

SPECIFICATION
IMPROVED HAIR STYLING METHODS



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5 Field of the Invention

The present invention relates to methods of hair styling in which the health condition of hair is determined based on the extent of hair damage and hair treatments such as cutting, coloring and perming are carried out under conditions most suitable to the extent of hair damage.

10 Hair styling methods in the present invention include all hair treatments related to beauty and hairdressing such as haircutting, hair coloring and perming.

Background Technology

15 The type of hair can be classified into hard and soft hairs, straight and wavy hairs, and curly hair. It has been said that straight hair having a virtually circular cross section is commonly seen in the Mongoloid such as the Japanese and the Chinese, wavy hair having an oval cross section is commonly seen in the Caucasian, and curly hair having a cave-in circular cross section is commonly seen in the Negroid. A mass of about 100 to 150 thousands of hair grows at the rate of approximately 1.2 cm every month and the life of hair is said to be about 3 to 5 years for men and about 4 to 6 years for women. It is also said that hair of the Japanese is about 80 μ m in diameter, 20 which is thicker than the hair of the Westerner with 50 to 55 μ m in diameter, and generally have a moisture content of about 11 to 16%, and as high as about 35 to 45% when dampened ("Popular Science: A Science in Hair Care" by Kao Life Science Research Institute, published by Shochukabo Inc., 1992).

25 Conventionally, not only adult women but also young women generally get hair treatments for perming or curling, which often cause hair damage. These treatments include a number of permanent treatments, such as rod permanent treatment in which a variation in waves is made with different sizes of rods; pin permanent treatment which provides a compact finish with various kinds of style depending on different kinds of curling; spiral permanent treatment in which a bundle of hair is twisted and wound round a rod or aluminum foil; twisting permanent treatment 30 in which a bundle of hair is pinned as if being screwed to make irregular waves; permanent straightening treatment in which curly hair is straightened and the hair volume is reduced; aluminum permanent treatment in which a bundle of hair is rapped with an aluminum foil; wire permanent treatment in which a bundle of hair is freely wound round a wire and pinned to make



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naturally-looking curly hair; and other permanent treatments using half-split chopsticks or U-shaped pins.

5 A highly alkaline liquid perming agent is widely known. In permanent treatment, generally, hair is permed typically by combing or rolling the hair round a roll to add the tension while applying a highly alkaline liquid perming agent to the hair to change molecular linkages of a protein molecule of the hair component. Conventionally, when the hair has damages such as frizziness or splitting, a protein conditioner has been used to restore the damages.

10 A conditioner improves the texture and gloss of hair by supplying the protein, which oxidizes the hair to return it to a normal state at a molecular level. At the same time, an acidic neutralizing liquid is used because oxidization is accelerated. Thus, permanent treatments using strong chemical substances are often hazardous and cause hair loss and damage on the hair and the scalp in the long run.

15 In order to such direct application to the scalp, an alkaline perming lotion is generally used as hard cream or paste. However, such cream or paste is hard to cleanse. Further, in order to protect the scalp, an oily substance is occasionally added to a liquid agent as an oil-in-water emulsion. However, such a liquid agent is also hard to cleanse. If a residue of an alkaline perming lotion remains, effectiveness of the improvement of the hair structure by conditioning declines. Thus, conventionally, there existed no perming lotion that can further improve the texture and gloss of hair and be easily and completely cleansed from the hair.

20 Accordingly, monitoring and controlling the extent of hair damage is a critical measure to get the best and consistent result in a perming procedure. However, there is no reliable method available for monitoring and/or controlling the extent of the damage. Furthermore, there is an urgent need to accurately and consistently monitor the rate and appropriate point of the reaction between an alkaline liquid perming agent and the hair in a perming procedure.

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DISCLOSURE OF THE INVENTION

30 Under these conditions, ordinary perming treatments had been reluctantly carried out without taking the extent of the damage and health conditions of hair into consideration. As a result, hair was waved in different shapes depending on the health conditions of the hair or the waviness was different depending on the treatment time with a perming agent. Further, the hair was waved not necessarily as designed because of the extended damage due to the tension or the like during winding. Further, hair was treated under unspecific general conditions as mentioned above without taking the extent of damage and health conditions of the hair into consideration and

often suffered irrecoverable damages accordingly. Repetition of such treatments occasionally caused incurable hair loss.

Accordingly, the present inventors noted that when hair is chemically or thermally treated, it is necessary to maintain healthy balance of hair components, i.e., medulla, cortex and cuticle.

5 Namely, the present inventors found that it is appropriate to diagnose the health condition of hair according to the extent of hair damage and then treat the hair based on the diagnose to minimize additional damage as much as possible, and thus completed the present invention.

