MERCURIC SALICYLATE AND ITS PREPARATIONS AS APPLIED IN PHARMACY.*

BY J. LEON LASCOFF.

In presenting this paper, my object is not to discuss the therapeutics of mercury and its salts, but rather the modes of compounding or preparing prescriptions as presented to us by the medical profession. It is expected of us that the finished product be correct, convenient for use, elegant in appearance, and by all means safe for administration.

A few words of history may be of interest. Dr. H. G. Klotz (Fifty-ninth Annual Meeting of the American Medical Association, June 1908) in his paper on Mercurial Treatment, states that the use of mercury as a remedy was known in the twelfth century, and introduced by an Arabian physician. With the appearance of syphilis in civilized Europe, in 1497, an Italian physician, Caspardo Torella, recommended the use of mercurial ointment for the skin lesion of this disease. During these early periods, the use of mercury was restricted to external use.

About 1535, Pierre André Mathiole initiated the internal use of mercury in the form of the red oxide; later, Van Swieten's Solution, a solution of mercuric chloride, was much used. The protoiodide, first recommended by Biett, was widely adopted at the beginning of the nineteenth century. About the same period, the intramuscular injection of mercury came into vogue and has become firmly established. Dr. Klotz advocated the use of mercuric salicylate (insoluble injections). Dr. Joseph Zeisler of Chicago, remarked the following in discussing the paper of Dr. Klotz: "I began the use of injections of mercuric salicylate about eight months ago; since then, after having given several hundred of these injections, I have been delighted with them."

In *Schmidt's Jahrbücher* of 1891, we find that Szadek, following the teachings of Silva Aronjo, recommended the use of mercuric salicylate. Szadek recommended the following formula:

Mercuric Salicylate	1 Gm.
Mucilage of Acacia	5 mils
Distilled Water	20 mils

J. L. Wollheim in his paper on Painless Mercury Injections (*New York Medical Journal*, July 27, 1912), S. Pollitzer (*N. Y. State Journal of Medicine*, April 1916) and Harlow Brooks (same Journal) have recommended and summarized the results of their experiences with mercuric salicylate.

Wollheim recommends the following suspension of mercuric salicylate:

Suspension VII represents the following formula:

Quinine and Urea Hydrochloride	2.0 Gm.
Distilled Water	2.0 mils
Wool Fat, anhydrous	12.0 Gm.
Mercuric Salicylate	10.0 Gm.
Olive Oil or Liquid Petrolatum to make	100.0 mils

This suspension is one with which most of his injections have been given and is an elegant preparation from a pharmaceutical standpoint.

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Dr. S. Pollitzer recommends intramuscular injection above all modes of administration as being most efficient and convenient, the preparations to be used being insoluble salts. The customary 10 percent suspension requires too large a volume of the menstruum and therefore he uses $33^1/_3$ percent suspension. He also uses olive oil as a menstruum.

All of these suspensions must be prepared asceptically, as far as possible. The bottles, corks, and all glassware should be previously boiled. There is now in the N. F. IV a chapter on sterilization.

Mercuric salicylate is a white, odorless, tasteless powder containing about 59 percent of mercury. It is insoluble in water and alcohol. Great care should be exercised in keeping it. It is prescribed for external use, internally and by intramuscular injections.

There are a good many preparations on the market of mercuric salicylate. One of the best known and most used is "Enesol," Mercuric Salicylarsenate, which is described as an amorphous white salt, holding 38.46 percent of Hg and 14.4 percent As. It is soluble in 25 parts of water. Used in hypodermic injections, 1–2 Cc. of a 3 percent solution.

FORMULAS.

1. Mercuric Salicylate..... 1.0 Gm.
   Mucilage of Acacia..... 0.5 mil
   Distilled Water..... 20.0 mils

The mercuric salicylate is triturated with the mucilage, and the water is added.

2. Mercuric Salicylate..... 10.0 Gm.
   Olive Oil to make..... 30.0 mils
   For Injection.

As this preparation is for hypodermic use, sterilization is absolutely necessary.

3. Wollheim VII
   Quinine and Urea Hydrochloride..... 2.0 Gm.
   Distilled Water..... 2.0 mils
   Wool Fat..... 12.0 Gm.
   Mercuric Salicylate..... 10.0 Gm.
   Liquid Petrolatum to make. 100.0 mils

The quinine and urea hydrochloride is dissolved in the distilled water. The mercuric salicylate is triturated with the anhydrous wool fat. Add the former solution to the triturate and then add gradually the liquid petrolatum.

No. IX is the same as No. VII but has olive oil.

4. Pills (McDonald)
   Mercuric Salicylate..... 0.6 Gm.
   Extract of Gentian..... 2.0 Gm.
   Make into a pill mass and divide into 30 pills.

In preparing this pill mass, care should be taken to have the mercuric salicylate uniformly subdivided, the mass soft, and the resulting pill as small as possible.

5. Tablets
   Mercuric Salicylate..... 1.0 Gm.
   Sugar of Milk—sufficient
   Make into 50 tablets

The mercuric salicylate should be thoroughly triturated with the sugar of milk. Avoid the use of metallic utensils.

6. Ointment
   Mercuric Salicylate..... 3.0 Gm.
   Petrolatum and Wool Fat, each to make..... 30.0 Gm.

This ointment should be made in a glass mortar. Triturate the mercuric salicylate thoroughly before adding the base.

7. Ampuls
   Mercuric Salicylate..... 10 percent
   Quinine and Urea Hydrochloride..... 0.5 percent
   Liquid Petrolatum..... 1.0 mil

In preparing the ampuls, the ordinary suspension is by no means advisable. It could be prepared in an ointment base like cacao butter. The objection to this, I find, is that it must be warmed before transferring to the syringe. However, when the suspension is made with the addition of lanolin or a few drops of water, (as per Formula 3) a uniform and equal subdivision of doses is found. Each ampul will represent the desired strength.

By far the most convenient and safest method of dispensing, and mercury administration, is in the ampul. The preparations for hypodermic use should be sterilized, the dosage should be exact and there should be no chance for contamination or infection between the container and the hypodermic syringe. All of these requirements are fully satisfied by the ampul. In addition the ampul meets the physician's demand for a convenient container and at the same time the preparations are protected from deterioration.

The ampul, however, should contain a preparation of uniform consistency and be well emulsified and minutely exact as to the dosage. The fresh preparation of such an ampul by the pharmacist will readily appeal to physicians. As stated in my former paper, these ampuls are easily filled and can be produced at a very low cost by pharmacists and in any strength desired by physicians.

HISTORY OF AMERICAN SALICYLIC ACID INDUSTRY SHOWS HARD COMPETITIVE BATTLE.

Salicylic acid is a basic product used in making a number of chemicals for pharmaceutical purposes.

For 20 years American manufacturers of this product fought the German market, which fixed prices on this acid in every country of the world, except the United States, it is said. Prior to 1893 practically all the salicylic acid consumed in this country was supplied by the Germans, who kept the price up to $1.25 a pound. Then came the erection of a factory at St. Louis, which cut the price in half, and the German competitors promptly dropped to 56 cents.

By 1903 the German control of the American market was broken, and the product was sold around 30 cents a pound. Later the American manufacturers were forced to extend themselves, it is contended, to meet competition. The Germans, it is told, tried to get an American producer to withdraw competition if the American concern would pay a yearly indemnity of 10,000 francs, but the offer was promptly declined.

The European war has tied up exports from Germany.