

united states patent 3,954,974

Disinfectant for the surface of human body parts containing hydrogen peroxide

Inventors: Herzog; Paul (Vevey, CH), Herzog-Thomander; Karin (Vevey, CH) - Appl. No.: 05/493,147 - Filed: July 30, 1974

abstract

A disinfectant which is an aqueous emulsion of hydrogen peroxide of the oil-in-water type. The hydrogen peroxide in this emulsion is more stable and more active than in aqueous solution. The disinfectant may be used for disinfecting doctors', dentists' and surgeons' hands, but also for treating skin diseases, injuries and irritations.

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parent case text

This is a continuation-in-part of application Ser. No. 07/630,690, filed Dec. 20, 1990, now abandoned, which is a continuation of application No. 07/363,563 filed Jun. 8, 1989, now abandoned.

claims

We claim:

1. A disinfectant for the surface of human body parts, consisting essentially of an oil-in-water emulsion having a continuous aqueous phase containing an amount of hydrogenperoxide effective to disinfect human body parts upon contact, the oil phase being the dispersed phase of the emulsion and containing by weight, from 80 to 230 parts of glycerol monostearate, from 80 to 320 parts of paraffin oil, from 80 to 320 parts of cetyl alcohol, from 150 to 600 parts of petroleum jelly and from 10 to 200 parts of a polyoxyethylene derivative of anhydrosorbitol partially esterified with a higher fatty acid, and wherein the total emulsion comprises per liter of said oil phase, a water phase containing from 3 to 7 liters of water and from 100 to 450 g of hydrogen peroxide.

2. A disinfectant as claimed in claim 1, said polyoxyethylene derivative being polyoxyethylene sorbitan mono-oleate and said water containing in solution from 0.4 to 5 g of an azulene.

3. A disinfectant for the surface of human body parts, comprising per 10 kg of total weight, a dispersed oil phase consisting essentially of about 230 g of mono-stearine glyceride, about 230 g of paraffin oil, about 230 g of cetyl alcohol, and about 430 g of petroleum jelly, and the balance of the disinfectant being a continuous water phase containing about 0.5% to about 12% of hydrogenperoxide and about 0.15% by weight of p-hydroxybenzoic acid methyl ester.

description

The present invention relates to disinfectants. The disinfectant of the invention is particularly useful for the disinfection of doctor's hands, especially surgeon's hands.

Disinfectants are known which contain mercury in chemically bonded form, or chlorinated organic substances like hexachlorophene. The use of mercury containing and chlorinated substances has, however, been questionable for some time, and it is contemplated to forbid them completely if they are not already prohibited for use in disinfectants.

A further well known disinfectant is ethanol but aqueous ethanol solutions having an ethanol concentration of about 70 to 80% can only be used exceptionally since they desiccate the human skin too extensively.

Aqueous solutions of hydrogen peroxide have already been proposed and used as a disinfectant. Such solutions, however, suffer from the drawback that they are unstable. Furthermore, they are difficult or impossible to apply. If these solutions did not have these drawbacks, hydrogen peroxide would be an ideal disinfectant. It destroys harmful microorganisms not by intoxication but by oxidation. After use, it remains in the form of water. However, the instability of aqueous hydrogen peroxide and its difficult or impossible application have rendered until now its use for the disinfection of parts of the body, especially or surgeon's hands, impossible.

Hydrogen peroxide emulsions of the water-in-oil type are known. The hydrogen peroxide is dissolved in microscopical spherical water drops which constitute the dispersed phase. Each drop is surrounded by the continuous oil phase, and thus the hydrogen peroxide is perfectly protected from contact with air or other compounds or materials. But the hydrogen peroxide is so well protected, that it is not only stabilized but also prevented from acting on the surface of a human body part in order to disinfect it. It follows that such known emulsions of the water-in-oil type cannot be used for disinfecting human body parts, such as surgeons' hands. It is quite significant that such known emulsions are used for bleaching fabrics, where conditions exist which are quite different from those occurring in disinfecting the surface of a human body part.

