

DESCRIPTIONHAIR DYEING PROCESS AND KIT

5 The present invention relates to a process for
dyeing hair, particularly human hair, and
a kit for carrying out that process.

10 The color of human hair is due to the presence
within its structure of discrete natural pigment
particles - the melanins. The study of melanins and
melanogenesis has intensified in the last 40 years,
accompanied by some interest in the dyeing of hair
with such materials that most closely resemble the
15 natural materials which contribute the color to
hair. The biosynthesis of melanin involves conver-
sion of tyrosine via dihydroxyphenylalanine (dopa)
to melanin through a number of intermediate steps ,
including 5,6-dihydroxy-indole, to melanin.

20 In addition to the general desirability of
dyeing hair in a simple fashion and with a dye which
is the closest to the material that contributes the
natural coloration of hair, a requirement also
exists for a hair colorant which can also serve, if
desired, as a temporary hair color which can be
25 applied and removed at will and which can be applied
in a reliable and fast manner.

Patents issued which cover aspects of hair coloring with melanin precursors, e.g. tyrosine, L-dopa, L-dopa esters, and 5,6-dihydroxy-indole.

5 U.S. patents Nos. 2,539,202; 2,875,769; and 3,698,852 deal with using L-dopa as the starting material. U.S. patents Nos. 2,934,396; 3,194,734; and 3,993,436 disclose the use of 5,6-dihydroxyindole as the starting material. The major disadvantages of these systems are the time required for
10 color development, the uncertainty of the development and the lack of control over it, and the necessity of adding compounds such as p-phenylenediamine and various couplers for shade adjustment.

15 In the process disclosed in U.S. patent No. 2,934,396 hair is first treated with an acidic or neutral solution of 5,6-dihydroxyindole, then the excess solution is blotted off and an oxidizing agent or an oxidation-inducing solution is applied
20 to the hair until the desired shade is developed. In one of the methods disclosed in the patent the oxygen of the ambient air is utilized wherein the second solution contains an alkalizer and a cobalt or manganese oxidation promoter. Mainly, however,
25 an ammoniacal solution of an oxidizing agent, such as of hydrogen peroxide or an alkali metal or ammonium iodate, periodate or persulfate, etc. is taught to be employed. When the desired shade is developed, the hair is rinsed, shampooed, rinsed
30 again and dried.

U.S. patent No. 3,194,734 is characterized as an improvement over the above-mentioned U.S. patent No. 2,934,396, because in the process of the earlier patent the dyeing which is the oxidative polymerization of the 5,6-dihydroxyindole into melanin simultaneously competes with an oxidative destruction of the dye that is being formed, resulting in a waste of indole, producing uneven results on the hair and it is difficult to determine when to stop the process by rinsing. Therefore, this later patent proposes a process wherein an aqueous alkaline composition containing 5,6-dihydroxyindole and ammonia or an amine are used to contact the hair until the desired shade is obtained. Alternatively, certain methyl derivatives of 5,6-dihydroxyindole can be employed in a two step process to obtain lighter shades wherein the hair is first impregnated with an aqueous solution of such a methyl derivative in an acidic or neutral pH solution, then is briefly dried and then the color is developed in a second step by application of an aqueous solution containing an oxidizing agent.

The present invention is, in part, based on the discovery that, in contrast to the prior art where H_2O_2 or other oxidants are used either in a separate step, or together with the 5,6-dihydroxyindole, to obtain a variety of shades, superior results can be obtained by utilizing a metal salt for promoting melanogenesis.

We discovered that a better variety of shades and more reliable shade development and, if desired, improved temporary hair coloring can be achieved by a hair dyeing process which comprises the steps of

5 contacting the hair to be dyed with a solution, suitably aqueous solution, of a metal salt which promotes melanin formation from 5,6-dihydroxyindole, before or after the aforementioned step contacting

10 the hair with a solution, suitably aqueous solution, of 5,6-dihydroxyindole, rinsing the hair between the two contacting steps, maintaining the contact with the second-used solution until a desired darker color is obtained, rinsing or shampooing the hair, then contacting the hair with a solution of hydrogen

15 peroxide for a maximum of 15 minutes until the desired color shade is obtained, and then again rinsing the hair.

