

[54] **HAIR AND NAIL HARDENING
PROCESS**

[76] Inventor: **Bernhard Joos**, Kurfirstenstrasse 23,
Zurich, Switzerland

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 708,514, Feb. 27,
1969, abandoned.

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424/244, 424/250, 424/273

[51] Int. Cl.**A61k 7/04**, **A61k 7/06**, **A61k 27/00**

[58] Field of Search....424/61, 65, 70, 244, 250, 273,
424/322

[56]

**References Cited
UNITED STATES PATENTS**

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Primary Examiner—Albert T. Meyers

Assistant Examiner—Donald B. Moyer

Attorney—Littlepage, Quaintance, Wray and Aisen-
berg

[57]

ABSTRACT

Cosmetic compositions and methods of applying the same are provided wherein the compositions contain 1–15 percent of dimethylolalkyleneurea or dimethylolalkylenethiourea as the primary active ingredient dispersed in a compatible carrier conducive to the application of the cosmetic composition in cosmetically effective amounts.

5 Claims, No Drawings

HAIR AND NAIL HARDENING PROCESS

This application is a continuation-in-part of application Ser. No. 708,514, filed Feb. 27, 1969 now abandoned.

The present invention relates to cosmetic compositions particularly useful as disinfectants, deodorants, and hair and nail hardeners.

It is the function of a deodorant to cover up odors or to destroy them. A body deodorant can also have a perspiration-reducing effect so that this effect is combined with an odor-destroying effect, if possible. When using an odor-destroying or odor-covering agent, compounds containing sulfur and/or nitrogen are transformed, preferably by chemical complex combinations, into substances which are no longer ill-smelling.

As is known, for this purpose, solutions, creams, sticks, soaps and the like are used which usually contain active substances, such as hexachlorophene, hexamethylene tetramine, quaternary ammonium compounds, Nipagine or chlorophyllin. Aluminum compounds are widely used as active components.

All these substances must be harmless to man to the maximum degree possible and must not irritate the skin. Such properties are not possessed by all active substances. For instance, aluminum compounds can only be used in an acid medium in order to be effective and this can frequently result in skin irritations. Up to now, no active substance is known which combines all desirable qualities such as compatibility with the skin and a high degree of effectiveness in every respect, namely bactericidal, fungicidal as well as odor-covering, astringent and perspiration-preventing properties.

Up to the present time, very few products have been found to be suitable for the hardening of toe and finger nails, although wide use of nail polishes and polish removers results in extensive damage to nails, which use requires preventive measures. Usually, simple means are used to prevent brittleness of the nails, such as citric acid or substances containing tannin. The use of poly waxes in creams which, partially harden the solvent, is known also. However, these products are not effective enough to achieve a hardening of the nails, and especially, they do not actively increase nail elasticity and plasticity. Only formaldehyde has an adequate effectiveness. However, its use is not recommended because of its toxicity and for this reason is not permitted in many countries.

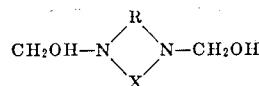
A great number of chemicals are useful as disinfectants in the sense that they destroy or prevent the growth of diseases causing bacteria and fungi. Such known disinfectants are, for instance, numerous oxidizing agents, reducing agents, sulfur and mercury compounds or alcohols. These products frequently offer only a limited protection because they are removed or become inactive.

The cosmetic compositions of this invention combine desirable properties with freedom from undesirable side effects. They have outstanding properties as deodorants, are excellent nail hardeners and are most effective as a disinfectant.

According to the present invention, there is provided a cosmetic composition comprising as an active ingredient a dimethylolalkyleneurea or a dimethylolalkylenethiourea, in which the alkylene group preferably has two to five carbon atoms, and a topically acceptable carrier, such as water, alcohols, ethers and the like

or mixtures thereof. By using such topically acceptable carriers containing 1-15 percent of the active ingredient mentioned above, one is enabled to apply the cosmetic compositions hereof topically in effective disinfectant, deodorant and nail or hair hardening amounts.

