC, preferably at a temperature of 20 ºC to 40 ºC, and more preferably at a temperature of 25 ºC to 30 ºC.

According to the present invention, the warming of the hair in step (3) is performed for 5 to 15 minutes, preferably for 8 to 13 minutes, and more preferably for 9 to 11 minutes.

Alternatively, the treating method according to the present invention may comprise a substep (3a) of applying the hair care composition on the half portion of hair distant from the scalp after step (2) and before step (3). Afterwards, the treating method according to the present invention may comprise a substep (3b) of covering a plastic film over the hair after step (2) and before step (3).

There is no limitation to the hair care composition used in step (3) of the treating method so long as the hair care composition comprises at least one hair care component and has the effect of hair care. One example of the hair care composition useful for step (3) comprises at least one cationic surfactant and at least one silicone oil.

Suitable cationic surfactant is alkyl quaternized ammonium salt cationic surfactants selected from the group consisting of cetyltrimethylammonium chloride, behenyltrimethylammonium chloride, cetylpyridinium chloride, tetramethylammonium chloride, tetraethylammonium chloride, octyltrimethylammonium chloride, dodecyltrimethylammonium chloride, hexadecyltrimethylammonium chloride, octyldimethylbenzylammonium chloride, decyldimethylbenzylammonium chloride, stearyldimethylbenzylammonium chloride, didodecyldimethylammonium chloride, dioctadecyldimethylammonium chloride, tallowtrimethylammonium chloride, cocotrimethylammonium chloride, the corresponding hydroxides thereof, and the mixture thereof. A particularly useful cationic surfactant for use in hair conditioners of the invention is cetyltrimethylammonium chloride, available commercially, for example as DEHYQUART, from Henkel.

Suitable silicone oils include polydiorganosiloxanes, in particular polydimethylsiloxanes which have the CTFA designation dimethicone. Also suitable for use in step (3) are polydimethyl siloxanes having hydroxyl end groups, which

have the CTFA designation dimethiconol. Also suitable for use in compositions of the invention are silicone gums having a slight degree of cross-linking, as are described for example in WO 96/31188.

The product of hair care composition is for example commercially available with the trade name of the BC Ying Mask from Schwarzkopf.

If substep (3a) is present in the treating method according to the present invention, the warming of scalp in step (3) allows for example moisture, a variety of nutruition to be evenly absorbed in hair cuitcle.

Alternatively, the treating method according to the present invention further comprises a substep (3c) of rinsing the hair after step (3) and before step (4). The rinsing off may be achieved by washing by warm water with or without shampoo so long as substantially free of the components contained in the mask remains on the hair after washing. Preferably, the hair in step (3) is treated in a wetted condition.

In step (4) of the treating method according to the present invention, the hair of the subject is cooled at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes. The effect of hair cooling can be obtained by wearing a device containing cooling medium surrounding the hair of the subject. Preferably, the cooling device is in the form of a cap having a plastic/synthetic fabric which is filled with a gel material mechanically kept at above temperature and operates by means of a mechanism similar to a refrigerator. One example of the cooling device useful in the step (4) is described in CN 201384613 Y and commercially available from BWB-02 of Gui Lin Bing Wang Technology Co. Ltd, China.

According to the present invention, the cooling of hair in step (4) is performed at a temperature of 4 ºC to 15 ºC, preferably at a temperature of 4 ºC to 7 ºC, and more preferably at a temperature of 4 ºC to 6 ºC.

According to the present invention, the cooling in step (2) is performed for 5 to 10 minutes, preferably for 3 to 8 minutes, and more preferably for 4 to 6 minutes.

Alternatively, the treating method according to the present invention may comprise a substep (3d) of applying a hair conditioning composition on the end portion of the hair after step (3) and before step (4).

There is no limitation of the hair conditioning composition used in step (4) of the treating method so long as the hair conditioning composition comprises at least one hair conditioning component and has the effect of hair conditioning. One example of the hair conditioning composition useful for step (4) is in the form of a leave-on spray comprising at least one volatile silicone and at least one functional silicone. The composition can further comprise optional ingredients such as fragrances, anti-static agents, colorants, vitamins, herbal extracts and others.