In a particularly suitable embodiment of the process of the present invention the process comprises the steps of contacting the hair to be dyed

20 with an alkaline solution, suitably an aqueous solution, containing cupric ions, before or after the aforementioned step containing the hair with a solution, suitably aqueous solution, of 5,6-dihydroxyindole, rinsing the hair between the two

25 contacting steps, maintaining the contact with the second-used solution until a desired darker color is obtained, and rinsing or shampooing the hair. If a color other than grey or black is desired, the shade

30 is obtained with a subsequent treatment with H_2O_2 . Thus, it can be seen that a principal distinction of the present process over all prior proposals for dyeing with 5,6-dihydroxyindole is

that in all cases, except when the desired ultimate color is black, the hair is first dyed to a grey or black color, and the ultimate desired shade is subsequently developed by lightening with the hydrogen peroxide solution.

A further feature of the present invention is a hair dyeing kit which includes in a single package a plurality of containers, comprising a first container including therein an aqueous alkaline pH solution of an effective amount of a metal which promotes melanin formation from 5,6-dihydroxyindole, a second container including therein a solution of 5,6-dihydroxyindole at an acidic pH, a vapor space being maintained above the solution in said second container and containing a non-oxidizing gas in said space, a third container including therein an alkali-
lizer, said vapor space in said second container being of sufficient volume to accept said third container or the contents of said third container with said vapor space, and a fourth container which contains a solution of hydrogen peroxide.

In a further feature the present invention provides a hair dyeing kit which includes in a single package a plurality of containers, comprising a first container including therein an aqueous alkaline pH solution of an effective amount of a metal which promotes melanin formation from 5,6-dihydroxyindole, a second container including therein an alkaline solution, a vapor space being maintained above the solution in said second container, a third container including therein a solution of an effective amount of 5,6-dihydroxyindole at acidic

pH, said vapor space in said second container being of sufficient volume to accept said third container or the contents of said third container within said vapor space, and a fourth container which contains a solution of hydrogen peroxide.

In yet another embodiment of the invention a hair dyeing kit is provided which includes in a single package a plurality of containers, comprising a first container including therein an alkaline pH solution containing an effective amount of copper, a second container including therein a solution of an effective amount of 5,6-dihydroxyindole at an acidic pH, a vapor space being maintained above the solution in said second container and containing a non-oxidizing gas in said space, and a third container including therein an alkalizer, said vapor space in said second container being of sufficient volume to accept said third container or the contents of said third container within said vapor space.

A further embodiment of the invention is a hair dyeing kit which includes in a single package a plurality of containers, comprising a first container including therein an alkaline pH solution containing an effective amount of copper, a second container including therein an alkaline solution, a vapor space being maintained above the solution in said second container, and a third container including therein a solution of an effective amount of 5,6-dihydroxyindole at acidic pH, said vapor space in said second container being of sufficient volume to accept said third container or the contents of said third container within said vapor space.

In accordance with the present invention, unless a black or grey shade is desired, the hair dyed with the melanin from 5,6-dihydroxy-indole is lightened with a hydrogen peroxide-containing solution. As used throughout the specification and the claims, the term "hydrogen peroxide" intends to denote hydrogen peroxide or any other ingredient which is an aqueous solution forms hydrogen peroxide, such as urea peroxide. This lightening or color shade-establishing step is different from the conventional oxidizing treatment employed in the conventional bleaching of hair. In conventional bleaching the natural color of hair is removed by bleaching when it is desired to color it to a shade that is lighter than the natural color of the hair. In that case the natural color of the hair is bleached out over a longer period of time with a strong oxidizing solution which usually contains hydrogen peroxide and additional bleach boosting persalts, around pH 10. This bleaching step generally tends to weaken or otherwise damage the hair. In the lightening step of the present invention we do not deal with the conventional kind of bleaching, because the hydrogen peroxide solution used in the present invention does not contain added bleach boosters such as persalts, it is suitably employed at a pH below 10, suitably around 9, and the lightening requires only up to about 15 minutes for the lightest shades. Hence the lightening, color-developing oxidizing step of the present invention is considerably faster than conventional bleaching and is not employed to carry the lightening further than the natural color of the hair or the color that it had before the process of this invention was employed.