10 An object of the present invention is to provide a method of selecting an appropriate hair styling treatment for a client, in which the frequency of perming, coloring, straightening and shampooing, the state of home caring and the use of hair care products are monitored and thus client's hair state is diagnosed to accurately understand the extent of damage and the health condition of the hair.

15 In the present invention, the most appropriate hair treatment can be provided for a client by thoroughly considering the extent of damage or the health condition of the hair of a client to avoid inconvenience such that hair is waved in different shapes depending on the health condition of the hair, or the state of cuticles, the waviness varies depending on treatment time with a perming agent, or the wave changes depending on the extent of damage caused by the tension or the like during winding.

20 According to the present invention, in a hair coloring or hair ironing procedure, client's hair is diagnosed in terms of the present state of perming and coloring, or the external appearance or waviness of the hair, and further the state of bleaching.

Furthermore, although the present invention is intended for a human body, an embodiment of the present invention can be repeatedly and continuously implemented and is sufficiently applicable to a number of people on an industrial scale.

25 Namely, the present invention essentially comprises the followings.

(1) A hair styling method comprising diagnosing a health condition of hair from the extent of hair damage and then treating the hair under the most appropriate conditions according to the extent of hair damage.

30 (2) The hair styling method according to (1) above, wherein diagnostic indices for the health condition of the hair are perming design, perming curing, external hair appearance, or the state of coloring.

(3) The hair styling method according to (1) or (2) above, wherein the extent of hair damage is expressed by the sum total of the following grading indices:

1) indices for grade 1: whole perming, partial perming or tip perming, and whole straightening, partial straightening, whole coloring or partial coloring;

2) indices for grade 2: fine waves (about 10 mm in width), souvage, twist perming, kinky surface, tip splitting or broken hair, coloring (5 to 8 tones in brightness); and

5 3) indices for grade 3: dread (about 5 mm), aluminum perming, bleaching, and white bleaching.

(4) The hair styling method according to any one of (1) to (3) above, wherein necessary treatments are carried out by carefully selecting conditions in terms of wave strength, brightness of color, design, selection of a liquid chemical, preparatory treatment, selection of a pretreatment
10 lotion, and the like, according to the extent of hair damage based on the result of the abovementioned diagnosis, and further taking great account of the applying area for the liquid chemical.

(5) The hair styling method according to any one of (1) to (4) above, wherein the conditions for preparatory treatment are set according to the extent of damage of client's hair.

15 (6) The hair styling method according to any one of (1) to (5) above, wherein a polypeptide protein-supplementing agent, hair nutrient and/or squalane oil are appropriately used for the preparatory treatment according to the extent of hair damage.

(7) The hair styling method according to any one of (1) to (6) above, wherein a necessary softening time is set according to the extent of hair damage.

20 (8) The hair styling method according to any one of (1) to (7) above, wherein necessary softening time is appropriately selected to be in a range between scores of seconds and 20 minutes according to the extent of hair damage.

(9) The hair styling method according to any one of (1) to (8) above, wherein the liquid chemical is selected according to the extent of damage of client's hair.

25 (10) The hair styling method according to any one of (1) to (9) above, wherein the liquid chemical is appropriately selected from hard type, normal type, or soft type chemicals according to the extent of hair damage.

(11) The hair styling method according to any one of (1) to (10) above, wherein time for reaction with the liquid chemical is set according to the extent of damage of client's hair.

30 (12) The hair styling method according to any one of (1) to (11) above, wherein the time for reaction with the liquid chemical is appropriately selected to be in a range between one minute and 20 minutes according to the extent of hair damage.

(13) The hair styling method according to any one of (1) to (12) above, wherein an

ironing temperature is set according to the extent of hair damage.

(14) The hair styling method according to any of (1) to (13) above, wherein the ironing temperature is appropriately selected to be in a range between 100°C and 180°C according to the extent of damage of client's hair.

5 In the present invention, one critical condition is to determine the extent of damage of client's hair for diagnosing the health condition of the hair using indices such as external hair appearance.

In the present invention, the extent of hair damage is determined according to criteria shown in Table 1.