The hair conditioning composition useful for step (4) is applied to the hair, the volatile silicones evaporate from the hair leaving the functional silicone(s) deposited on the hair which then provide the conditioning properties to the hair. There is no need for rinsing the hair conditioning composition of the instant invention from the hair because of the volatile nature of the conditioner.

The volatile silicones useful in the hair conditioning composition are commercially available or produced from known methods, and include, but are not limited to, disiloxane, e.g. hexamethyldisiloxane, trisiloxane, e.g. octamethyltrisiloxane. tetrasiloxane, e.g. decamethyltetrasiloxane, cyclotrisiloxane, e.g. hexamethylcyclotrisiloxane, cyclotetrasiloxane, e.g. octamethylcyclotetrasiloxane, cyclopentasiloxane, e.g. decamethylcyclopentasiloxane, low viscosity trimethyl endblocked polydimethylsiloxanes, cyclomethicone. dimethicone, polydimethyl cyclic siloxanes and mixtures thereof. Preferably, the volatile silicones useful in the hair conditioning composition is polycyclopentasiloxane, e.g. decamethylcyclopentasiloxane.

The functional silicones useful in the hair conditioning composition in step (4) are selected from amine functional silicones, vinyl functional silicones, dimethylpolysiloxane fluids, hydroxyl endblocked polysiloxanes, phenylmethyl

polysiloxanes, alkyl substituted polysiloxanes, halogenalkyl functional silicones, acrylate functional silicones and mixtures thereof.

One example of the commercially available product of the hair conditioning composition useful for step (4) is under the trade name of BC Yang 2 phase spray Moisturizer from Schwarzkopf.

If substep (3d) is present in the treating method according to the present invention, the cooling of hair by wearing a cooling cap in step (4) allows to seal hair cuticle, and thus boost shine and smoothness. The hair treated in step (4) is in a wetted condition.

The present invention may be better understood with reference to the following examples.

Examples

Example 1

For a subject having from damage to highly damaged Asian hair, after washing the hair with shampoo, the following four step treatments were adopted to the subject as shown in Figs 1 to 4:

Step 1:

A scalp cleansing product with the trade name of BC-scalp-thermo cleanser from Schwarzkopf was gently applied on the scalp of the subject, and the scalp was further massaged for about 2 minutes before using the moderate mist, at a temperature of 53 to 54 ºC produced by a hair streamer commercially available from KD2328A of Hair Steamer for 15 minutes as shown in Fig. 1. Afterwards, the scalp and hair was rinsed with warm water.

Step 2:

A scalp care product with the trade name of BC fluid nutrition essence from Schwarzkopf was applied on the scalp of the subject, and a cooling cap commercially available from HT007 of Hairtech at a temperature of 5 ºC was disposed over the scalp of the subject for 5 minutes as shown in Fig. 2. The scalp was not rinsed after cooling.

Step 3:

A hair care product with the trade name of BC Ying Mask from Schwarzkopf was applied from the middle to the ends of the hair shaft, and a plastic wrap was covered over the hair. The heat cap commercially available from Dying hood CF6000 of Krups was used to achieve a temperature of 25 ºC for the hair for 10 minutes as shown in Fig. 3. The hair was rinsed afterwards.

Step 4:

A hair conditioning product with the trade name of BC Yang 2 phase spray Moisturizer from Schwarzkopf was applied especially on the hair ends. The cold cap commercially available from Model BWB-02 of Bing Wang was put in place on the subject to obtain a temperature of 5 ºC on hair for 5 minutes as shown in Fig. 4.

Comparative Example

The treating method in the comparative example is same as that in the inventive example except that the warming and cooling treatments were not used for each step.

Evaluation

Testing method

Eight volunteers having chemical influenced hair texture which varies from damaged to highly damaged levels are selected as the subjects of the treating

methods in the inventive example and comparative example for scalp and hair and were divided into two groups.

A panel of well-trained hair dressers assessed the hair care results for the subjects and scored every volunteer on a scale of 1 to 5 as shown below. The scores for four volunteers given by the hair dresser team were averaged and recorded in the each table as below.

5: Good,

4: Slightly good,

3: Slightly bad,

2: Bad, and

1: Very bad.