These active ingredients have the general formula:



in which R is alkylene and X is CO or CS.

According to a preferred feature of the invention, the active ingredient of the cosmetic composition comprises dimethylolethyleneurea or dimethylolethylenethiourea.

In a preferred embodiment of the invention, the composition further comprises additional material selected from conventional coloring, emulsifiers, perfume and thickening agents.

It has been found that the composition of the invention has properties enabling them to be useful for the purposes mentioned hereinbefore. Additionally the compositions have a good skin compatibility on account of their favorable pH value between 5 and 7. Therefore, the body deodorant with the claimed active components is most effective with older people, while for instance the aluminum compounds do not meet this requirement.

The products, according to this invention, make brittle nails hard again and increases their elasticity by increasing and strengthening the partially damaged keratin structure of the nails by building new "bridges" and by additional polymerization of the active components. The active ingredient of the cosmetic compositions hereof apparently form insoluble polymers, in water or organic solvents, which protect the keratin during the usual treatment with organic solvents, i. e., a lattice-like reaction takes place between the keratin and the active components of the product.

Composition for hardening nails is an aqueous solution of one percent by weight of ninhydrin are known in the prior art. (Ninhydrin is 1,2,3-indantrione monohydrate. See Merck Index, Eighth Edition.) If this composition is compared with the nail hardeners of this invention, which preferably consists of an aqueous solution of 5 percent by weight of dimethylolethylenethiourea, the following is to be noted: Ninhydrin reacts with the keratin and colors the nail blue. Compared with this, dimethylolethylenethiourea acts without coloring keratin and polymerizes thereby increasing the elasticity and the tensile strength and sealing the surface of the nail. Such reactions do not occur when ninhydrin is applied.

As a disinfectant, the product may be used in soaps, tooth pastes, hygienic articles, bath oils, shampoos, lotions, hair wash, mouth wash, and shaving soaps with skin-strengthening effect. It has been found that the active components do not irritate the mucous membrane, thus permitting the use of this product in a wide field of application. The product can also be used for disinfecting objects or rooms.

The following examples (all parts by weight) illustrate the way the active compounds of this invention may be mixed with the customary carriers, emulsifiers, thickening agents, etc. All of the active compounds may be used, individually or in mixtures, in similar compositions.

I. DEODORANT EXAMPLES

EXAMPLE 1

5 percent dimethylolethylenethiourea
1 percent Triton X-100 a nonionic octylphenoxy-polyethylene glycol wetting agent
94 percent water
Small amounts of perfume and coloring matter may be added, if desired.

When applied topically, this cosmetic composition is effective, also, as a nail hardener, hair hardener and as a disinfectant.

EXAMPLE 2

Deodorant Stick
4 percent dimethylolethylenethiourea
8 percent pulverized soap
10 percent isopropylmyristate
4 percent glycerine
74 percent alcohol (ethanol)

EXAMPLE 3

Deodorant Toilet Water
5 percent dimethylolethylenethiourea
10 percent zirconium acetate
8 percent calcium acetate
0.1 percent Triton X 100
0.1 percent perfume
water to 100 percent

EXAMPLE 4

Deodorant Gel
5 percent dimethylolethyleneurea
10 percent zirconium acetate
8 percent calcium acetate
0.1 percent Triton X 100
0.1 percent perfume
2 percent carboxymethylcellulose
water to 100 percent

These deodorant compositions are topically applied to the human body, in the customary manner, by rubbing a small adherent amount of the composition under the arms or other desired parts of the anatomy.

II. NAIL HARDENER EXAMPLES

EXAMPLE 5

10 percent dimethylolethyleneurea
0.1 percent Triton X 100
0.1 percent perfume
0.001 percent dye stuff
water to 100 percent

EXAMPLE 6

14 percent dimethylolethylenethiourea
0.1 percent Triton X 100
0.1 percent perfume
25 percent alcohol (96 percent)
water to 100 percent

EXAMPLE 7

5 percent dimethylolthiourea
5 percent dimethylolethylenethiourea
35 percent alcohol (96 percent)
5 percent glycerine

0.5 percent "Bayoil"
0.2 percent "Carnation Oil" } *perfumes*
water to 100 percent

A small adherent amount of these nail hardening compositions is brushed on to the nail like a nail polish and it can be left on the nail until it is rubbed off or removed with a suitable solvent. The nail hardening effect begins immediately.

