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SHAPED MEDICINAL PREPARATION

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The present invention relates to shaped medicinal preparations.

Fats, for instance, cacao oil, wax, spermaceti, hydrogenated vegetable fats and the like have long served as basis material or vehicle for shaped medicinal preparations intended for introduction into cavities, such as suppositories, bougies and the like. As the shaped preparations are required to melt at the temperature of the body the vehicle must have a low melting point, a quality which is associated with many disadvantages; the vehicle often liquefies at summer heat and at tropical temperatures. As, furthermore, the resorption of the vehicle occurs very slowly there is the danger that part of the molten mass will flow from the cavities whereby an exact dosing of the medicine is made impossible. Finally most of the fats readily become rancid and have then an irritating effect upon the mucous membranes. For a long time therefore, the function of basis material for shaped medicinal preparations has been shared by masses prepared from solutions of gelatin, agar-agar and the like in glycerine and water. But also these vehicles show many defects. They dry readily when stored whereby their solubility in the cavities is diminished.

Furthermore, they constitute a nutrient medium for Hyphomycetes and bacteria. They are liable to become mouldy and to form in the cavities an undesired and in certain cases even noxious nutrient medium for pathogenic bacteria.

Attempts which have been made to remove the drawbacks associated with these several vehicles have not shown any practical results. Also swelling bodies which are often used for medicinal preparations to be introduced into the urethra or openings of wounds are not free from drawbacks. They also become hard when they are stored up and then break down in the cavities only with difficulty.

Now we have found that polyalkylene oxides and the derivatives thereof are suitable vehicles for the manufacture of shaped medicinal preparations to be introduced into the cavities. In contradistinction to the fatty vehicles the melting point of the new vehicles is of no importance because their function does not depend on fusion but on dissolution in the secretion of the cavity.

The medicinal preparations which may be prepared according to our present invention have also the following favorable properties.

When they are stored they are not decomposed and do not dry. They mix well and can be shaped in a solid as well as in a molten state

with most of the medicines. The preparations made with their aid have an unobjectionable solidity and persistence of form. As these new vehicles are soluble in water and in lipoids the medicinal preparation quickly dissolves in the cavities so that the medicines contained in it can rapidly and completely be resorbed.

The new vehicles are physiologically indifferent, nonirritant and odorless and are resistant to the tropical climate. In consequence of the surface activity of the new vehicles a very high degree of distribution of the incorporated medicines is obtained.

Polyalkylene oxides and especially polyethylene oxide, which has been polymerized up to a wax-like consistency are, for instance, suitable; furthermore the derivatives of the polyalkylene oxides, especially the reaction products of ethylene oxide upon organic compounds which contain hydroxy-, carboxy-, amino- or amido-groups and among these especially those which have been obtained by the action of 10 to 20 molecular proportions of ethylene oxide upon 1 molecular proportion of the organic compound in question especially of a compound containing at least 10 carbon atoms. The compounds, for instance, which are obtained by the action of ethylene oxide upon castor oil, ricinoleic acid or oleyl alcohol are especially suitable.

For the preparation of the solid medicinal preparations there may, of course, also be used mixtures of the new vehicles. According to the desired purpose there may also be used suitable adjuvants and corrigents, such as glycerine, water, small proportions of fat, hydrocarbons having a high molecular weight and the like.

We have furthermore found that polyalkylene oxides and their derivatives may be used with the same result for the preparation of pills, tablets and the like. It is known that those medicinal preparations, made in known manner, often become hard when they are stored and then break down only very slowly or insufficiently in the stomach or intestine. The same is true of tablets and dragees. Medicinal preparations to be administered per os and free from the disadvantages mentioned may be made by the invention. Also in this case widely differing derivatives of the polyalkylene oxides may be used. Adjuvants of quite different kinds may also be used therewith.

The following examples illustrate the invention but they are not intended to limit it thereto; the parts are by weight:

(1) *Morphine suppositories*

	Parts
Morphine hydrochloride.....	0.5
Very pure, bleached polyethylene oxide.....	227
5 Condensation product from ethylene oxide and ricinoleic acid.....	22.3
Water.....	22.2

10 The condensation product from ethylene oxide and ricinoleic acid is stirred together with the water. The morphine is made into a paste with this mixture and the polyethylene oxide which has been molten on the steam bath is stirred in. The whole is poured into hollow moulds for suppositories and is allowed to cool.

15 (2) *Suppositories prepared from dimethylaminophenyldimethylpyrazolone, sodium phenyldimethylpyrazolonemethylaminomethane sulfonate and urethane*

	Parts
20 Dimethylaminophenyldimethylpyrazolone.....	40
Sodium phenyldimethylpyrazolonemethylaminomethane sulfonate.....	60
Urethane.....	45
25 Very pure, bleached polyethylene oxide.....	250

30 The dimethylaminophenyldimethylpyrazolone, the sodium phenyldimethylpyrazolonemethylaminomethane sulfonate and the urethane are at first molten together on a steam bath, while stirring, and then mixed, while stirring, with the polyethylene oxide which has been liquefied by heating it on a steam bath. The whole is poured in the usual manner into hollow moulds for suppositories and is allowed to cool.

35 (3) *Small rods containing the compound prepared from gelatose with silver nitrate*

	Parts
40 The compound prepared from gelatose with silver nitrate.....	0.25
Very pure, bleached polyethylene oxide.....	42
The condensation product from ethylene oxide and ricinoleic acid.....	4
45 Water.....	4

The mass which is prepared as described in Example 1 is poured into hollow moulds for rods.

(4) *Papaverine tablets*

	Parts
Papaverine hydrochloride.....	4
Very pure, bleached polyethylene oxide.....	33
Glycerine.....	3

5 The papaverine is made into a paste with the glycerine and the polyethylene oxide which has been liquefied by heating it on a steam bath is then stirred in. The mass is either poured into hollow moulds and allowed to cool or it is poured 10 onto a glass plate or the like where it is allowed to harden and is then cut to form tablets.

(5) *Pills prepared from caffeine-phenylethylmalonyl-urea*

	Parts
Caffeine.....	2.5
Phenylethylmalonyl-urea.....	5
Very pure, bleached polyethylene oxide.....	15
Sugar syrup.....	5

20 The phenylethylmalonyl-urea and the caffeine are mixed with the polyethylene oxide which previously has been pulverized and the mixture is kneaded with the sugar syrup to a plastic mass. Pills are formed from this mass in the usual 25 manner.

We claim:

1. Shaped medicinal preparations comprising a pharmacologically active substance and a vehicle consisting of polyethylene oxide.

2. Shaped medicinal preparations comprising a 30 pharmacologically active substance, a compound obtained by the interaction of ethylene oxide and ricinoleic acid and a vehicle consisting of polyethylene oxide.

3. Shaped medicinal preparations comprising a 35 pharmacologically active substance, a compound obtained by the interaction of ethylene oxide and castor oil and a vehicle consisting of polyethylene oxide.

4. Shaped medicinal preparations comprising a 40 pharmacologically active substance, a compound obtained by the interaction of ethylene oxide and oleyl alcohol and a vehicle consisting of polyethylene oxide.

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