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Table 1. Table for diagnosing the health condition

Extent of damage (diagnostic indices)	Grade 1	Grade 2	Grade 3
15 Perming design	Whole perming Partial perming Tip perming	Fine waving (about 10 mm) Souvage Twist perming	Dread (about 5mm) Aluminum perming
Perming curing	Whole straightening Partial straightening	Kinky surface	
20 External hair appearance		Tip splitting Broken hair	
State of coloring	Whole coloring Partial coloring	Coloring (Brightness: 5 to 8 tones)	White bleaching Bleaching (Brightness: over 8 tones)
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30 In the present invention, it is essential diagnose the current condition of hair in terms of diagnostic indices, i.e., "perm design", "perm curing", "external hair appearance," and "a state of coloring" and classify into "grade 1," "grade 2", and "grade 3," as shown in Table 1 "Table for diagnosing the health condition."

According to the table for diagnosis of the present invention above, "whole perming,"

“partial perming,” and “tip perming” are designated as grade 1 damage, “fine waving (about 10 mm)”, “soupage,” and “twist perming” are designated as grade 2 damage, and “dread (about 5 mm)” and “aluminum perming” are designated as grade 3 damage, in the diagnostic index “perming design.”

5 Furthermore, “whole straightening” and “partial straightening” are designated as grade 1 damage, and “kinky surface” is designated as grade 2 damage in the diagnostic index “perming curing.” Further, “tip splitting” and “broken hair” are designated as grade 2 damage in the diagnostic index “external hair appearance.” Similarly in the diagnostic index “state of coloring,” “whole coloring” and “partial coloring” are designated as grade 1 damage, “coloring (brightness: 5 to 8 tones)” is designated as grade 2 damage, and “coloring (brightness: over 8 tones)” is designated as grade 3 damage.

Next, an example of the determination of the extent of hair damage (the sum total of the grade) according to Table 1 will be explained.

15 Hair of one client is observed and scored according to the criterion in Table and the extent of hair damage, i.e., the sum total of the grade is calculated. Namely, the hair is thoroughly permed (i.e., whole perming: grade 1), colored partially at a tone of 4 (partial coloring: grade 1), wholly twist-permed (twist perming: grade 2), and further white-bleached (white bleaching: grade 3) and thus the extent of hair damage is the sum total of 7 (= grade 1 × 2 + grade 2 + grade 3).

20 Further, in the abovementioned diagnosis of the present invention, attention should be paid to distinguish between soft hair and hard hair and to differentiate the stem part and the tip part of the hair particularly in intensively damaged hair.

BRIEF DESCRIPTION OF THE DRAWINGS

25 Figure 1 shows the extent of hair damage according to the properties of the hair shown in Table 1.

Figure 2 shows means of preparatory treatment and necessary softening time according to the extent of hair damage.

Figure 3 shows the standard for selection of the liquid chemical, reaction time with the liquid chemical, and ironing temperatures.

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THE BEST MODE OF CARRYING OUT THE INVENTION

The present invention will be explained in more detail using the drawings and table.

Figure 1 shows the extent of hair damage (the sum total of the grade) and innate

characteristics of hair according to Table 1 “Table for diagnosing the health condition.” Figure 2 shows the relationship between means of preparatory treatment and necessary softening time according to the extent of hair damage and Figure 3 shows the standard for selection of the liquid chemical, reaction time with the liquid chemical (time for soaking in the liquid chemical), and ironing temperatures when heating iron is used.

Further, the followings will specifically explain the means of preparatory treatment, necessary softening, standard for selecting a liquid chemical, reaction time with the liquid chemical, ironing temperatures, according to the extent of hair damage. However, it should be understood that these examples are for purpose of illustration only and the essence of the present invention is basically a method of appropriately treating the hair according to the extent of hair damage.

1. Preparatory treatment – necessary softening time:

According to Figure 1, the extent of hair damage is generally in the range of 0 to 4. If the figure exceeds this range, particularly over 6, the health condition of the hair is deemed to be damaged, which requires a gentle and moderate treatment for perming or coloring.

According to Figure 2, steaming can be carried out without any problem as a pretreatment procedure for perming when hair has no damage. However, spray of treatment water, a so-called “hair water treatment” is required when hair is damaged even to a small extent. Further, the hair should be treated according to the extent of the damage when the extent exceeds 2.

As shown in Figure 2, hard hair has to be pretreated using a polypeptide protein supplement (“PPT” treatment), a hair nutrient “5-fold treatment lotion” in addition to “PTT,” and “squalane oil” in addition to “PTT” and “5-fold treatment lotion.” Soft hair has to be pretreated using “essence” instead of “PPT” and “3-fold treatment lotion” instead of “5-fold treatment lotion.” Further, a waving agent has to be used for both hard hair and soft hair. A common “waving agent” is used when the extent of damage is less than 5-6 and a “cysteine waving agent” is used when the extent of damage exceeds 5-6.

Softening time is set to 20 minutes when the extent of damage is 0. However, the time must be shortened as the damage level increases.

