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## METHOD OF APPLYING COATING TO A MEDICAL PREPARATION

Grover C. Miller, Alhambra, Calif., assignor to Kelp-Oil Laboratories, Inc., Los Angeles, Calif., a corporation of California

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5 Claims. (Cl. 167—82)

This invention relates to a method of applying coating material to a medical compound or preparation and more particularly to a method of application of a coating material to a medical preparation, which coating material is of a relatively high melting point.

In my co-pending application, Serial No. 648,823, I have disclosed a coating for medical compound which is of a relatively high melting point and which is prepared so as to provide a coating for a medical compound such that its time of breaking away to free the medical compound may be timed or determined to enable the dispersing of the medical compound or preparation into the human system at the point of the system desired.

As such a medical compound coating is of relatively high melting point, its application to the surface of the medical preparations, some of which may be very sensitive to the application of heat, has proven difficult.

It is therefore an object of this invention to provide a new and improved method of applying such a coating to a medical compound or preparation so that the heat as utilized for the purpose of causing the coating material to encase the medical compound or preparation has substantially no effect upon the medical compound or preparation being coated.

It is an object of this invention to provide a method of applying coating materials to medical compounds and preparations in which the coating material to be applied is first caused to adhere to the surfaces of the medical compound or preparation, and is then fused together to encase or enclose the medical compound or preparation.

Other objects and advantages of this invention it is believed will be apparent from the following detailed description of a preferred embodiment thereof.

In the application of medicine, particularly where the application is desired at particular points of the human system or points other than the stomach and digestive tracts, difficulty has been encountered due to the fact that most of such medicines when passing through the digestive tracts of the stomach are attacked by the digestive secretions of the stomach or other secretions of the human system and are destroyed so that their application as a medicine never reaches the point in sufficient quantities where its effect is desired.

In order to overcome this difficulty, there is disclosed in my co-pending application above referred to a coating for a medical compound or

medicine which protects the compound or medicine to be taken from the digestive or other secretions of the human system so as to deliver the medical compound or medicine to the point where its application is desired. This protective medium is a coating which is of relatively high melting point and which is so compounded that when it is applied to the surface of medical preparations or medicines it will physically break at a time which may be determined by the coating prepared.

Such a coating consists preferably of a coating formed of waxes and oils, the melting points of which exceed the temperature of the human body mixed with such a substance, for example, as ground agar, which coating will break from the medical compound or preparation to which it is applied mechanically under the influence of moisture as the moisture is absorbed by the agar or other substance having the property of integrating on absorption of moisture. An example of such a coating is: Powdered agar or any other substance having a high property of mechanical absorption of moisture is mixed with a mixture of oils or waxes, the melting point of which is determined by the mixture so that the melting point of the resultant compound will be materially above the temperature of the human system as, for example, between 150 to 165° F., dependent upon the time at which it is desired for the coating to break during the passage of the coated medical compound through the digestive or colonic tracts. For example, five parts of stearic acid or other oil having a high melting point of approximately 140° F. is mixed with one part of white wax having a melting point of, for example, between 143 and 160° F. One part of carnauba wax is then added to the mixture, the carnauba wax having a melting point of between 181 to 195° F. To this mixture of oils and waxes is then added one part of powdered elm and one part of powdered agar. The mixture is made by melting the oils and waxes together and adding to the mixture of oils and waxes in a mixing or stirring machine the powdered elm and agar.

The degree of fineness to which the agar and powdered elm or other substance having a high property of absorption of moisture is ground, together with the melting points of the oils and waxes employed, determine the time it will require for the coating when it is applied to the medical compounds or medicines to break when passing through the human system.

In preparing the coating, which will require approximately three to four hours to break under



the above conditions, I have found it advisable to grind the powdered elm and agar to approximately 80 to 90 mesh. As the amount of agar or other substance having a high property of absorption to moisture is increased in the coating as above set forth, the time required for the splitting of the coating decreased.

The coating as thus prepared, which is given merely as an illustrative example, and my invention is not in any way dependent upon the specific illustrative example given of such a coating, I permit the coating to cool and then reduce the coating material to a state of relatively fine subdivision by any suitable or desirable means such, for example, as by grating the material through a mechanical grater, and I preferably reduce the coating material as above set forth to a relatively fine state of subdivision so that it will pass through an 80 mesh screen.

The medical preparation or medicine to be coated, preferably in a solid, or semi-solid state, is then placed in a mixing machine to which a small quantity of an adhesive material is added. The adhesive material may be such a substance as white shellac dissolved in alcohol or may be such a substance as benzoine dissolved in alcohol, or any other similar adhesive substances. The medical preparation and the adhesive are then stirred together so as to thoroughly coat the medical preparation with the adhesive. The powdered coating material is then added to the stirring machine and the stirring continued until the powdered material has adhered to the surface of the medical compound or preparation.

In coating small pills of medical preparations I have found that approximately 2 ounces of powdered coating material may be utilized for very effectively coating 1 pound of tablets or pills. The powdered coating material is held by the adhesive to the surface of the tablet or pill and the particles of the coating material are, by the mixing, caused to adhere together.

After the application of the powdered coating material to the surface of the tablets or pills, they are removed from the mixing machine and placed on trays and are then subjected to a relatively high temperature for a relatively short period of time in order to fuse the particles of the coating materials together. The application of heat to the coating material may be effectively performed by passing the tray of pills or tablets with the coating material on its surface under a high temperature flame. In order that all surfaces may be exposed to the action of high temperature flame, the tablets or pills are turned over so that the coating is fused on all sides. Obviously other means may be employed for imparting to the coating material a high temperature in order to effect the desired fusing.

When it is desired to give pills or tablets a glossy finish, I prefer to add to the mixing machine after the powdered coating material is adhered to the

surface of the pills or tablets, a small quantity of stearic acid. The stearic acid thus is applied to the exterior of the powdered coating material and under the influence of the flame as applied to the surface of the pills, is not burned away but gives to the resultant coating preparations a relatively high gloss.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. A method of applying an enteric coating of an oil or wax of a melting point of not lower than 140° F. to a medical preparation for admission in the intestinal tract including the steps of reducing the coating to a relatively fine powder, applying an adhesive substance to the preparation, then covering the preparation with the powdered coating and fusing by direct application of a flame the coating on the preparation.

2. A method of applying an enteric coating of an oil or wax of a melting point of not lower than about 140° F. to a medical preparation for admission in the intestinal tract including the steps of applying a coating to the medical preparations, and then fusing by direct application of a flame the powder to cover the preparation.

3. A method of applying an enteric coating of an oil or wax of a melting point of not lower than about 140° F. to a medical preparation for admission in the intestinal tract which includes the steps of reducing the coating material to a state of relatively fine subdivision, applying the finely divided coating material to the preparation with an adhesive, and then fusing by direct application of a flame the coating to the preparation.

4. A method of applying an enteric coating of an oil or wax of a melting point of not lower than about 140° F. to a medical preparation for admission in the intestinal tract which includes reducing the coating material to a relatively fine state of subdivision, applying the finely divided coating material to the preparation with an adhesive, and then fusing the coating material to the preparation by applying to the surface of the preparation as coated with the finely divided coating material a relatively high temperature flame for a short interval of time.

5. A method of applying an enteric coating of an oil or wax of a melting point of not lower than about 140° F. to a medical preparation for admission in the intestinal tract including the steps of reducing the coating material to a state of relatively fine subdivision, applying the finely divided coating material to the preparation, and then fusing the coating to the preparation by applying relatively intense heat of a direct flame for a relatively short interval of time to the finely divided coating material on the surfaces of the preparation.

GROVER C. MILLER.