Without intending to be bound by the following explanation, we believe that the difference in the lightening in accordance with the present invention and conventional bleaching is attributable to the new dyeing step of the present invention. In naturally colored hair the melanin pigment is distributed throughout the cortex, i.e. the inner core of the hair shaft. This means that in bleaching the natural melanin color in hair with a strong bleach, such as hydrogen peroxide as boosted by added persalts, considerable time is required for the bleach to penetrate through the unpigmented periphery or cuticle into the hair shaft. In the process of the present invention the dye is believed to be disposed principally along the periphery of the hair shaft and the lightening hydrogen peroxide does not require the presence of percompound boosters and prolonged exposure to reach and to bleach the dye. Due to the shorter exposure and the peripheral penetration, the lightening step of the present invention does not tend to damage or weaken the hair as is the case in conventional bleaching.

Furthermore, it is believed that the dyes produced in accordance with the present invention are unique in that the melanogenesis-promoting metal forms a complex with the melanin formed during dyeing. The affinity of the complexed metal is viewed as being greater for melanin than for the keratin of the hair. Therefore the reactivity of the melanin-metal complex dye is greater with hydrogen peroxide than that of melanin without the metal. This is borne out by the observation that the melanin/copper complex produced in accordance

with the present invention can be lightened faster with hydrogen peroxide than a natural melanin, even if a copper salt is dissolved in the hydrogen peroxide used to lighten the natural melanin.

5 Therefore, the metal not only promotes melanin formation in the dyeing step of the present invention, but is believed to contribute to the ease and rapidity of the lightening step. For this reason we distinguish the lightening step of the present
10 invention which can be completed in under 15 minutes from conventional bleaching which is of a different kind and requires generally a time period that is well over twice as long and requires bleach boosters in addition to hydrogen peroxide.

15 Accordingly, another feature of the present invention is a complex melanin hair dye as a new composition of matter, said dye being prepared by contacting hair with a solution of 5,6-dihydroxy-indole, and before or after the aforesaid step
20 contacting the hair with a solution of a cupric salt.

The process of the present invention can also be used for dyeing hair which was previously dyed with conventional permanent or semipermanent hair dyes. As long as the original dye is stable to the
25 lightening solution that is milder than conventional hair bleaches, the dyeing and lightening steps of the present process do not destroy the starting color of the hair within the times employed herein for lightening, whether or not the starting color is
30 natural color of the hair. Accordingly, hair colored by the present process can be re-lightened to that starting color, whether that re-lightening

takes place the next day or a considerable time later.

If the present process is intended to color hair to a shade which is lighter than the natural shade of hair, or lighter than a shade to which hair was dyed by conventional techniques, then the hair has to be first bleached lighter, or even bleached completely, before employing the process of the present invention. In that case the lightening treatment of the present invention can be carried to any shade that is darker than the initially bleached shade, and then the hair can be lightened to any intermediate shade, or if desired, the initially bleached shade can be restored.

If the desired shade is a lighter one, it is not necessary to dye the hair entirely black, but dyeing to a lighter or darker grey will suffice. When the dye is then lightened in a subsequent step, it will initially lighten to a lighter or darker brown shade, depending on whether it was dyed to a lighter or darker grey in the initial steps. Of all the melanogenesis promoters that were tested, only Cu^{2+} was found to promote melanin formation all the way to an intense black color. The other metal promoters that were tested appear to assist dyeing only to lighter or darker shades of grey. In our experiments longer exposure of the hair or larger concentrations of the metal promoter did not result in an increase of the resulting depth of color.

In the dyeing step the treatment of the hair with the solution of the melanogenesis promoter can

generally precede or follow the treatment of the hair with the 5,6-dihydroxyindole-containing solution. Generally a better depth of color could be obtained when the treatment with the promoter solution preceded the contacting with the 5,6-dihydroxyindole solution. Any metal or transition metal ion which is capable of promoting melanogenesis is believed to be suitable for that purpose. These include, for example, solutions of iron, cobalt, manganese, copper, silver, titanium, zirconium, tantalum, chromium, nickel, palladium, platinum, gold, mercury, cadmium, zinc, tin, antimony, lead, bismuth, etc. The metal salts can be employed alone or in mixtures. Except for cupric solutions it was found that it is usually necessary to employ a chelating agent such as citric acid, a citrate, ethylenediamine tetraacetic acid, ascorbic acid and the like to keep the metal in solution.