2. Selection of liquid chemical, reaction time with liquid chemical and ironing temperatures.

As shown in Figure 3, perming agents used are a hard type, a normal type, and a soft type when scores for the extent of damage are less than 2, 2-10, and more than 10, respectively. Further, a common “waving agent” and a “cysteine waving agent” are used when the extent of damage are less than 6 and over 6, respectively.

Furthermore, in terms of relationship between the reaction time with a liquid chemical

(applying time) and the extent of damage, as the extent of damage increases starting from 0, the reaction time with the liquid chemical must be shortened. For example, the reaction times are about 20, 10 and 5 minutes when scores for the extent of damage are 0, 5, and 10, respectively. Further, when heat treatment is used for perming, hair having the extent of damage of less than 5 is treated at 180°C for long hair and 160°C for short hair and hair having the extent of damage of 4-7 is treated at 160 °C for both short hair and long hair. Further, hair having the extent of damage of 7-9 has to be treated at 130°C for both long hair and short hair and hair having the extent of damage of more than 9 has to be treated at 100°C for both long hair and short hair.

10 Potential for industrial use

In the present invention, the health condition of client's hair is thoroughly understood prior to hair treatment by diagnosing the extent of damage in terms of current perming, coloring, straightening, frequency of shampooing, home caring, use of hare care products, and the like so that the most appropriate treatment procedure for styling can be selected. Such a preliminary diagnose of hair makes it possible to minimize potential hair damage due to inappropriate perming and coloring and maintain hair stability for a long period of time.

Further, hair can be most appropriately and timely treated responding to client's request by keeping record cards for the health condition of client's hair.

A method of the present invention is thus durable, repeatable, highly utilizable in industry, and highly contributory to society.

CLAIMS

1. A hair styling method comprising diagnosing a health condition of client's hair from the extent of hair damage and then treating the hair under the most appropriate conditions according to the extent of hair damage.
- 5 2. The hair styling method according to claim 1, wherein diagnostic indices for the health condition of the hair are perming design, perming curing, external hair appearance, or the state of coloring.
3. The hair styling method according to claim 1 or 2, wherein the extent of hair damage is expressed by the sum total of the following grading indices:
 - 10 1) indices for grade 1: whole perming, partial perming or tip perming, and whole straightening, partial straightening, whole coloring or partial coloring;
 - 2) indices for grade 2: fine waves (about 10 mm in width), souvage, twist perming, kinky surface, tip splitting or broken hair, coloring (5 to 8 tones in brightness); and
 - 3) indices for grade 3: dread (about 5 mm), aluminum perming, bleaching, and white
- 15 bleaching.
4. The hair styling method according to any one of claims 1 to 3, wherein necessary treatments are carried out by carefully selecting conditions in terms of wave strength, brightness of color, design, selection of a liquid chemical, preparatory treatment, selection of a pretreatment lotion, and the like, according to the extent of hair damage based on the result of the
- 20 abovementioned diagnosis, and further taking great account of the applying area for the liquid chemical.
5. The hair styling method according to any one of claims 1 to 4, wherein conditions for preparatory treatment are set according to the extent of damage of client's hair.
6. The hair styling method according to any one of claims 1 to 5, wherein a
- 25 polypeptide protein supplementing agent, hair nutrient and/or squalane oil are appropriately used for the preparatory treatment according to the extent of hair damage.
7. The hair styling method according to any one of claims 1 to 6, wherein a necessary softening time is set according to the extent of hair damage.
8. The hair styling method according to any one of claims 1 to 7, wherein the
- 30 necessary softening time is appropriately selected to be in a range between scores of seconds and 20 minutes according to the extent of hair damage.
9. The hair styling method according to any one of claims 1 to 8, wherein a liquid

chemical is selected according to the extent of damage of client's hair.

10. The hair styling method according to any one of claims 1 to 9, wherein the liquid chemical is appropriately selected from hard type, normal type, or soft type chemicals according to the extent of hair damage.

5 11. The hair styling method according to any one of claims 1 to 10, wherein time for reaction with the liquid chemical is set according to the extent of damage of client's hair.

12. The hair styling method according to any one of claims 1 to 11, wherein the time for reaction with the liquid chemical is appropriately selected to be in a range between one minute and 20 minutes according to the extent of hair damage.

10 13. The hair styling method according to any one of claims 1 to 12, wherein an ironing temperature is set according to the extent of hair damage.

14. The hair styling method according to any one of claims 1 to 13, wherein the ironing temperature is appropriately selected to be in a range between 100°C and 180°C according to the extent of damage of client's hair.