Contrary to what is known from the prior art, our emulsion is of the oil-in-water type, i.e., the hydrogen peroxide is in the continuous phase. It is surprising that in this case the hydrogen peroxide is sufficiently stable for storing without decomposition over a reasonable time, but still sufficiently active for disinfecting the surface of a human body part within a very short time. Anyone skilled in the art would expect that hydrogen peroxide in the continuous phase will readily decompose in contact with air or with the walls of a container, as no protection is present. One would also expect that if, surprisingly and against common knowledge, the hydrogen peroxide would really be stable in such an emulsion, it would not act as a disinfectant in a reasonably short time. Thus, our discovery is the contrary of what anyone skilled in the art would expect.

The main object of the invention is to provide a disinfectant which fulfils the four principal requirements of a disinfectant namely:

- Reliable and immediate disinfection.
- Avoiding the formation of resistant bacterium and virus strains.
- Avoiding adversely affecting of sewage waters after use.
- Good compatibility with the skin and body tissues.

These and other objects are accomplished by the disinfectant of the invention, consisting essentially of an oil-in-water emulsion having a continuous aqueous phase containing an amount of hydrogen peroxide effective to disinfect human body part upon contact. It is possible to use all appropriate emulsifiers and other additives. The concentration and the nature of the emulsifiers and other ingredients will generally be selected such that the emulsion is stable and may be stocked. It is not important if the emulsion breaks on contact with the skin or the tissue. It is to be supposed that the emulsion when applied to the hands is at least in part massed against and into the skin during the washing movements, becoming thereby unstable and liberating hydroperoxide with a maximum of activity.

It has been found that hydrogen peroxide is much more active in the emulsions of the invention than in the form of a normal aqueous solution at the same concentration. In order to achieve a predetermined disinfecting effect, less hydrogen peroxide is necessary when using a composition of the invention than with a conventional aqueous solution thereof used in the past. It is not possible to give a simple explanation of this fact.

After being used, the emulsion may be removed by drying or by rinsing with water.

The time period necessary for the disinfection of surgeon's hands, about 2 to 6 minutes, may be varied by nature and concentration of the emulsifier, by the concentration of the hydrogen peroxide, and by additives which lower the surface tension and have themselves an additional disinfecting activity, like alcohol. As an alcohol, e.g. methanol, ethanol, glycol or glycerol may be used. After rubbing the disinfectant into the hands, it may easily be removed by washing with water, the hands remaining disinfected.

Upon dissolving hydroperoxide in the aqueous phase of an emulsion, it is stabilized and does not decompose on storage, even in open containers and at elevated temperatures.

Although the specified emulsions are sufficiently stable per se, known hydrogen peroxide stabilizers may optionally be added, like urea.

The oil phase may be constituted by any suitable hydrophobic organic substance. Examples thereof are glycol mono, di and triesters of fatty acids, paraffins of different consistency, higher alcohols and petroleum jelly such as Vaseline. The emulsifier is suitably selected as being compatible with the skin and the tissue.

All of the compounds of the disinfectant are preferably selected such that no allergic reactions occur. For the sake of safety it has been found suitable to add an antiallergenic to the disinfectant, like an azulene, e.g. guajazulene. The latter is distributed commercially as an aqueous "solution", i.e. a finely dispersed emulsion, having a concentration of about 25% by weight.

The preparation of the novel disinfectant is very easy and is performed by operations known per se. The different compounds may be added in any sequence. The hydrogen peroxide is preferably added in such a concentration which permits one to obtain the desired final concentration.

The oil phase is preferably a mixture comprising from 80 to 320 parts by weight of glycerol monostearate, from 80 to 320 parts by weight of paraffin oil, from 80 to 320 parts by weight of cetyl alcohol, from 150 to 600 parts by weight of petroleum jelly such as Vaseline, and from 10 to 200 parts by weight of polyoxyethylene derivatives of anhydrosorbitols partially esterified with a fatty acid, e.g. polyoxyethylene sorbitan mono-oleate ("Tween 80").

