

SOLUTION OF ALUMINUM CHLORIDE COMPOUND.

Aluminum Chloride	50.0 Gm.
Alcohol	120.0 cc.
Oil Lavender Flowers	0.6 cc.
Tincture of Cudbear	0.6 cc.
Water	
To make	500.0 cc.

Use for Bromidrosis.

Directions: Apply at night and morning.

SPIRIT OF MENTHOL COMPOUND.

Menthol	4.0 Gm.
Camphor	4.0 Gm.
Oil Lavender	
Oil Bergamot	of each 1.5 cc.
Oil of Orange Flowers	0.3 cc.
Alcohol 70%	500.0 cc.

Mild counter irritant and refrigerant.

SPIRIT OF THYMOL COMPOUND.

Benzoic Acid	8.0 Gm.
Salicylic Acid	8.0 Gm.
Thymol	5.0 Gm.
Methylene Blue	0.120 Gm.
Oil Neroli	0.300 cc.
Alcohol 70%	500.0 cc.

Epidermophytosis—Athlete's Foot.

We have had official for a number of years the salicylic acid, Indian Hemp, collodion, Whitfield Ointment, compound talc powder, inunction menthol comp., Stainless Iodine Ointment. All of these preparations are extensively used by both the doctors and the laity.

AN ENTERIC COATING FOR TABLETS.*

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The writers have reviewed the more commonly used American textbooks as well as journal literature searching for references on enteric coatings for pills, capsules and tablets. Salol or mixtures of salol with other substances seem to be the materials favored by most writers. Salol is made use of in certain commercial enteric coated tablets. Enteric coated Glycotauro tablets are coated with salol (1), enteric coated tablets, Neutral Acriflavine-Abbott, are coated with shellac and salol while enteric coated tablets, Neutral Acriflavine-National, are coated with salol containing some keratin (2). Several methods of applying salol coatings to pills and capsules have been suggested. Apparently, however, little work has been done on developing a method of applying a salol coating to tablets in a manner which

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could be used satisfactorily by the retail pharmacist. The present paper deals with a simple method of salol coating tablets.

Pills, capsules and tablets are the accepted modes of administration of medicines which need only to be taken in small quantities. They are used to advantage for bad tasting drugs. Pills and tablets may be coated to further disguise bad tastes and all three modes of administration may be coated in such a manner as to make them reach the intestines before they dissolve or disintegrate. Capsules may also be treated with formaldehyde to render the gelatin insoluble in the acid juices of the stomach.

Pills, one of the oldest forms in which medicines are given, were probably first experimented with in an attempt to secure an enteric coating. In 1884 Dr. Unna (3) experimented with keratin as an enteric coating. Keratin is now generally held as of little value for this purpose. Previous to 1884 fatty and resinous substances had been employed (4). Beginning with the third edition, the National Formulary has given a method of salol coating pills by rotating them in successive, small amounts of salol, thus applying several thin coats. Salol or a mixture of salol with other substances may be applied in liquid form by spraying a solution on the pills while agitating them in a suitable dish.

An enteric coating may be applied to capsules by similar methods. However, Cook and LaWall, in the seventh edition of Remington's Practice of Pharmacy (5), point out that greater care is necessary to secure complete coating. They also state that the capsules being flexible and the coating very brittle, it is necessary to handle them with care to avoid cracking off the coating. Husa and Magid (6) came to the conclusion that a coating applied by spraying a mixture of salol, stearic acid and an alcoholic solution of shellac is satisfactory. Bukey and Rhodes (7) studied the treatment of gelatin with formaldehyde and recommend as a method to be used by the pharmacist an immersion for 5 to 15 seconds in a 10% formaldehyde solution. They also used gelatin-coated pills in their study.

Tablets may be coated by spraying a solution of the material or materials upon them while they are being agitated. Wruble (8) developed a coating consisting of shellac, suitable for large scale production. He made use of a 25% solution in equal quantities of alcohol and ammonia. Because of their shape, tablets, like capsules, do not lend themselves to the National Formulary and similar methods of coating. Therefore the following method for salol coating of tablets has been developed. Although this method is not all that is to be desired, it may be used to coat a dozen tablets in about one-half hour's time after the operator becomes familiar with the technique involved.