Table 1: Test results of the hair performance with the treating methods of the inventive example and comparative example in group 1

Hair performance	By Inventive Example	By Comparative Example
Moisture of dry hair ends	4.57	4.00
Softness of dry hair	4.71	4.00
Smoothness of dry hair	5.00	4.14
Static/ electricity control	4.57	4.29
Combability after drying	4.86	3.86
Look of dry hair, not flying away	4.71	4.14

Table 2: Test results of the hair performance with the treating methods of the inventive example and comparative example in group 2

Hair performance	By Inventive Example	By Comparative Example
Moisture of dry hair ends	4.57	3.86
Softness of dry hair	4.57	3.71
Smoothness of dry hair	4.86	3.86
Static/ electricity control	4.86	4.43
Combability after drying	4.86	3.71
Look of dry hair, not flying away	4.86	3.71

It can be clearly seen from Tables 1 and 2 that compared to the comparative example without alternative warming and cooling treatments on scalp and hair, the treating method according to the inventive example exhibited much better hair caring effects on hairs from damaged to highly-damaged and impart desirable properties such as antistatic control, softness, smoothness and moisture to dry hair. As such, it is demonstrated that the treating method according to the present invention improved the performance of the hair caring product, and provided an unexpected contribution on the health of scalp and hair, especially on damaged hair due to a consistent blood circulation resulted from the alternate warming and cooling treatments.

Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only, and is not intended to limit the invention so further described in such appended claims.

What is claimed is:

1. A treating method for scalp and hair of a subject, comprising the steps of:

(1) warming the scalp of the subject at a temperature from 40 ºC to 60 ºC for 10 to 20 minutes;

(2) cooling the scalp of the subject at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes;

(3) warming the hair of the subject at a temperature from 15 ºC to 60 ºC for 5 to 15 minutes; and

(4) cooling the hair of the subject at a temperature from 4 ºC to 15 ºC for 1 to 10 minutes.

2. The treating method according to claim 1, further comprising a substep (1a) of washing the hair before step (1).

3. The treating method according to claim 1 or 2, further comprising a substep (1b) of applying a scalp cleansing composition on the scalp before step (1).

4. The treating method according to claim 3, wherein the scalp cleansing composition comprises at least one non-ionic surfactant selected from the group consisting of octyl glucoside, decyl glucoside, lauryl glucoside, coco glucoside, palmityl glucoside, isostearyl glucoside, stearyl glucoside, arachidyl glucoside, behenyl glucoside, and mixtures thereof.

5. The treating method according to claim 4, wherein the non-ionic surfactant is lauryl glucoside.

6. The treating method according to any of claims 1 to 5, further comprising a substep (1c) of rinsing off scalp cleansing composition from the hair and scalp after step (1) and before step (2).

7. The treating method according to any of claims 1 to 6, further comprising a

substep (2a) of applying a scalp care composition on the scalp after step (1) and before step (2).

8. The treating method according to claim 7, wherein the scalp care composition comprises at least one animal or vegetable protein hydrolyzates selected from the group consisting of elastin, collagen, keratin, milk protein, soya protein, silk protein, oat protein, pea protein, almond protein and wheat protein hydrolyzates, condensation products thereof with fatty acids, quaternized protein hydrolyzates, and mixture thereof.

9. The treating method according to claim 8, wherein the animal or vegetable protein hydrolyzate is wheat protein hydrolyzates.

10. The treating method according to any of claims 1 to 9, further comprising a substep (3a) of applying a hair care composition on the half portion distant from the scalp of the hair after step (2) and before step (3).

11. The treating method according to any of claims 1 to 10, wherein the hair care composition comprises at least one alkyl quaternized ammonium salt cationic surfactants and at least one polydimethylsiloxanes.

12. The treating method according to any of claims 1 to 11, further comprising a substep (3b) of covering a plastic film over the hair after step (2) and before step (3).

13. The treating method according to any of claims 1 to 12, further comprising a substep (3c) of rinsing the hair after step (3) and before step (4).

14. The treating method according to any of claims 1 to 13, further comprising a substep (3d) of applying the hair conditioning composition on the end portion of the hair after step (3) and before step (4).