One liter of this base may be mixed at 70.degree. to 80.degree.C with 3 to 7 liters of water of about the same temperature, containing 0.4 to 5 grams of an azulene, especially guajazulene. To this mixture, 100 to 450 g of hydrogenperoxide, dissolved in water, are added warm or cold, a stabilizer for hydrogenperoxide, like urea, being optionally present.

The following examples are illustrative only and are not to be construed to limit the invention.

example 1

On a water bath, the following ingredients are mixed, using a conventional stirring apparatus: 160 g of glycerol monostearate, 160 g of paraffin oil, 160 g of cetyl alcohol, 300 g of Vaseline brand petroleum jelly, 50 g of "Tween 80" (polyoxyethylene sorbitan mono-oleate) and 170 g of water.

300 g (about 350 ml) of the base so obtained are mixed with one liter of water at about 80.degree.C, containing 3 g of a 25% aqueous solution of guajazulene. Furthermore, 800 ml of water are added containing 200 ml of 30% hydrogenperoxide.

The disinfectant so obtained presents all the desirable properties discussed above. Instead of 200 to 450 g of water in 1 liter thereof, one may use about 200 to 450 g of ethanol in order to further shorten the cleaning time.

A disinfectant for surgeons contains preferably about 60 g H.sub.2 O.sub.2 per liter of the total composition, and about 40% of the water may be replaced by ethanol.

example 2

48 g of glycerol monostearate, 48 g of paraffin oil, 48 g of cetyl alcohol, 90 g of Vaseline, 14 g of "Tween 80", 1782 g of water, 3 g of a 25% aqueous solution of guajazulene and 268 g of a 30% aqueous hydrogenperoxide solution are heated together to 80.degree.-90.degree.C. The mixture is allowed to cool to room temperature on a water bath under stirring, and a disinfectant ready for use is obtained containing 3.5% by weight of hydrogen peroxide. This mixture does not contain any preserving agent.

In Examples 1 and 2, the emulsifier ("Tween 80") amounts to about 0.7 to 0.8% by weight. This amount may be varied depending on the desired stability of the emulsion, the lower limit being about twice or even four times this basic amount. If other emulsifiers are used, corresponding amounts will be selected, and conveniently such amounts that equal approximately the emulsifying ability of the mentioned "Tween 80" amounts.

The stability of the emulsion may be limited more or less by, e.g., selecting the concentration of "Tween 80" lower than 0.75%, lower than 0.35% or even lower than 0.15%. Other emulsifiers than "Tween 80" will be used with corresponding concentrations for achieving a corresponding stability.

The presence of a particular emulsifier is not always necessary. For example, it is possible that a component of the oil phase is sufficiently emulsifying.

When a disinfectant is to be used which is stabilized to a high degree, e.g. by a high amount of emulsifier in order to obtain a long storage time, it may be convenient to treat the hands to be disinfected with an emulsion breaking agent before using the emulsion. All known emulsion breaking agents may be used for this purpose, e.g. soap or calcium or aluminium ions.

example 3

Using the method of Example 2, 6 g of bleached bee wax, 4 g of cetyl alcohol, 25 g of anhydrous lanoline, 25 g of white Vaseline oil, 10 g of 30% hydrogen peroxide and 30 g of water are mixed together.

example 4

Using the method of Example 2, 20 g of white Vaseline oil, 20 g of anhydrous lanoline, 6 g of cetyl alcohol, 10 g of 30% hydrogen peroxide and 44 g of water are mixed together.

example 5

Using the method of Example 2, 15 g of cetyl alcohol, 10 g of glycerol, 1 g of sodium laurylsulfate, 10 g of 30% hydrogenperoxide and 84 g of water are mixed together.

example 6

Using the method of Example 2, 1 g of stearyl alcohol, 2 g of solid paraffin, 5 g of stearic acid, 8 g of glycerol monostearate, 1.5 g of liquid paraffin, 0.8 g of triethanolamine, 8 g of glycerol, 10 g of 30% hydrogenperoxide and 63.7 g of water are mixed together.

example 7

The water to be used is prepared by distilling water and adding to the distilled water 0.15% by weight of p-hydroxybenzoic acid methyl ester.

