

1

3,274,063

COSMETIC CREAM

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No Drawing. Filed June 21, 1961, Ser. No. 118,495

Claims priority, application Germany, July 24, 1958,

N 15,392; Sept. 22, 1958, N 15,614

4 Claims. (Cl. 167-91)

The invention relates to cosmetic preparations, particularly to cosmetic creams, and is a continuation-in-part of our application Ser. No. 828,721, filed July 22, 1959, now abandoned.

Cosmetic creams usually comprise emulsion systems of the oil-in-water, or water-in-oil type, or combinations thereof. They are used, for instance, as cold creams or vanishing creams, for smoothing and softening the skin.

We have found that if a small amount of magnesium aspartate (also known as magnesium asparaginate) is added to a cosmetic cream, the properties of the cream are considerably improved as far as the effect on the skin is concerned. Already after short use, the skin becomes much softer and smoother than when ordinary cosmetic creams are used.

Accordingly, a cosmetic cream in accordance with the invention includes about 0.05 to 10 percent by weight of magnesium aspartate.

We believe that the considerable improvement in the properties of a cosmetic cream containing magnesium aspartate is due to the facts that on the one hand, magnesium in form of said salt is only slightly dissociated in the blood and body liquids, passes easily through the cell walls, and then readily exerts its particular effects inside the cell.

The effect of intracellular magnesium consists in an activation of the metabolism ferments of these esterase type. Such activation improves the growth of the basal layer of the epidermis and produces an increased bonding of intracellular water, increasing the size and tension of the cells.

It appears that the easy migration of the magnesium aspartate through the cell walls is due to the affinity of the aspartic acid to the cells of the epithelial tissue and to the relatively high complex constant of the salt.

The magnesium salt of glutamic acid, which, like aspartic acid, is a dicarboxylic amino acid, does not show the beneficial effect of the magnesium aspartate. A comparison between the complex constants,

$$K = \frac{(Mg Z)}{(Mg^{++})(Z^{--})}$$

wherein Z is the acid anion, shows that K of the magnesium aspartate is 269 and that of magnesium glutamate only 79. However, the complex constant defines only one of a number of useful properties and is by no means alone controlling. This is best seen by a comparison with the magnesium salt of ethylene-diamine tetraacetic acid (Mg=EDTA) which has a complex constant of $5 \cdot 10^8$ but has no effect in cosmetic creams. The probable reason is that the magnesium is replaced at once by other metals, particularly calcium, and is not conveyed into the cells.

The above theoretical considerations are given only as a tentative explanation and are in no way to be construed as limiting the scope of our invention.

The favorable effects shown by cream bases containing magnesium aspartate on the skin may be reproduced in vitro by tissue cultures.

The classic model for epithelial tissue is the monkey kidney cell monolayer in cultivation flasks. The respira-

2

tion rate of both tissues is $Q_{O_2} = 8$ to 10, designating the consumption of mm.³ of oxygen per mg. of tissue per hour.

For the tests, sterile rhesus kidney cortex tissue treated by Rapaport-trypsination, or hela cells, were suspended 1:400 in a culture medium. As culture medium, a lactalbumin hydrolysate 0.5% in Hanks salt solution, 10% calf serum added was used.

The test flasks were filled with 90 ml. of the cell containing medium; after 7 days, the culture was treated with 0.2% trypsin solution and then centrifuged. The obtained cell quantity was measured in milliliters. The following table gives the results:

| Concentration of the substances tested | Tissue | Medium | Sedimented cells after centrifugation in milliliter |
|--|----------------------|--------------------------|---|
| 0.025% Mg-aspartate | Rhesus kidney 1:400. | Lactalbumin hydrolysate. | 0.72 |
| Control without Mg-aspartate. | do. | do. | 0.40 |
| 0.025% Mg-aspartate | Hela cells 1:800. | do. | 0.69 |
| Control without Mg-aspartate. | do. | do. | 0.40 |

The growth tests show that additions of as low as 0.025% of magnesium aspartate increase the cell growth by about 75 percent. An additional advantage of magnesium aspartate is its low cost and lack of any irritating effects, even when used in comparatively large proportions.

As cosmetic base, we may use any of the conventional cream bases in form of their oil-in-water or water-in-oil emulsions as they are described, for instance, in Ralph G. Harry Cosmetics, Chemical Publ. Co., New York, 1956, particularly pages 122-123, and in Kirk-Othmer, Encyclopedia of Chemical Technology, vol. 4, pp. 532 et seq.

Among the preferred bases are beeswax; water-soluble fats containing a high proportion of synthetic partial glycerides of saturated fatty hydroxyl groups containing acids having 12 to 18 C atoms, preferably in mixture with 50% of triglycerides; the bases disclosed in German Patent No. 1,090,824; the products of U.S. Patent No. 2,684,970, mixed with glycerol or cetyl alcohol as emollients.

The magnesium aspartate is soluble in most cream bases and may be directly incorporated therein. We prefer to prepare a concentrated solution of the magnesium aspartate and admix the solution to the cream base.

The following example serves to illustrate the invention, without, however, limiting the same hereto.

Example 1.—Cold cream

| | Parts |
|--|-------|
| Bees wax, white | 10.0 |
| Lanolin | 10.0 |
| Ethoxylated fatty alcohols (8-30 moles ethylene oxide) | 5.0 |
| Paraffin oil | 8.0 |
| Cetyl alcohol | 2.0 |
| Stearin | 1.0 |
| Fatty alcohol sulfate | 0.5 |
| Cholesterol | 0.5 |
| Triethanolamine | 0.5 |
| Magnesium aspartate | 0.075 |
| Water, ad | 100 |

This cream is particularly useful for restoring the smooth texture of skin which has been affected by an excessive use of mascara.

The magnesium aspartate may also be used in the form of jellies, whereby any conventional gel such as gelatin, agar-agar, alginates, carrageen, pectin, methyl cellulose may be used.

Example 2.—*Skin lotion*

| | |
|---------------------------|-----|
| Magnesium aspartate ----- | 1 |
| Peanut oil, ad ----- | 100 |

Instead of the peanut oil, we may use other vegetable oils such as olive oil, arachis oil, castor oil, animal oils such as neat's-foot oil, spermaceti; or also mineral oils such as paraffin oil.

We claim:

1. A cosmetic preparation containing a cosmetic fatty cream base and incorporated therein about 0.05 to 10 percent by weight of magnesium aspartate, said magnesium aspartate enhancing the skin-softening effect of said cosmetic fatty base.

2. A cosmetic cream comprising an emulsion of oil in water, and from about 0.05% to 10% by weight of magnesium aspartate, said magnesium aspartate enhancing the skin-softening effect of the cosmetic cream.

3. A cosmetic preparation comprising an oil and about 0.05 to 10 percent by weight of magnesium aspartate dis-

solved therein, said magnesium aspartate enhancing the skin-softening effect of the cosmetic preparation.

4. A cosmetic preparation comprising a member of the group consisting of beeswax, lanolin, and mixtures thereof, and about 0.05 to 10 percent by weight of magnesium aspartate, said magnesium aspartate enhancing the skin-softening effect of the cosmetic preparation.

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