Terms, such as "melanogenesis promoter", "melanogenesis-promoting metal salt" and variants of such terms, as used throughout the specification and the claims intend to refer to solutions of one or more metals which will promote color formation in hair within a maximum period of 20 minutes after the hair was contacted with a solution of 5,6-dihydroxyindole. Whether or not a given metal or a given combination of metals can perform as a melanogenesis promoter, can be determined by routine experimentation by trying out its ability to form a melanin dye in accordance with the process of the present invention.

The melanogenesis promoter which was found most suitable is Cu^{2+} which provides a considerably faster dyeing and the resulting color can go all the way to solid black. While Fe^{2+} ion will also work well, it is less preferred than copper, due to solubility problems at certain pH levels and other considerations. Furthermore, when using the cupric ion at about pH 9 or above, suitably at pH 9.5, no chelating agent is required, because no insoluble traces can be found in the solution. Suitably monoethanolamine or other nitrogen-containing alkalis, such as other alkanolamines, ammonia, etc. can be used for adjusting the desired pH. Alkali hydroxides work well only if a chelating agent is also employed to maintain the solution. The basic pH has the further advantage of swelling the hair and this allows a better dye take. In the case of using the cupric ion it is decidedly preferable to impregnate the hair first with the solution containing the cupric ion and, after rinsing or blotting the hair, impregnating it with the solution containing the 5,6-dihydroxyindole. The intermediate rinsing or blotting of the hair surface is required to prevent superficial dye formation which can be washed off, since dye formation within the hair shaft itself is desired. As used throughout the specification and the claims, in this context the term "rinsing" is intended to include blotting, wiping and any other method for removing a solution from the hair surface. It requires about 2-20 minutes to dye the hair to the maximum achievable depth of color when using a metal salt promoter for melanogenesis; but when using the cupric ion the time required is at the faster end of even this fast

time range. Therefore, as can be seen, use of the cupric ion provides a plurality of benefits over and above those that can be achieved with other melanogenesis promoters.

5 The solution containing the 5,6-dihydroxyindole is suitably at pH 8 or above. It should preferably not exceed 9.5, since the solutions are increasingly unstable at increasing pH. At the conclusion of dyeing the hair black or grey, shampooing is preferred to a mere rinse. This is, because any dye that may have formed on the hair surface may not
10 rinse off and then can later rub off the surface. A shampoo will remove such surface dye and thus prevent ruboff.

15 The concentration of the 5,6-dihydroxyindole is not critical, but suitably from about 0.5 to about 2% by weight of the solution can be employed for reasons of economy and suitable control over the rate of dyeing. As indicated, the concentrations of
20 the respective ingredients are not critical. Therefore, wherever a concentration is characterized in the specification and the claims as being an "effective amount", this characterization means that the amount employed be sufficient for the intended purpose. Such purpose can be as diverse as a different
25 depth of shade, greater economy in cost of ingredients, different reaction rate, solution stability, and the like. Whatever the purpose, the effectiveness of the amount of an ingredient can be determined by routine experimentation. All percentages
30 throughout the specification and the claims are by weight, unless otherwise specified.

If the shade that is desired is other than black, then the hair, subsequent to dyeing and possible shampooing, is subjected to a lightening step by contacting it with a dilute hydrogen peroxide solution until the desired shade is obtained. Any suitable hydrogen peroxide solution useful in the bleaching or lightening of hair can be employed in this step, however, it was found that an H_2O_2 concentration of from about 1% to about 6% is sufficient. In lightening the hair from black or grey, the color will pass through various progressively lighter shades and the process can be stopped by rinsing the hair when it reached the shade that is desired. The natural shade of the hair can be readily re-established after a prior darker shade is no longer desired. The aqueous hydrogen peroxide solution is suitably employed above pH 8, suitably at pH 9. The relatively slow, but not too slow rate of lightening of up to 15 minutes provides sufficient control to the user for stopping at any desired shade or at the natural shade of the hair. In this manner the competing dyeing and bleaching reactions of the prior art and the attendant drawbacks are eliminated to provide a better, more positive control over the entire process, regardless of whether the dyeing is done in the salon or by the user.

The process of the present invention also enables the selective coloring of different portions of the hair to achieve highlights, streaks and other special cosmetic effects.