The oil phase is prepared by heating to 120.degree.C in a stainless steel vessel under stirring 230 g of monostearine glyceride, 230 g of paraffine oil, 230 g of cetyl alcohol, and 430 g of Vaseline brand petroleum jelly.

The water phase is prepared in two steps:

a. 5300 g of the water prepared above, 65 g of polyoxyethylenesorbitan mono-oleate, and 10 g of salicylic acid are warmed to 90.degree.C.

b. 2350 g of the water prepared above and 1175 g of an aqueous solution containing 30% hydrogenperoxide are warmed to 40.degree.C.

The oil phase is slowly added under stirring to part a) of the water phase, and the mixture is cooled to 40.degree.C. Part b) of the water phase is added under stirring to the thus obtained mixture. The whole emulsion thus obtained is cooled to room temperature.

In this manner, one obtains about 10 kg of a disinfectant having a pH of 2.8 to 3.0, and a hydrogenperoxide concentration of about 3.5%. The amount of hydrogenperoxide can be varied between about 0.5% and about 12%, by varying the proportion between water and hydrogenperoxide in solution b) above.

Normally, commercially available aqueous solutions containing 30% of hydrogenperoxide are acid and give a pH between about 2.7 and 4.7 for the final disinfectant. This is an advantage, as disinfectants having such an acidity are not only more stable than at higher pH values, but have also a very good compatibility for the human skin. However, in some cases it may be desirable to have higher pH values, such as 5 to 8. In this pH range, the hydrogenperoxide is less stable and thus acts more rapidly for disinfecting the human skin. The pH value can be raised and adjusted to 5 to 8 by adding e.g. mono- or di-sodium phosphate in suitable amounts.

The hydrogenperoxide emulsion of the invention is not only applicable as a disinfectant for doctors and dentists and for general sick-nursing purposes; the emulsion may also be used for the treatment of skin diseases provoked or adversely affected by micro-organisms. In these cases, the emulsion may be combined with corticosteroids and acetyl salicylic acid.

The emulsions of the invention may also be used for intimate hygiene, and in some cases, the activity may be enhanced by adding of an astringent agent. Furthermore, these emulsions may be used against troubles caused by haemorrhoids or against irritations of the anal opening. In this case, the activity may be enhanced by the addition of aluminum and zinc compounds.

These emulsions may further be used on burns, against skin redness as caused by heat, and cutaneous vesicles.

The disinfectant power of the emulsions of the invention is already very strong. It may, however, be convenient to combine these emulsions with other disinfecting agents like hexachlorophene. It is now known that the latter may be toxic, but it presents certain advantages since it is partially absorbed and is therefore active for a long time.

If hexachlorophene or other toxic disinfecting agents are combined with the emulsions of the invention, only very little and thus harmless amounts of the toxic agents are sufficient to achieve a strong effect.

united states patent 5,380,764

Composition of vitamin A, glucose and hydrogen peroxide for cosmetic or pharmaceutical use

Inventors: Herzog; Paul (Saint-Legier, CH) - Appl. No.: 08/010,513 - Filed: January 28, 1993

abstract

A composition for use as a cosmetic or pharmaceutical consisting essentially of Vitamin A or ester, glucose in an amount of between about 0.5 and 10.permill. by weight and a stable aqueous emulsion of hydrogen peroxide.

parent case text

This is a continuation-in-part of application Ser. No. 07/630,690, filed Dec. 20, 1990, now abandoned, which is a continuation of application No. 07/363,563 filed Jun. 8, 1989, now abandoned.

claims

What I claim is:

