

1

3,072,536

PRE-SHAVING LOTION AND METHOD

David J. Pye, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich., a corporation of Delaware

No Drawing. Filed Apr. 8, 1959, Ser. No. 804,361
4 Claims. (Cl. 167-85)

This invention is concerned with a pre-shaving lotion and with an improved method for shaving.

Ever since man decided that his facial hair should be periodically removed, there has resulted more or less discomfort particularly for those men with tough beards and/or tender skins. Numerous devices for removing hair, as well as some chemical preparations, have been suggested, but the majority of men still employ razors. When removing hair with a razor, it is customary to apply a soap or grease composition to the face to facilitate the shaving operation. However, despite the numerous shaving creams and soaps which have been placed on the market over the years, many men still encounter difficulty in obtaining a clean, smooth face without discomfort.

In accordance with the present invention, it has been discovered that the application of a pre-shaving lotion, embodying certain high-molecular-weight, water-soluble polymers, to the skin prior to shaving provides an excellent degree of lubricity to the skin so that the subsequent cutting operation with the razor proceeds more smoothly and with much less discomfort than in previously employed methods of shaving.

The high-molecular-weight, water-soluble polymers employed in the invention include those polymers commonly designated as polyelectrolytes and obtained by vinyl polymerization of monoethylenically unsaturated compounds containing one or more water-solubilizing, carboxyl or carboxamide groups on the molecule. Representative polymers include homopolymers of acrylamide and acrylic acid and copolymers of said compounds with other suitable monomers such as methacrylic acid, methacrylamide and the like. Satisfactory polymers can also be prepared wherein one or more monomers having water solubilizing constituents as set forth above is copolymerized with not more than about 25 mole percent of another vinyl monomer free of water solubilizing groups, such as acrylonitrile, methacrylonitrile, vinyl chloride, vinylidene chloride, styrene, alkyl esters of acrylic or methacrylic acid and the like. In any case, it appears that the essential factors for obtaining the desired improvement in lubricity are achieved when the polymer is water-soluble, contains a plurality of carboxyl and/or carboxamide groups and has a molecular weight of at least about 500,000. Preferred polymers are polyacrylamides and copolymers of acrylamide with not more than about 50 mole percent of acrylic acid or an ammonium or alkali metal acrylate. Polymeric compounds similar to the preferred copolymers of acrylamide and acrylates can also be obtained by partial hydrolysis of polyacrylamide with an alkali metal hydroxide.

In carrying out the invention, an aqueous solution containing a small amount of a high-molecular-weight, water-soluble polymer, as set forth above, is applied to the skin and spread to form a film over the area to be shaved. Thereafter shaving with a sharp razor may proceed without further preparation. In a further mode of carrying out the invention, the aqueous solution of high-molecular-weight, water-soluble polymer is applied as set forth above and thereafter a shaving soap is applied in conventional fashion prior to the actual shaving operation. In either mode of operation, a high degree of lubricity is afforded

2

to the skin and shaving proceeds smoothly and easily with a minimum of irritation.

The amount of polymer to be employed in the pre-shaving lotion composition may vary depending upon the particular polymer employed, the degree of lubricity desired and whether the lotion is employed alone or followed with a conventional shaving cream treatment. In general, the amount of any particular polymer or copolymer required varies in inverse proportion to the molecular weight of said polymer or copolymer. Thus, for example, satisfactory results may be obtained with a pre-shaving lotion containing about 0.5 percent by weight of a polymer having a weight-average molecular weight of about 2,000,000 while 2 percent by weight or more of a polymer having a weight-average molecular weight of about 500,000 may be required for equivalent lubricity. In general, the pre-shaving lotion composition should comprise an aqueous solution containing at least about 0.5 percent by weight of polymer and it is generally desirable that said solution contain from about 1 to about 4 percent by weight of a polymer. The concentration of polymer is adjusted to provide a lotion composition having a moderately high viscosity so that it may be spread readily on the face without an excessive tendency to run or drip. The amount of the lotion composition employed will vary depending on the length and density of the beard and personal preferences. Good results have been obtained when from about 3 to 10 milliliters of lotion were spread evenly on the area to be shaved.