To maintain stability, suitably the 5,6-dihydroxyindole solution is maintained at an acid pH,

advantageously around pH 4.5. Furthermore, the solution at the acid pH should suitably be maintained under anaerobic conditions, such as under nitrogen, whereby during packaging the atmosphere above the solution in the bottle is established with nitrogen rather than air. One method of dealing with the problem is to maintain a small volume of nitrogen above the solution in the bottle, the space being sufficient to allow the addition of an alkali-
10 lizer before use. This can be, however, inconvenient, and, therefore, suitably a concentrated, such as 12.5%, aqueous alcoholic or entirely alcoholic solution of the 5,6-dihydroxyindole, in which it is easily soluble, can be maintained at acidic pH in a
15 small, full container until it is intended to be used. Immediately before use the contents of this small bottle can be transferred to a larger bottle which can contain a pre-thickened alkaline solution to obtain the alkaline 5,6-dihydroxyindole solution
20 immediately before its use. Another way is to maintain the alkalizer in a small pouch made of a selectively soluble material and then the entire pouch can be dropped into the space above the acidified 5,6-dihydroxyindole-containing solution to
25 avoid the need for the consumer being required to handle a possibly strong alkalizer. Alternatively, when a small, concentrated solution of acidified 5,6-dihydroxyindole is intended to be added to an alkaline solution, then the former could be main-
30 tained in a selectively soluble pouch which could in its entirety be transferred to the aqueous alkaline solution to avoid the need of the user having to pour a liquid from one container into another.

It was found that adding a small amount, such as 1% by weight, of a surfactant, such as sodium lauryl sulfate to at least one of the metal and the 5,6-dihydroxyindole solutions, can improve the flow-on properties of the compositions for better applicability to the hair. Similarly, scalp staining can be reduced and the desirable flow properties of the solutions can be improved by adding a small amount, such as 0.5% by weight of a thickener to both of the solutions, such as carbomer 940, a polymer of acrylic acid crosslinked with a polyfunctional agent and sold by the Goodrich Chemical Company under the name of Carbopol* 940. The identity of other agents for adjusting desirable flow properties can be determined by routine experimentation, since such flow property-adjusting agents are well known in the field of compounding hair treatment compositions. It is also known in the art of hair treatment compositions that certain flow property-changing additives may be incompatible with certain compositions. It was found, for example, that additives such as cocamidopropyl hydroxysultaine, sold by Lonza Chemical Co. under the name of Lonzaine CS, and hydroxypropyl methylcellulose sold by Dow Chemical Co. under the name Methocel,* were apparently not compatible with compositions of the present invention, because the resulting color was not as deep when these materials were included. Other ingredients known per se, such as conditioners, perfumes, anti-static agents and the like, can be included in the compositions or can be subsequently applied to the hair.

* "Carbopol" and "Methocel" are registered Trade Marks.

The following examples serve as further illustrations of the present invention.

Example 1

5 The following promoter composition was prepared:

	CuSO ₄ ·5H ₂ O	1%
	carbomer 940	0.5%
	sodium lauryl sulfate	1%
	monethanolamine	to pH 9.5
10	water q.s. to 100	

The following dye composition was prepared:

	sodium acetate	1.2%
	5,6-dihydroxyindole	1.2%
	carbomer 940	0.47%
15	ethanol	19.7%
	sodium hydroxide	to pH 8.5

20 Hair was saturated with the catalytic composition for five minutes and then rinsed with water. Next the hair was saturated with the 5,6-dihydroxyindole-containing composition for a period of 5 minutes. The resulting black dyed hair was shampooed to remove any melanin from the surface of the hair.

Example 2

25 Light brown hair was dyed black with the



5 procedure of Example 1. Subsequently the hair
was saturated with a 6% aqueous solution of
hydrogen peroxide at pH 9. After 10 minutes
when the original light brown shade of the hair
was reached, the hair was rinsed. The same
procedure was repeated but the hair was light-
ened for 6 minutes to a darker brown shade.
Three weeks later the hair was further light-
ened for 3 1/2 minutes to its original light
10 brown shade.

Example 3

15 The same process was carried out as in
Example 1, on blond hair, except that the con-
centration of the 5,6-dihydroxyindole was only
0.5%. Dyeing was carried out only for 2
minutes to a light to medium gray color. After
shampooing, a 6% aqueous hydrogen peroxide
solution at pH 9 was employed to lighten the
hair to a light brown shade within 6 minutes.

20

Example 4

25 The copper sulfate solution of Example 1
was replaced by employing 0.25% FeSO based on
the composition premixed with citric acid in an
amount suitable to prevent precipitation of the
iron at alkaline pH, and monethanolamine was
used to adjust the pH to 9.5.

