In GBP 156 1475, the manufacture of bacteriostatic solutions is described as capable of being used as a deodorant, the free lactic acid being in alcoholic solution. Lactic acid esters are not mentioned, but the hydrolysation of these esters is. It has to be concluded that there is an equilibrium. A fungicidal effect of the solutions is not described. The suspicion is expressed that part of the bactericidal effect is attributable to the alcohol used.

USP-2005019355 describes compositions that reduce bacteria on the hand, comprise esters of lactic acid and are bacteriostatically effective in particular. The esters of lactic acid are dissolved in various solvents. A fungicidal effect is by no means described or even claimed.

WO 2004032886 describes the use of lactic and citric acid salts as bactericidal agents. In particular, it describes the use of these agents on the skin and in particular for the hair to combat bacteria. Fungicidal effects are neither mentioned nor claimed. The use of surfactants (surface active agents) and in particular the use of a second acid is described as advantageous.

In none of the patent specifications mentioned is reference made to the fungicidal effect of the esters of lactic, malic, tartaric or citric acid, which are suitable for the treatment of diseases of the nail bed resulting from fungal infection.

SUMMARY

In one aspect, there is provided an anhydrous agent for topical application for the treatment or prevention of nail diseases caused by mycoses, consisting of

a) one or more C1-C4 alkyl esters of lactic acid, malic acid, tartaric acid or citric acid as an antimycotic agent; and
b) one or more physiologically acceptable excipients.

In another aspect, there is provided a process for the manufacture of an anhydrous agent for topical application as defined above, comprising mixing one or more C1-C4 alkyl esters of lactic acid, malic acid, tartaric acid or citric acid and one or more physiologically acceptable excipients with agitation, and optionally with addition of heat, until a homogeneous solution is obtained.

In another aspect, there is provided the use of an anhydrous agent for topical application as defined above for the manufacture of a medicament for the treatment or prevention of nail diseases caused by mycoses.

In another aspect, there is provided the anhydrous agent for topical application as defined above for treatment of fungal infections of hooves, claws or talons of pets, farm animals, or wild animals living in captivity.

DETAILED DESCRIPTION

Surprisingly, the C1-C4 alkyl esters can be used as fungicidal active substances and at the same time also as carriers, if needed, which make any further additive unnecessary.

There is not yet a satisfactory agent for topical treatment of nail disorders caused by mycoses (fungi), which is used either without an additional carrier or without an additional active substance. The C1-C4 alkyl esters of lactic acid, malic acid, tartaric acid and also citric acid show surprisingly good antimycotic effects and at the same time good properties as carriers themselves, which guarantee the required quantity of active substance for a lasting therapeutic effect as cosmetic agents for topical treatment of nail disorders, i.e. the transport of a C1-C4 alkyl ester of the corresponding acids through the nail into the underlying nail bed and root (matrix).

Claims:

1. An anhydrous agent for topical application for the treatment or prevention of nail diseases caused by mycoses ~~and for nail care~~, ~~comprising~~consisting of

a) one or~~, if necessary,~~ more C1-C4 alkyl esters of lactic acid, malic acid, tartaric acid or citric acid as an antimycotic agent; and
b) ~~if necessary,~~one or more physiologically acceptable excipients.

2. The ~~Anhydrous~~ anhydrous agent for topical application according to Claim 1, comprising an ethyl ester of lactic acid, malic acid, tartaric acid or citric acid as the antimycotic agent.

3. The ~~Anhydrous~~ anhydrous agent for topical application according to Claim 1, comprising an isopropyl ester of lactic acid, malic acid, tartaric acid or citric acid as the antimycotic agent.

4. The ~~Anhydrous~~ anhydrous agent for topical application according to Claim 1, comprising lactic acid ethyl ester as the antimycotic agent.

5. The ~~Anhydrous~~ anhydrous agent for topical application according to Claim 1, comprising malic acid diisopropyl ester as the antimycotic agent.

6. The ~~Anhydrous~~ anhydrous agent for topical application according to any one of Claims 1-5, ~~comprising~~ wherein the one or more excipients are selected from the group ~~comprising~~ consisting of terpenes ~~or~~, oils containing terpenes, alcohols, ketones, fatty acid esters, polyglycols, tensides, urea, antioxidants and complexing agents.

7. The ~~Anhydrous~~ anhydrous agent for topical application according to any one of Claims 1-6, comprising 1 to 99.99% by weight of said C1-C4 alkyl esters of lactic acid, malic acid, tartaric acid or citric acid, and said one or more physiologically acceptable excipients are present in an amount up to ~~0 to~~ 98.99% ~~by weight of excipients~~.

8. A ~~Processes~~ process for the manufacture of an anhydrous agents for topical application according to any one of Claims 1-7, comprising mixing one or more C1-C4 alkyl esters of lactic acid, malic acid, tartaric acid or citric acid and~~, if necessary,~~ one or more physiologically acceptable excipients ~~being homogeneously mixed~~

~~and agitated~~with agitation, ~~if necessary under~~and optionally with addition of heat, until a homogeneous solution is obtained.

9. Use of an anhydrous agent for topical application according to any one of Claims 1 to 7 ~~in~~ for the manufacture of a medicament for the treatment~~,~~ or prevention~~, follow-up or supportive treatment~~ of nail ~~disorders and periungual~~ diseases caused by mycoses.

~~10. Use of an anhydrous agent for topical application according to one of Claims 1 to 7 for nail care.~~

~~11.~~ 10. ~~An~~ The anhydrous agent for topical application according to any one of Claims 1 to 7 for ~~use in the~~ treatment of fungal infections of hooves, claws ~~and~~ or talons of pets~~and~~, farm animals, ~~and~~ or wild animals living in captivity.