A METHOD FOR SALOL COATING TABLETS.

Melt a sufficient quantity of salol in a 4-inch casserole on a water-bath to completely cover a tablet upon dipping it into the melted salol. When the melted salol reaches the temperature of from 45-50° C. (salol melts between 41-43° C.), grasp the tablet to be coated on its narrow sides with a pair of tweezers, the points of which have been bent inward, and dip the tablet into the melted salol. Remove and keep the tablet moving in a circular motion in the air until the salol congeals. Shift the tweezers to a new position on the tablet and repeat the operation until a coating of the desired thickness is obtained. Usually three dippings are enough.

To make the coating smooth and glossy, grasp the coated tablet with tweezers and pass it quickly through a Bunsen flame.

Test tablets containing methylene blue and calcium sulphide for determining the effectiveness of the coatings were prepared by the formula used by Wruble (9). The tablets were compressed on a Stokes hand-operated tablet machine. As considerable inconvenience was experienced with Wruble's formula, the following was developed with no changes in the quantities of the two active ingredients:

Methylene blue	$\frac{1}{4}$ grain
Calcium sulphide	$\frac{1}{2}$ grain
Lactose	$\frac{3}{4}$ grain
Starch	$1\frac{1}{2}$ grain
Purified talc.	$1\frac{1}{4}$ grain
Sugar	$\frac{3}{4}$ grain

Granulate with a gelatin solution prepared as follows:

Pour upon 180 grains of gelatin sufficient water to cover it and allow it to stand one hour, then pour off the water. Transfer the washed gelatin to a dish, add 240 minims of glycerin and sufficient water to make four fluidounces. Heat on a water-bath until the gelatin is dissolved. Use while warm.

There is some question about the effectiveness of these tablets for testing enteric coatings as several students reported no eructations of hydrogen sulphide after taking the uncoated tablet.

The test tablets were coated with the salol as described above. Sixty students were each asked to take one of these tablets. Five reported eructations of hydrogen sulphide gas. Three reported no reaction. The balance of the group reported blue coloration of the urine. This is evidence that the salol coating does not dissolve in the stomach, but dissolves in the intestinal fluids allowing the tablet to disintegrate there.

BIBLIOGRAPHY.

- (1) New and Nonofficial Remedies (1934), 110.
- (2) *Ibid.*, 178.
- (3) P. G. Unna, *Pharm. Zentralh.*, 25 (1884), 577; from *Fortschr. Med.*, 15 (1884), 507 and *JOUR. A. PH. A.*, 10 (1921), 372.
- (4) A. G. DuMez, *JOUR. A. PH. A.*, 10 (1921), 372.
- (5) E. F. Cook and C. H. LaWall, "Remington's Practice of Pharmacy," 7th Edition (1926), 1683.
- (6) W. J. Husa and L. Magid, *JOUR. A. PH. A.*, 21 (1932), 1030.
- (7) F. S. Bukey and P. Rhodes, *Ibid.*, 22 (1933), 1253.
- (8) M. S. Wruble, *Amer. J. Pharm.*, 102 (1930), 326. (9) *Ibid.*, 327.

Wholesale Drug Analysis.—An analysis of wholesale drug operations, based on an eight months' study of a typical wholesaling establishment, has been published by the Bureau of Foreign and Domestic Commerce of the Department of Commerce as a bulletin—"Domestic Commerce Series—No. 86." The work reported was supervised by Wroe Alderson on a plan laid out by John R. Bromell. The study was made and the report prepared by Edward J. Carroll. Detailed statistical records and comment are given on selling, buying,

commodity coverage, storage, transportation, finance and risk bearing, a comparative tabulation being included which covers eight types of drug wholesaling. The data are broken down for departments, and although the author disclaims any purpose of critically analyzing the trade as a whole, his records, being factual have a wide relative value. The bulletin comprises 110 pages. It is for sale by the Superintendent of Documents, Government Printing Office, Washington, at 15 cents a copy.