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COATING MATERIAL FOR TABLETS AND COATED TABLETS

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This invention relates to coated tablets and materials which may be used for coating them to protect their contents and to make them attractive in appearance.

Heretofore tablets have been coated by a lengthy, expensive process which consists in applying a plurality of coatings of sugar syrup with the addition of powdered filler and with intermediate drying between coating applications. During the first portion of a coating process the layers are built up rather fast with sugar syrup and filler. They are dried with an air blast. After the coating has been built up the tablets are shaped with coatings of the syrup and dried with air blast with accompanying tumbling. After the desired shape has been given to the tablets several coatings of colored syrup are added. When these have been dried the tablets are waxed and polished.

Heretofore it has been customary to apply a coating which amounts to approximately one-half the weight of the tablet. It has been difficult to get a satisfactory coating on corners or sharp edges and it has been therefore necessary to use considerably more coating than would be necessary if the coating could be applied evenly. In fact, on the edges and corners only about 70% as much material is applied as on the rest of the tablet due to the manner in which the coating is applied.

The process is slow because many layers have to be applied and there must be drying between applications. This means that as many as sixty to eighty hours may be necessary for drying.

An object of this invention is to provide a new and improved coating for tablets and a new and improved coated tablet. Another object is to provide such a tablet with a coating which is more elastic than previously-known coatings and which is more resistant to chipping through fracture. Another object is to provide a tablet with a relatively thin coating which can be applied in a shorter time, eliminating extensive and expensive operations. Another object is to provide a thin coating which is sufficiently opaque to conceal the internal portion of the tablet. Other objects and advantages of the invention will be apparent from the following specification:

In carrying out this invention a small amount of water-soluble hydroxy ethyl cellulose is added to the syrup which is used in coating the tablets. After from 2 to 7 parts by weight of such hydroxy ethyl cellulose are added to each 200 parts by weight of sugar in making the syrup, a coating which is adequate for the tablet and thinner than coating heretofore employed can be applied to the tablet in a relatively short time. This coating is more elastic and adequate coverage can be obtained in fewer processing steps, reducing the amount of material and time required.

When such coatings are applied and are thin, the addition of from 0.5 to 3 parts by weight of titanium dioxide to the sugar and hydroxy ethyl cellulose will improve the covering properties. This thinner coat thus gives adequate protection and adequate attractiveness to the tablet.

When such a coating is applied to a tablet the resistance at the corners and sharper edges of the tablets to chipping is increased by a considerable amount. The resistance to fracture may be increased several times. Therefore, it is possible to reduce the amount of coating material and the time to apply it. Savings up to 60% of the man hours involved and 50% of the drying time may be brought about.

In preparing coating solutions in accordance with this invention 100 parts by weight of water are employed with

each 200 parts by weight of sugar. 2 to 7 parts by weight of hydroxy ethyl cellulose are added. 3 parts by weight of hydroxy ethyl cellulose will ordinarily give very satisfactory results.

The hydroxy ethyl cellulose which is employed is the reaction product of alkali cellulose and ethylene oxide. These vary in viscosity and the viscosity should be sufficiently low to obviate mechanical difficulties encountered in application which would be encountered with very high viscosity materials.

The following are suitable syrups for use in carrying out this invention—

	Parts by weight
No. 25 subcoating syrup:	
Hydroxy ethyl cellulose medium viscosity	3.0
Distilled water	100
Sugar	200
No. 19 color coating syrup (green):	
Hydroxy ethyl cellulose low viscosity	6.0
Titanium dioxide	0.5
FD and C green No. 2	q.s.
FD and C yellow No. 1	q.s.
Distilled water	100
Sugar	200.
No. 60 color coating syrup (brown):	
Hydroxy ethyl cellulose medium viscosity	3.0
Distilled water	100
Brown oxide	q.s.
Sugar	200
No. 21 color coating syrup (red):	
Hydroxy ethyl cellulose low viscosity	6.0
FD and C red No. 1	q.s.
Titanium dioxide	0.5
Distilled water	100
Sugar	200

In these examples from 3 to 6 parts by weight of the hydroxy ethyl cellulose are employed, although the amounts can vary as above pointed out using from from 2 to 7 parts by weight depending upon viscosity. With high viscosity hydroxy ethyl cellulose the lower ranges are employed.

The titanium dioxide can be varied from 0.5 to 3 parts by weight.

The following example illustrates a specific application of the invention to the coating of tablets:

Example

About 100,000 compressed tablets which have been given a sealing coat of shellac are placed in a coating pan. These tablets are given four applications of about two pounds each of a subcoating syrup consisting of 3 parts by weight of hydroxy ethyl cellulose, 100 parts by weight of distilled water and 200 parts by weight of sugar. Dusting or filling powder is employed with each coat, as is customary, and the coatings are dried between applications with an air blast.

The tablets are rounded by the application of about three pounds of the same solution. During this rounding operation they are tumbled in the pan and dried without the use of an air blast.

Just prior to complete drying another application of syrup is made and the tablets are allowed to dry without any air blast.

The color coating is applied to the dried tablets. This consists of 6 parts by weight of hydroxy ethyl cellulose, 0.5 part by weight of titanium dioxide, coloring material, 100 parts by weight of distilled water and 200 parts by weight of sugar. About nine separate applications are made of this syrup, each application consisting of about two pounds. The quantity is decreased until the last two applications which consist only of enough syrup to wet the surface of all the tablets. An air blast is used continuously until the last three applications.

The dried tablets are waxed and polished.

About four hours is required for drying the subcoating and the coloring coats.

It will be appreciated by those skilled in the art that the above examples of the syrup and coating procedures have been given by way of illustration only and that variations may be made without departing from the invention. Certain of the variations have been described

above. It is not intended that there be any limitation to the specific form of invention described. The invention is defined in the appended claims.

What is claimed is:

1. A medicinal tablet having a coating thereon comprising intermixed sugar and water-soluble hydroxy ethyl cellulose and titanium dioxide in the proportions of 200 parts of sugar to 2 to 7 parts of water-soluble hydroxy ethyl cellulose to 0.5 to 3 parts of titanium dioxide and characterized by elasticity and resistance to fracture.

2. A medicinal tablet having a coating thereon comprising intermixed sugar and water-soluble hydroxy ethyl cellulose in the proportions of 200 parts of sugar to 2 to 7 parts of water-soluble hydroxy ethyl cellulose and characterized by elasticity and resistance to fracture.

3. A composition for coating compressed medicinal tablets or the like comprising a solution in water of sugar and water-soluble hydroxy ethyl cellulose in the proportion of 200 parts of sugar to 2 to 7 parts of water-soluble hydroxy ethyl cellulose and having suspended therein titanium dioxide.

4. A composition for coating compressed medicinal tablets or the like comprising a solution in water of sugar and water-soluble hydroxy ethyl cellulose in the proportion of 200 parts of sugar to 2 to 7 parts of water-soluble hydroxy ethyl cellulose.

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