III. HAIR HARDENER EXAMPLES

EXAMPLE 8

Hair Hardeners Shampoo
5 percent dimethylolethylenethiourea
10 percent dimethylolthiourea
2 percent sodium chloride
20 percent sulphonated oil of ricinus
6 percent oil of olives
1 percent lanoline
0.1 percent perfume
water to 100 percent

EXAMPLE 9

Hair Tonic
3 percent dimethylolethyleneurea
20 percent "Witch Hazel"
0.6 percent ammonia tumenol
1.6 percent oil of ricinus
Ethylalcohol to 100 percent

EXAMPLE 10

Hair Fastener
A mixture of
2 percent dimethylolethylenethiourea and
1 percent betainechlorohydrate, both in powder form, just before use dissolve in 20 parts of water.

These hair hardening compositions may be used in the customary manner and in the customary amounts by wetting the hair. The shampoo may be left on the hair for 1-5 minutes prior to rinsing it off with water.

IV. DISINFECTANTS EXAMPLES

EXAMPLES 11

4 percent dimethylolthiourea
5 percent dimethylolethylenethiourea
90 percent talcum powder base
0.01 percent perfume
0.99 percent colloidal silica
water to 100 percent

EXAMPLE 12

6 percent dimethylolethyleneurea
10 percent cocoa oil
10 percent olein
8 percent potassium hydroxyde (50°Be)
2 percent sodium metaphosphate
5 percent glycerine
water to 100 percent

EXAMPLE 13

4 percent dimethylolethylenethiourea
50 percent ethyl alcohol
1 percent aluminum oxide chloride
0.05 percent menthol
0.05 percent peppermint oil
5 percent propyleneglycol
water to 100 percent

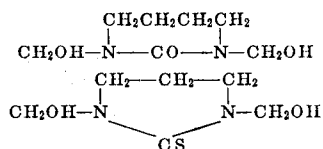
These disinfectant compositions may be applied topically in the customary manner and in the customary amounts.

The foregoing examples have disclosed cosmetic compositions containing 3-14 percent of

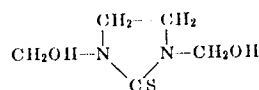
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dimethylolethyleneurea or dimethylolethylenethiourea which may be applied topically to the human body in adherent amounts to obtain deodorant or disinfectant effects and may be applied topically to human hair and nails in adherent amounts to obtain hardening effects. Of course, when applied to hair, the compositions hereof impart a disinfectant effect and, in some instances, a deodorant effect. It will be understood, however, important functional effects can be obtained when the compositions contain as little as 1 percent of the ureas hereof and that amounts in excess of 15 percent normally are not necessary and may even be disadvantageous.

Other preferred compounds of this invention include:



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What is claimed is:

1. The process of hardening live human nails or hair comprising applying to the human nails or hair a hardening amount of a compound selected from the group consisting of dimethylolalkyleneurea and dimethylolalkylenethiourea wherein the alkylene groups each have two to five carbon atoms.

2. The process of claim 1, in which live human nails are hardened.

3. The process of claim 1, in which live human hair is hardened.

4. The process of claim 1, in which said compound is dimethylolethyleneurea.

5. The process of claim 1, in which said compound is dimethylolethylenethiourea.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,725,525 Dated April 3, 1973

Inventor(s) BERNHARD JOOS

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Please correct the Swiss Priority number to read,

--3.113/67--

Signed and sealed this 17th day of September 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,725,525 Dated April 3, 1973

Inventor(s) BERNARD JOOS

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Please insert:

[30] Foreign Application Priority Data

March 2, 1967 Switzerland 33113/67

The filing date of the parent application, Serial No. 708,514, should read --1968--, not "1969".

Signed and sealed this 12th day of February 1974.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents