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HAIR DYE COMPRISING m-LOWER-DIALKYL AMINOPHENOL AND p-MONONUCLEAR DIAMINES**Hermann Wilmsmann, Darmstadt, Germany, assignor to Wella A.G., Darmstadt, Germany****No Drawing. Continuation of application Ser. No. 852,169, Nov. 12, 1959. This application May 5, 1964, Ser. No. 365,145****Claims priority, application Germany, Nov. 13, 1958, W 24,442****13 Claims. (Cl. 167—88)**

This invention relates to a dyeing adjuvant and its use. More particularly, this invention is concerned with new compositions suitable for use in the dyeing of keratin fibers, such as human hair.

This application is a continuation of my co-pending application Serial No. 852,169, filed November 12, 1959, for "Dyeing Adjuvant," and now abandoned.

It is well known to dye keratin fibers such as human hair with combinations comprising a primary aromatic amine or a derivative thereof, a so-called modifier, and an oxidizing agent. Among the modifiers commonly used in these dyeing compositions are resorcinol, pyrocatechol, orcinol, chlorohydroquinone, alpha naphthol, m-aminophenol and similar compounds. These modifiers are necessary to obtain particular color shades. Moreover, such modifiers act beneficially on the fastness of the dyeing.

However, the combinations of aromatic amines with modifiers presently used in the dyeing of hair are not entirely satisfactory. Thus, the fastness of the colors derived from such combinations to light, wear and permanent waving is inadequate. In particular, blonde and brown shades which have a dull, natural appearance tend to gradually become reddish. In order to prevent such a discoloration (shift towards red), 3-alkoxy-4-aminodiphenyl amines, which when oxidized produce a green color, may be added to the dyeing combination used. However, these compounds can be applied only in an acid or weakly alkaline medium. They are unsuitable for use in hair dyeing systems having a relatively strong alkaline pH. Therefore, 3-alkoxy-4-aminodiphenyl amines are inoperative in the presently used hair dyeing combinations. It has also been recommended to employ dimethyl aniline or 4-amino-dimethyl aniline in order to produce a dull color effect. However, these modifiers are unsuitable for use in cosmetic preparations because of their unpleasant odor and pronounced toxicity. Furthermore, dyeings produced with these modifiers have an unsatisfactory light fastness.

It is therefore an object of the present invention to provide a new class of dyeing adjuvants.

Another object of the present invention is to provide dyeing adjuvants which when added to amine-containing dyeing compositions will improve the properties of the colors produced therefrom.

A further object of the present invention is to provide new amine-containing dyeing compositions suitable for use in the oxidative dyeing of keratin fibers including human hair.

Yet another object of the present invention is to provide dyeing adjuvants which when applied to hair preserve its natural or artificial color.

A further object of the present invention is to provide novel compositions which make it possible to dye human hair in such manner that the color obtained does not shift towards red under the action of light and/or perspiration.

Still further objects will appear hereinafter.

With the above objects in view, the present invention provides the m-dialkyl aminophenols as a new class of dye-

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ing adjuvants. It has been found in accordance with the present invention that m-dialkyl aminophenols, in particular m-dimethyl aminophenol, produce an excellent modifying effect resulting in the formation of dull, green oxidation dyes. This effect is all the more surprising since m-aminophenol, which is the parent substance of the m-dialkyl aminophenols and which is also used as a modifier, leads to blue-violet oxidation colors.

When combined with an aromatic p-diamine, such as p-tolylene diamine, the dialkyl amino phenols of the present invention produce on human hair, depending upon the ratio of the components used, colors of excellent fastness which range from green to a natural-looking dull brown or blonde. The dyeings obtained with the aid of m-dialkyl aminophenols according to the present invention are fast to permanent waving (for example, by preparations based on thioglycolate), weather, washing and all influences of wear. A further advantage of the dyeing adjuvants of the present invention is that they can be used at the relatively high pH of the common hair dyeing compositions.

A very desirable feature of the m-dialkyl aminophenols, such as m-dimethyl aminophenol, is the fact that these compounds when applied to the keratin of the hair form a greenish dyestuff under the action of oxygen contained in the air. Therefore, the m-dialkyl aminophenols are capable of counteracting the shift towards red normally observed with hair colors.

The dyeing adjuvants of the present invention have the added advantage of producing a shift towards green with all commonly used oxidation dyes, such as the aromatic p-diamines. Consequently, none of the mixtures commonly employed in the dyeing of hair will result in the formation of an abnormal color when an m-dialkyl aminophenol is present.

Meta-dimethyl aminophenol and its homologues, such as m-diethyl aminophenol, are physiologically harmless compounds. This finding is in agreement with the data obtained by S. Borelli (Hautarzt 9, No. 1, 19, 21 (1958)), in studying the behavior of m-aminophenol.

The following examples are additionally illustrative of the present invention but are not to be construed as limiting the scope thereof. Parts indicated are parts by weight unless stated otherwise.

Example 1

8 parts of an aqueous solution containing 1% of toluylene diamine and 0.25% of resorcinol are mixed with 2 parts of a 1% solution of m-dimethyl aminophenol and 0.5 part of 25% aqueous ammonia. Shortly before the dyeing step, 10 parts of a 6% hydrogen peroxide solution are added to the mixture. The dyeing composition thus produced is allowed to act on human hair of medium brown color at a temperature of 32° C. for a period of 20 minutes. After rinsing and drying, the hair is of a dull, natural-looking brown color.

Example 2

20 grams of cetyl alcohol, 2 grams of cetyl alcohol sulfate-sodium and 5 grams of wool wax are melted together and then emulsified with 40 grams of water at 70° C. To the hot emulsion there is added a hot solution of 0.3 gram of toluylene diamine, 0.08 gram of resorcinol, 0.01 gram of m-aminophenol and 0.1 gram of m-dimethyl aminophenol in 25 ml. of water. Subsequently, 10 ml. of a 25% ammonia solution are added and the mixture is stirred until cold. 50 grams of the cream thus prepared are mixed with 20 ml. of 6% hydrogen peroxide and the mixture is applied to human hair. After a dyeing time of 30 minutes, a dull, natural-looking blonde tone is obtained.

While the invention has been illustrated and described in the specification, it is not intended to be limited to

the details shown since various modifications may be made without departing in any way from the spirit of the present invention.

What is claimed is:

1. A dyeing composition for use in the dyeing of human hair on human beings, consisting essentially of a mononuclear aromatic p-diamine, an oxidizing agent and m-lower-dialkyl aminophenol.

2. A dyeing composition for use in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine, hydrogen peroxide and m-dimethyl aminophenol.

3. A dyeing composition for use in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine, an oxidizing agent and m-lower-dialkyl aminophenol.

4. A dyeing composition for use in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine, an oxidizing agent and m-dimethyl aminophenol.

5. A dyeing composition for use in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine, an oxidizing agent and m-diethyl aminophenol.

6. A dyeing composition for use upon oxidation in the dyeing of human hair on human beings, consisting essentially of mononuclear aromatic p-diamine and m-lower-dialkyl aminophenol.

7. A dyeing composition for use upon oxidation in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine and m-lower-dialkyl aminophenol.

8. A dyeing composition for use upon oxidation in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine and m-dimethyl aminophenol.

9. A dyeing composition for use upon oxidation in the dyeing of human hair on human beings, consisting essentially of p-toluylene diamine and m-diethyl aminophenol.

10. A hair dye composition which comprises the dyeing composition of claim 1 and a hair dye modifier.

11. A hair dye composition which comprises the dyeing composition of claim 1 and a hair dye modifier selected from the group consisting of resorcinol, pyrocatechol, orcinol, chlorohydroquinone, alpha naphthol and m-aminophenol.

12. A hair dye composition which comprises the dyeing composition of claim 6 and a hair dye modifier.

13. A hair dye composition which comprises the dyeing composition of claim 6 and a hair dye modifier selected from the group consisting of resorcinol, pyrocatechol, orcinol, chlorohydroquinone, alpha naphthol and m-aminophenol.

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