1. A composition for use as a cosmetic or pharmaceutical consisting essentially of (1) Vitamin A in the form of an ester or as the free acid in an amount sufficient to provide an effective quantity of retinoic acid to skin cells and (2) glucose in an amount of between about 0.5 and 10.permill. by weight and in association with (3) a stable aqueous emulsion of hydrogen peroxide, wherein the hydrogen peroxide is present in an amount of about 0.1% to about 10% by weight to supply water and oxygen to transport the Vitamin A and glucose through the outer layers of skin and to react with the Vitamin A so that the Vitamin A can provide retinoic acid to cells therein, and the glucose is present to provide energy to the reaction.
2. A composition for use as a cosmetic or pharmaceutical consisting essentially of (1) Vitamin A in the form of an ester or as the free acid in an amount ranging from about 1,000 to 10,000 IU/g of the composition to provide an effective quantity of retinoic acid to skin cells and (2) glucose in association with (3) a stable aqueous emulsion of hydrogen peroxide, wherein the hydrogen peroxide is present in an amount of about 0.1 to 10 percent by weight to supply water and oxygen to transport the Vitamin A and glucose through the outer layers of skin and to react with the Vitamin A so that the Vitamin A can provide retinoic acid to cells therein, and the glucose is present in an amount of about 0.5 to 10.permill. by weight to provide energy to the reaction.
3. A composition for treatment of the skin, said composition consisting essentially of, as an active ingredient, Vitamin A in a form selected from the group consisting of an acetate and a palmitate, in an amount of between about 1,000 to 10,000 IU/g of the composition in combination with a substantially stable aqueous emulsion of hydrogen peroxide, wherein said emulsion comprises hydrogen peroxide in an amount of from about 0.1% up to about 4% by weight, measured as 100% peroxide, and wherein glucose is included in the composition in an amount of less than about 10.permill. by weight.
4. A composition according to one of claims 1 or 2, characterized in that the stable aqueous emulsion of hydrogen peroxide is an emulsion of the oil-in-water type.
5. A composition for cosmetic use according to one of claims 1 or 2, characterized in that it contains from 0.5 to 4% in weight of hydrogen peroxide, based on the weight of the composition.
6. A composition according to claim 1 or 2 characterized in that the ester of vitamin A is the palmitate or acetate salt.
7. A composition for treatment of the skin, said composition consisting essentially of, as an active ingredient, Vitamin A in an amount sufficient to provide an effective quantity of retinoic acid to skin cells in combination with a substantially stable aqueous emulsion of hydrogen peroxide, wherein said emulsion comprises hydrogen peroxide in an amount of about 0.1% up to about 4% by weight, measured as 100% peroxide, and wherein glucose is included in the composition in an amount of less than about 10.permill. by weight.
8. The composition of claim 7 wherein said vitamin A is in the form of an acid.
9. The composition of claim 7 wherein said vitamin A is in the form of vitamin A acetate.
10. The composition of claim 7 wherein said vitamin A is in the form of vitamin A palmitate.
11. The composition of claim 7 wherein the hydrogen peroxide emulsion is an oil-in-water emulsion.
12. The composition of claim 7 wherein said hydrogen peroxide concentration is about 1.2% by weight.
13. A composition for treatment of the skin, said composition consisting essentially of, as an active ingredient, Vitamin A in an amount of between about 1,000 and 10,000 IU/g of the composition to provide an effective quantity of retinoic acid to skin cells in combination with a substantially stable aqueous emulsion of hydrogen peroxide, wherein said emulsion comprises hydrogen peroxide in an amount of from about 0.1% up to about 6% by weight, measured as 100% peroxide, wherein glucose is included in the composition in an amount of less than about 10.permill. by weight.
14. The composition of claim 13 wherein said vitamin A is in the form of an acid.
15. The composition of claim 13 wherein said vitamin A is in the form of vitamin A acetate.
16. The composition of claim 13 wherein said vitamin A is in the form of vitamin A palmitate.
17. The composition of claim 13 wherein the hydrogen peroxide emulsion is an oil-in-water emulsion.
18. A process for combatting a loss of elasticity of the skin by treating the skin with an effective amount of the composition set forth in any one of claims 7-2, wherein a sufficient amount of the Vitamin A and glucose are transported through the outer layers of the skin, thus allowing vitamin A to provide retinoic acid to cells therein, while supplying energy to the cells by decomposing the glucose.

description

Background of the invention

The therapeutic action of vitamin A in its acid (retinoic acid), aldehyde (retinal) or alcohol form (retinol) is well known in dermatology.