15. The treating method according to claim 14, wherein the hair conditioning

composition comprising:

(1) at least one volatile silicone selected from the group consisting of disiloxane, trisiloxane. tetrasiloxane, cyclotrisiloxane, cyclotetrasiloxane, cyclopentasiloxane, low viscosity trimethyl endblocked polydimethylsiloxanes, cyclomethicone. dimethicone, polydimethyl cyclic siloxanes and mixtures thereof; and

(2) at least one functional silicone selected from the group consisting of amine functional silicones, vinyl functional silicones, dimethylpolysiloxane fluids, hydroxyl endblocked polysiloxanes, phenylmethyl polysiloxanes, alkyl substituted polysiloxanes, halogenalkyl functional silicones, acrylate functional silicones, and mixtures thereof.

16. The treating method according to any of claims 1 to 15, wherein the warming in step (1) is applied by spraying steam onto the scalp.

17. The treating method according to any of claims 1 to 16, wherein the warming in step (1) is performed at a temperature of 50 ºC to 55 ºC.

18. The treating method according to any of claims 1 to 17, wherein the cooling in step (2) is performed at a temperature of 4 ºC to 7 ºC.

19. The treating method according to any of claims 1 to 18, wherein the warming in step (3) is performed at a temperature of 35 ºC to 44 ºC.

20. The treating method according to any of claims 1 to 19, wherein the cooling in step (4) is performed at a temperature of 4 ºC to 7 ºC.

21. The treating method according to any of claims 1 to 20, wherein the warming in step (1) is performed for 12 to 18 minutes.

22. The treating method according to any of claims 1 to 21, wherein the cooling in step (2) is performed for 3 to 8 minutes.

23. The treating method according to any of claims 1 to 22, wherein the warming in step (3) is performed for 8 to 13 minutes.

24. The treating method according to any of claims 1 to 23, wherein the cooling in step (4) is performed for 3 to 8 minutes.

25. The treating method according to any of claims 1 to 24, wherein the subject is human.

26. The treating method according to any of claims 1 to 25, wherein the scalp in step (1) is in a wetted condition.

27. The treating method according to any of claims 1 to 26, wherein the scalp in step (2) is in a wetted condition.

28. The treating method according to any of claims 1 to 27, wherein the hair in step (3) is in a wetted condition.

29. The treating method according to any of claims 1 to 28, wherein the hair in step (4) is in a wetted condition.

Figures

Fig. 1

Fig. 2

Fig. 3

Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2014/092246

A. CLASSIFICATION OF SUBJECT MATTER

A61B 18/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61B 18/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, CNKI, CNPAT, Web of Knowledge: scalp, hair, treat, care, warm, heat, temperature, cool, method, step

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 1068954 A (HAO, WUBIN) 17 February 1993 (1993-02-17) description, page 2, lines 13-14 and figure 1	1-29
A	CN 103371548 A (PENG, JUAN) 30 October 2013 (2013-10-30) the whole document	1-29
A	CN 101795634 A (TRANSDERMAL CAP INC.) 04 August 2010 (2010-08-04) the whole document	1-29
A	US 5603728 A (PACHYS, FREDDY) 18 February 1997 (1997-02-18) the whole document	1-29
A	US 8499365 B1 (HILL, ERIC J. ET AL) 06 August 2013 (2013-08-06) the whole document	1-29
A	US 2014243940 A1 (SCHULLER, CARMEN) 28 August 2014 (2014-08-28) the whole document	1-29

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
04 August 2015	**17 August 2015**

Name and mailing address of the ISA/CN	Authorized officer
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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
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Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 1068954 A	17 February 1993	None	
CN 103371548 A	30 October 2013	None	
CN 101795634 A	04 August 2010	US 2010106077 A1	29 April 2010
		EP 2139417 A1	06 January 2010
		CA 2683090 A1	27 November 2008
		JP 2010524648 A	22 July 2010
		WO 2008144157 A1	27 November 2008
		AU 2008254339 A1	27 November 2008
US 5603728 A	18 February 1997	None	
US 8499365 B1	06 August 2013	None	
US 2014243940 A1	28 August 2014	WO 2014134332 A1	04 September 2014