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2,776,924

COMPOSITION OF MATTER CONTAINING POLY-VINYLPYRROLIDONE AND A FATTY CARRIER

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No Drawing. Application February 5, 1954,
Serial No. 408,600

8 Claims. (Cl. 167—82)

This invention relates to compositions of matter containing polyvinylpyrrolidone and more specifically, compositions including polyvinylpyrrolidone homogeneously dissolved in a carrier of a fatty or oily nature.

Polyvinylpyrrolidone (1-vinyl-2-pyrrolidone polymer) is a white powder which is readily soluble in water and certain organic solvents but is normally insoluble in fatty or oily carriers.

Since polyvinylpyrrolidone has a number of important properties, particularly in the therapeutic field, it is important that the polyvinylpyrrolidone be made compatible with as many different types of solvents and carriers, as possible. Thus, polyvinylpyrrolidone may detoxify therapeutic agents which are more or less toxic in character and also has the property of prolonging the effective period of many drugs and anaesthetics.

Accordingly, one object of this invention is to provide a composition of matter including a carrier of a fatty or oily nature and polyvinylpyrrolidone homogeneously dissolved in said carrier by means of a compound having a common solvent action with respect to the base and the polyvinylpyrrolidone.

Another object of this invention is to provide a composition of matter including a physiologically active agent which normally has an irritating effect when applied to the epidermis or mucous membranes, and polyvinylpyrrolidone for inhibiting the undesirable effects of said agent, all homogeneously distributed in a fatty carrier by means of a common solvent.

Yet another object of this invention is to provide a composition of matter including a therapeutic or physiologically active agent which may be of a toxic nature and has an irritating effect when applied to the epidermis or the mucous membranes, and polyvinylpyrrolidone for inhibiting the undesirable effects of such agent, all homogeneously distributed in a fatty carrier by means of a fatty acid or fatty alcohol.

Still another object of this invention is to provide a composition of matter in powder form applicable to the epidermis or mucous membranes and including an active agent which is normally irritating with respect to the epidermis or mucous membranes, wherein the active agent together with polyvinylpyrrolidone is dissolved in a fat or oil carrier by means of a common solvent, the solution being combined with an inert powdered carrier to form a powdered material free of the undesirable properties of the active agent.

It has been found that substantial amounts of polyvinylpyrrolidone may be dissolved in fatty or oil carriers and waxes of animal, vegetable or mineral origin, in their normal state or in hydrogenated form, such as lanolin, lard, mineral oil, cottonseed oil, castor oil, cocoa butter, beeswax, carnauba wax, ozokerite and the like, through the use of fatty acids or fatty alcohols.

Furthermore, physiologically active agents whose normally adverse physiological properties may be inhibited by the addition thereto of polyvinylpyrrolidone, such as iodine, salicylic acid or the like, may be uniformly dis-

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tributed in a fatty carrier by the use of fatty acids or fatty alcohols, for application to the epidermis or mucous membranes and free of undesirable effects relative thereto.

The following examples illustrate the present invention but it is understood that such examples do not limit the scope of said invention.

Example 1

4 grams of cetyl alcohol was melted over a water bath and 0.4 gram of polyvinylpyrrolidone was added and stirred until dissolved. There was then added 5.5 grams of lanolin and 7 grams of mineral oil. The resultant solution at an elevated temperature was clear and on cooling there was no separation. The combination of lanolin and mineral oil in the foregoing example was replaced by mineral oil as an alternative to give a homogeneous solution of polyvinylpyrrolidone in the oil carrier.

Example 2

0.2 gram of iodine in methyl alcohol was combined with 2 grams of polyvinylpyrrolidone and 8 grams of oleyl alcohol and dissolved in 19.8 grams of mineral oil to give a homogeneous solution. The mineral oil may be replaced by a lanolin carrier and the proportion of iodine used may be varied to give any desired concentration in the fatty carrier.

Example 3

2.0 grams of polyvinylpyrrolidone was added to 8.0 grams of palmitic acid to form a homogeneous mass. 30.0 grams of castor oil was added to the mass and produced a clear solution. The castor oil can be replaced by cottonseed oil or hydrogenated cottonseed oil.

Example 4

A solution of iodine and polyvinylpyrrolidone in a mineral oil carrier, as set forth in Example 1, was combined with an inert powdered material such as talc until the solid particles were well saturated with the solution yet provided a freely flowing powder. The resultant powder can be readily applied to the human skin for therapeutic purposes without danger of irritation. Other inert materials such as china clay, or the like may replace the talc as a carrier for the fatty solution of polyvinylpyrrolidone and iodine.

It has been found that substantial amounts of polyvinylpyrrolidone may also be readily dissolved in various fatty or oily carriers as well as waxes, of animal, vegetable or mineral origin, including cottonseed oil, olive oil, cocoa butter, beeswax, ozokerite or the like, as well as hydrogenated forms thereof, by means of fatty acids or fatty alcohols including lauric, myristic, palmitic, stearic, or sebacic acids and lauryl, myristyl, stearyl or oleyl alcohols and mixtures of such acids and alcohols.

It is also understood that various physiologically active agents, therapeutic agents and the like, which may normally have adverse effects when applied to the skin or mucous membranes, may be readily combined with polyvinylpyrrolidone to inhibit such adverse effects, the combination being homogeneously dissolved in a fatty or oily carrier, in accordance with the present invention, thereby facilitating the application of such agents to the skin or other portions of the human body.

It is to be understood that oily and waxy materials, which may be of animal, mineral or vegetable origin shall be deemed the substantial equivalent of the water insoluble, fat soluble fatty alcohols and acids previously described, for use in the compositions of the instant invention.

The foregoing examples are to be deemed illustrative of the invention and are not to be considered a limitation on the scope of the claims following.

What is claimed is:

1. A composition of matter consisting essentially of a homogeneous solution of polyvinylpyrrolidone, a fatty carrier and a compound selected from the group consisting of water insoluble, fat soluble fatty acids and fatty alcohols.
2. A composition of matter consisting essentially of a homogeneous solution of polyvinylpyrrolidone, a fatty carrier and a water insoluble, fat soluble fatty acid.
3. A composition of matter consisting essentially of a homogeneous solution of polyvinylpyrrolidone, a fatty carrier and a water insoluble, fat soluble fatty alcohol.
4. A composition of matter consisting essentially of a physiologically active agent having irritant effects when applied to the epidermis or mucous membranes, polyvinylpyrrolidone for inhibiting said irritant effects, a fatty carrier for said agent and inhibitor, and a compound selected from the group consisting of water insoluble, fat soluble fatty acids and fatty alcohols.
5. A composition of matter consisting essentially of a fatty carrier, polyvinylpyrrolidone, iodine, and a compound selected from the group consisting of water insoluble, fat soluble fatty acids and fatty alcohols.

6. A composition of matter in powder form comprising a solution including essentially a fatty carrier, polyvinylpyrrolidone and a compound selected from the group consisting of water insoluble, fat soluble fatty acids and fatty alcohols, and a powdered, inert inorganic vehicle for said solution.

7. A composition as in claim 6, said solution further including a physiologically active agent having irritant effects when applied to the epidermis or mucous membranes, the polyvinylpyrrolidone inhibiting said irritant effects.

8. A composition as in claim 7, said physiologically active agent being iodine.

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