The use of a composition including both an ester of vitamin A and a stable emulsion of hydrogen peroxide was proposed in patent CH-A-670 951. Such an emulsion has a particularly high capacity for releasing oxygen (paraosmotic pressure of about 10 atm), the effect of which is in particular to increase the movement of the vitamin A derivative across the outer layers of the skin, where the conversion of the vitamin A ester into retinoic acid may proceed.

Katzberg has reported in Anat. Rec. 112, 418 (1952) and later H. Pinkus in Dermatologica, 106, 28 (1953), that the life span of a human epidermal cell is of 101 days during the ten first years of life and decreases subsequently to 46 days at the age of 80. This means that time causes an ageing which is evidenced by a decreased capacity of the cells to regenerate the epidermis. When the energy which can be used physiologically by the cells is no longer sufficient, for instance because of an inadequate permeability of the capillaries or because of an inadequate capillary circulation, there is then an increase in the disappearance rate of the cells, which is accompanied by a significant impairment of their vital functions.

Whilst multiplication and growth of epidermal somatic cells require oxygen, the survival of cells is dependent upon glycolysis, which is an oxidative breakdown of glucose. Actually, to keep its structure ready to function or to fulfil its functions, each individual cell of the body needs a large amount of energy.

Should the energy, or a part of the energy needed to keep the cell functioning, not be available, damages may occur which are reversible at the beginning, but which may lead to a loss of cell structure and eventually to premature death, if not treated.

Up to now, no composition was available for cosmetic or for pharmaceutical use, which would associate the effects of vitamin A and of hydrogen peroxide and which could also supply the cell with the energy it needs.

The new composition according to the invention supplies this energy and, accordingly, is capable of restoring immediately the proper functioning of each individual cell, when the capillary insufficiency is due to an inadequate energy supply, which is particularly beneficial for cutaneous tissues.

The invention

Specifically, the object of the invention is a composition for cosmetic or for pharmaceutical use containing vitamin A in the form of an ester, or as the acid and glucose, in association with a stable aqueous emulsion of hydrogen peroxide.

Preferred embodiments of the invention

The energy is generated through the oxidative breakdown of glucose, which is made possible due to an adequate oxygen supply from hydrogen peroxide.

Glucose is transported through the outer layers of the skin with vitamin A (ester or free acid) under the effect of the pressure exerted by nascent oxygen. The energy released through glycolysis can then be used under the skin.

Under in vivo conditions, the oxidative breakdown of 1 mole of glucose (C.sub.6 H.sub.12 O.sub.6 +6O.sub.2 =6CO.sub.2 +6H.sub.2 O) results in the production of 690 kcal and is associated with the formation of 38 moles of adenosine triphosphate (ATP).

Specifically, glycolysis is the oxidative breakdown of glucose in a living organism under the effect of enzymes. ATP is an energy-rich phosphate donor in numerous phosphorylation reactions and also plays a role in the synthesis of ribonucleic acids.

The compositions of the invention do not require the addition of glucose, although the inclusion of this component is advantageous for the reasons given above. However, the present compositions include the combination of vitamin A or one of its derivatives and a hydrogen peroxide emulsion.

The application of the composition according to the invention, for example as a cream, ensures that a rapid breakdown of ATP to adenosine diphosphate (ADP) is maintained in the cutaneous tissues in contact with said composition, whereby the energy necessary for the metabolism of the cell is released: for example, for the synthesis of collagen, which is an important factor for preserving in particular the elasticity of the derm.

The compositions of the invention become fully effective right after being applied to the skin with the pressure of the oxygen and water becoming released from the decomposition of the peroxide. Thus, vitamin A, oxygen and water penetrate into the subcutaneous tissue and become available to the cells. The following reactions can then take place: ##STR1## The latter compound (Vitamin A in its acid form) being thus involved in the cellular metabolism. It is thus noted that sufficient oxygen and water is released from the emulsion to enable these reactions to take place.

Concerning retinoic acid, which can be used as such in the composition of the invention, the pressure of native oxygen on the surface of the skin drastically accelerates its passage through the skin and significantly decreases possible side effects when used externally. The oxidation mechanism does not occur as the compound is metabolized as would occur in the sub-cutaneous tissue.