The procedure of Example 1 was repeated,
except that no carbomer 940 was contained in
the 5,6-dihydroxyindole-containing solution.

5 The hair was exposed to the catalyst solution for 10 minutes, then rinsed and saturated with the 5,6-dihydroxyindole-containing solution for 10 minutes until the initially light brown-colored hair turned distinctly darker.

Example 5

10 The same procedure as in Example 1 was repeated, except that the 5,6-dihydroxyindole-containing solution was applied first, followed, after a rinse, by the catalyst-containing solution. The resulting color on the hair was less intense than in the case of Example 1.

In the foregoing Examples, the shampooing described is to be understood to provide a rinsing step as required in respect of the process of the invention.



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CLAIMS

1. A hair dyeing process which comprises the steps of contacting the hair to be dyed with an alkaline solution containing cupric ion, after the aforementioned step contacting the hair with a solution of 5,6-dihydroxy-
5 indole, rinsing the hair between the two contacting steps, maintaining contact with the second-used solution until a desired darker color is obtained, and rinsing the hair.

2. The process of claim 1, further comprising contacting the hair with a solution of hydrogen peroxide
10 until the desired color is obtained, and again rinsing the hair.

3. The process of claim 2, wherein the duration of the contacting with a solution of hydrogen peroxide is not more than 15 minutes.

4. The process of claim 2 or 3, wherein the pH
15 of the solution of hydrogen peroxide is at least 8.

5. The process of claim 2, 3 or 4, modified in that the alkaline solution containing cupric ion is replaced by another solution of a metal that promotes melanin
20 formation from 5,6-dihydroxyindole.

6. The hair dyeing process of claim 5, wherein said solution of a metal contains one or more of the metals iron, cobalt, manganese, silver, titanium, zirconium, tantalum, chromium, nickel, palladium, platinum, gold,
25 mercury, cadmium, zinc, tin, antimony, lead, and bismuth.

7. The process of any of claims 1 to 6 wherein the pH of the solution of the metal is at least 8.

8. The process of any of claims 1 to 4, wherein the pH of the solution containing the cupric ion is at least 9.

9. The process of any of claims 1 to 4, or claim 8,
30 wherein at least one of said solutions containing 5,6-dihydroxyindole and containing cupric ion further contains at least one of a thickener, surfactant, anti-static additive, and perfume.



10. The process of any of claims 1 to 9, wherein the pH of the solution containing 5,6-dihydroxyindole is at least 8.

11. The process of any of claims 1 to 10, modified in that the contacting with the solution of 5,6-dihydroxyindole precedes the contacting with the solution containing cupric ion or other solution of a metal that promotes melanin formation from 5,6-dihydroxyindole.

12. A hair dyeing kit which includes in a single package a plurality of containers, comprising a first container including therein an alkaline pH solution containing an effective amount of copper, a second container including therein an alkaline solution, a vapor space being maintained above the solution in said second container, and a third container including therein a solution of an effective amount of 5,6-dihydroxyindole at acidic pH, said vapor space in said second container being of sufficient volume to accept said third container or the contents of said third container within said vapor space.

13. A hair dyeing kit according to claim 12, modified in that the alkaline solution is contained in said third container and the 5,6-dihydroxyindole solution is contained in said second container, the vapor space maintained above the solution in said second container containing a non-oxidising gas in said space.

14. A hair dyeing kit according to claim 12 or 13, which further comprises a fourth container which contains a solution of hydrogen peroxide.

15. A hair dyeing kit according to claim 14, modified in that the alkaline pH solution containing an effective amount of copper is replaced by an alkaline pH solution of an effective amount of another metal which promotes melanin formation.



16. A melanin hair dye as a composition of matter, said dye being prepared by contacting hair with a solution of 5,6-dihydroxyindole, and before or after the aforesaid step contacting the hair with
5 a solution of a cupric salt.

17. A hair dyeing process as claimed in claim 1, 5 or 11, substantially as described in any of the foregoing Examples.

18. A hair dyeing kit as claimed in claim 12,
10 13, 14 or 15, wherein the contents of the first container specified comprise a solution substantially as described in respect of the promoter composition in any of the foregoing Examples, and the contents of the second and third containers specified comprise
15 solutions which taken together are substantially equivalent to the 5,6-dihydroxyindole containing solution in the respective one of the foregoing examples.