Various other additaments may be incorporated in the pre-shaving lotion composition as desired. Thus, for example, antiseptics or germicides, such as halogenated methylenebisphenols or long chain quaternary ammonium compounds, cooling agents, such as menthol, and wetting agents may be incorporated in the composition in small amounts. In a preferred composition, a wetting agent such as an alkylaryl sulfonate or an alkylaryl polyoxyalkylene compound is incorporated in the composition in the amount of from about 0.01 to about 1 percent by weight to facilitate spreading of the lotion on oily skin. Other additaments such as perfumes and nontoxic coloring agents can be added as desired.

In a representative operation, a polyacrylamide having a weight-average molecular weight of over 1,000,000 and having about 5 percent of its carboxamide groups hydrolyzed to carboxyl groups was dissolved in water together with a commercial wetting agent (Triton X-100, identified as an alkylaryl polyoxyethylene compound) to produce a solution containing 2 percent by weight of the polyacrylamide and about 0.1 percent by weight of wetting agent. The resulting composition was viscous and spread readily when applied to the skin. Portions of this composition were distributed to a panel of men who applied the material to the face prior to shaving. In several cases, the shaving operation was completed with a safety razor with no further treatment of the face after application of the pre-shave lotion. A majority of the men applied a conventional aerosol or brush-type shaving soap over the pre-shaving lotion and then proceeded to shave with a razor as usual. In a few cases, after the application of the pre-shave lotion, a lather was worked up on the face using a brush and ordinary bar hand soap prior to shaving. In all cases, the panel reported improved smoothness and ease of shaving with a minimum of dragging, nicking and irritation as compared to shaving with a conventional shaving soap without the pre-shaving lotion.

Similarly, improved ease of shaving is obtained by applying pre-shaving lotions consisting of aqueous solutions

of the indicated amounts of the following polymers (having molecular weights of over 500,000):

Polymer:	Percent by weight	
Copolymer of equimolar proportions of acrylamide and sodium acrylate	1.0	5
Copolymer of 85 mole percent of acrylamide and 15 mole percent of methyl methacrylate...	1.5	
Copolymer of 60 mole percent acrylamide, 30 mole percent ammonium acrylate and 10 mole percent of acrylonitrile	3.5	10

I claim:

1. A method of shaving which comprises the steps of applying to the face a film of an aqueous solution of a water-soluble, high-molecular-weight polymer, said polymer having a molecular weight of at least about 500,000 and being selected from the group consisting of polyacrylamide, co-polymers of acrylamide with up to about 50 mole percent of acrylic acid, and the ammonium and alkali metal salts of such co-polymers, and thereafter shaving with a razor. 15

2. A method according to claim 1 wherein the polymer is employed in the amount of from about 0.5 to 4 percent by weight of the aqueous solution. 20

3. A method according to claim 1 wherein the solution comprises from about 0.5 to about 4 percent by weight of the polymer and from about 0.01 to about 1 percent by weight of a wetting agent. 25

4. A pre-shaving lotion composition for application to the skin prior to shaving with a razor which consists essentially of an aqueous solution containing from about 0.5 to about 4 percent by weight of a high-molecular- 30

weight, water-soluble polymer and from about 0.01 to about 1 percent by weight of a wetting agent, said polymer having a molecular weight of at least about 500,000 and being selected from the group consisting of polyacrylamide, co-polymers of acrylamide with up to about 50 mole percent of acrylic acid, and the ammonium and alkali metal salts of such co-polymers.

References Cited in the file of this patent

UNITED STATES PATENTS

2,227,321	Robson	Dec. 31, 1940
2,326,078	Trommsdorff	Aug. 3, 1943
2,754,291	Pollack	July 10, 1956
2,798,047	Touey et al.	July 2, 1957
2,831,841	Jones	Apr. 22, 1958

FOREIGN PATENTS

62,708	Netherlands	Mar. 15, 1949
703,238	Germany	Mar. 4, 1941
731,361	Germany	Feb. 8, 1943
796,319	Great Britain	June 11, 1958
873,891	Germany	Apr. 20, 1953
880,046	Germany	July 8, 1949

OTHER REFERENCES

Schwartz et al.: Surface Active Agents and Detergents, vol. 11, p. 409, 1958, Interscience Pub.

J. Soc. of Cosmetic Chemists, 8:4, July 1957, pp. 196-211.

Sagarin: Cosmetics Sci. and Tech., Interscience Pub., New York, 1957, pp. 433, 434.