This shows how unique is the combination of the invention either in terms of ingredients or activity. As a cosmetic, it has been proved that such a combination is particularly useful for combating premature aging of the skin.

Vitamin A in its acid form is conventionally used for the treatment of acne, but is a fairly aggressive material which can cause sensitization of skin when utilized in relatively high concentrations. While some amounts of Vitamin A when used alone may penetrate the skin, this occurs to the detriment of the outer layers, which may be sensitized as noted above.

Hydrogen peroxide itself is a strong disinfectant that can cause rapid oxidation of the skin. It has not been utilized in any skin conditioning formulations for that reason. It has, of course, been used in disinfecting solutions, and the present inventor discovered how to ameliorate its effects by

Hydrogen peroxide itself is a strong disinfectant that can cause rapid oxidation of the skin. It has not been utilized in any skin conditioning formulations for that reason. It has, of course, been used in disinfecting solutions, and the present inventor discovered how to ameliorate its effects by stabilizing it in an emulsion, as disclosed in U.S. Pat. No. 3,954,974. This patent does not disclose that such emulsions have utility in skin creams for cosmetic or pharmaceutical compositions.

Glucose has been utilized in topical cosmetics in small amounts as an antioxidant. There is no disclosure that glucose can be added to such compositions for transport through the outer layers of the skin for decomposition to provide energy to the cells therein.

The advantageous effects on the skin are obtained through the use of the present compositions, because the action of the peroxide on the skin is controlled by its incorporation and stabilization in the emulsion. Moreover, its decomposition provides oxygen which drives the Vitamin A and glucose beneath the outer layer of the skin. Once therein, the oxygen reacts with Vitamin A as noted above to produce retinoic acid. The cellular fluids include some glucose which can decompose to provide energy to this reaction, but the intentional addition of glucose to the composition provides additional energy to facilitate this reaction. The supply of retinoic acid to the cells, in turn, provides beneficial effects on the skin.

The hydrogen peroxide emulsions, which can be used within the scope of the present invention, can be either of the water-in-oil, or oil-in-water type.

A stable oil-in-water emulsion of hydrogen peroxide particularly well suited for preparing a composition according to the invention is described in U.S. Pat. No. 3,954,974.

Since no toxic by-products are formed during the breakdown of hydrogen peroxide, such emulsions can include a high concentration of nascent oxygen which reinforces all the more the action of vitamin A, while at the same time ensuring a release of energy as a result of its reaction with glucose.

Amongst the esters of vitamin A which can be used, one can preferably choose an ester of a fatty acid, such as the palmitate of vitamin A, or equally its acetate. Such products are sold commercially under an appropriate form; the fatty acid esters of vitamin A have the further advantage of being well tolerated by the skin and the organism.

The relative concentrations of the ester of vitamin A or of the acid, and of glucose can vary considerably, depending upon the effects which are sought. The derivative of vitamin A can be advantageously used at a concentration ranging from 1,000 to 10,000 international units (IU: expressed as vitamin A) per gram of the composition according to the invention.

As to the glucose, it is suitably included into the composition in an adequate molar proportion capable of producing through glycolysis, the amount of energy required for the cell metabolism. Preferably, one can use glucose in an amount ranging from 0.5 to 10 per mill. in weight, based on the weight of the composition.

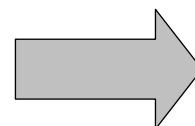
The concentrations of hydrogen peroxide in the composition obviously vary according to the oxygenating effect which is sought. In the case of a composition for cosmetic use, hydrogen peroxide is used in an amount ranging from 0.5 to 4% in weight (expressed as 100% H₂O₂) and in the case of a composition for pharmaceutical use, from 0.1 to 6% in weight or more depending on circumstances, based on the weight of the total composition.

Due to the well balanced nature of the emulsion composition, the excess oxygen generated not only produces an immediate oxidative breakdown of glucose, but further ensures that the palmitate or the acetate of vitamin A are converted into retinoic acid and that the extracellular medium is enriched with oxygen and water, these two products resulting from the breakdown of hydrogen peroxide.

Of course, the compositions according to the invention, can also contain the usual stabilizers, thickeners, perfumes or colouring agents. They can also contain additional active components, for example other vitamins and vitamin derivatives such as vitamin E, or liposomes.

Being based on an aqueous emulsion with a high oxygenating capacity, the compositions according to the invention further display highly advantageous disinfecting and cicatrizing properties, which are useful for treating burns, open wounds such as ulcers or complications arising from hemorrhoids.

The following examples are given for the purpose of illustrating the invention in more detail. These examples are in no way intended to be limiting.



example 1

A COSMETIC COMPOSITION

A first phase of the "oil" type is prepared by mixing together the following components:

Petrolatum 450 g Liquid paraffin 325 g Cetyl alcohol 160 g Stearyl alcohol 160 g Monostearin 310 g Total 1405 g

The following components are mixed together separately, to prepare a "water" type phase:

H.sub.2 O.sub.2, 30% 400 g = 0.353 moles/kg of cream "Tween 80" 125 g Salicylic acid 9 g Vitamin A palmitate* 63 g D,L-.alpha.-tocopherol acetate 200 g Glucose 18 g = 0.01 moles/kg of cream Distilled water 7780 g Total 8595 g

*1.7 million. IU/g

The "oil" and the "water" phases thus prepared are then mixed together in an appropriate apparatus at a temperature comprised between 70.degree. and 80.degree. C., until a homogeneous emulsion is achieved. 10 kg of cream for cosmetic use are thus obtained, which contain 1.1% active oxygen, 0.01 moles/kg of glucose and 10,000 IU of vitamin A palmitate/g of cream.

example 2

A COSMETIC COMPOSITION

A first phase of the "oil" type is prepared by mixing together the following components:

Petrolatum 450 g Liquid paraffin 325 g Cetyl alcohol 160 g Stearyl alcohol 160 g Monostearin 310 g Vitamin A palmitate* 63 g D,L-.alpha.-tocopherol acetate 200 g Total 1668 g

The following components are mixed together separately, to prepare a "water" type phase:

H.sub.2 O.sub.2, 30% 1167 g = 1.03 moles/kg of cream "Tween 80" 125 g Salicylic acid 9 g Glucose 18 g = 0.01 moles/kg of cream Distilled water 7013 g Total 8332 g

The "oil" and the "water" phases thus prepared are then mixed together in an appropriate apparatus at a temperature comprised between 70.degree. and 80.degree. C., until a homogeneous emulsion is achieved. 10 kg of cream for cosmetic use are thus obtained, which contain 3.5% active oxygen, 0.01 moles/kg of glucose and 10,000 IU of vitamin A palmitate/g of cream.

example 3

A COSMETIC COMPOSITION

A first phase of the "oil" type is prepared by mixing together the following components:

Petrolatum 475 g Liquid paraffin 350 g Cetyl alcohol 175 g Stearyl alcohol 175 g Monostearin 350 g D,L-.alpha.-tocopherol (vit. E) 250 g Total 1775 g

The following components are mixed together separately, to prepare a "water" type phase:

H.sub.2 O.sub.2, 30% 1176 g "Tween 80" 150 g Salicylic acid 11 g Glucose 18 g Retinoic acid "Tretinoine" 5 g Distilled water 6865 g Total 8225 g

The "oil" and the "water" phases thus prepared are then mixed together in an appropriate apparatus at a temperature comprised between 70.degree. and 80.degree. C., until a homogeneous emulsion is achieved. 10 kg of cream for pharmaceutical use are thus obtained, which contain 3.5% active oxygen (hydrogen peroxide), 0.01 moles/kg of glucose and 0.05% of retinoic acid (Tretinoine).

These compositions are perfectly well suited for numerous cosmetic or pharmaceutical uses and they proved to be particularly effective in cosmetic applications for preventing skin ageing. They can also be used for the treatment of benign disorders of the skin, such as acne. Further, these compositions have a disinfecting effect.