

NEW METHOD OF MAKING SYRUPUS HYPOPHOSPHITUM, U. S. P.,
AND SYRUPUS HYPOPHOSPHITUM COMPOSITUS, U. S. P.*

F. A. UPSHER SMITH, PH. C.

The pharmacist who wishes to make the official syrups of the hypophosphites encounters the fact that it is necessary to keep on hand five different salts, viz., the hypophosphites of calcium, iron, manganese, potassium and sodium. Even if he has a package of each of these salts it often happens that one or more of them are not on hand in sufficient quantity, or that the hypophosphites of potassium or sodium have deliquesced beyond the possibility of weighing them.

When I was with Noyes Bros. & Cutler, it occurred to me that a formula might be devised for making such syrups by taking advantage of the fact that these hypophosphites are all readily made from the calcium hypophosphite. This conjecture proved to be correct, and I obtained permission from Mr. C. R. Noyes to publish the formula.

In explanation of the process, let me remind you that when a solution of calcium hypophosphite is mixed with a solution of sodium sulphate in equimolecular proportions, these salts interact with formation of sodium hypophosphite, which remains in solution, and calcium sulphate, which settles as a white precipitate, insoluble in the liquid. If we take in this way a solution containing potassium sulphate, manganese sulphate, sodium sulphate and iron tersulphate, and add it to a solution of calcium hypophosphite, the resulting solution will contain the hypophosphites of potassium, manganese, sodium and (ferric) iron, while the precipitate of calcium sulphate is separated by filtration.

An excess of calcium hypophosphite is added to be retained in solution as such, according to the dosage of calcium hypophosphite required by the formula, and a further excess of calcium hypophosphite is added for the purpose of producing the correct amount of hypophosphorous acid, by decomposition with a carefully calculated equivalent quantity of sulphuric acid. The resulting solution is rendered stable by acidifying it in this most natural way with the free hypophosphorous acid so formed.

The formula which I have calculated out along these lines for *Syrupus Hypophosphitum Compositus*, U. S. P., reads as follows:

Calcium Hypophosphite	67.80 gms.
Hot Distilled Water.....	400.00 cc.
Diluted Sulphuric Acid, U. S. P.....	2.20 cc.

Dissolve and add the following solution:

Potassium Sulphate	14.65 gms.
Sodium Sulphate	26.58 gms.
Solution of Ferric Sulphate.....	3.38 cc.
Manganese Sulphate	2.40 gms.
Hot Distilled Water.....	150.00 cc.

When mixed add a solution of:

Sodium Citrate	3.75 gms.
Hot Distilled Water.....	5.00 cc.

* Read before the Minnesota State Pharmaceutical Association.

Let stand over night, filter, then add:

Quinine Alkaloid	1.100 gms.
Strychnine Alkaloid	0.115 gms.

When dissolved, add:

Sugar	715.00 gms.
Distilled Water, q. s. to.....	1000.00 cc.

Dissolve sugar in cold water, strain through cotton and add water q. s. Keep in amber bottles.

A sample of the first batch of the syrup made from this formula, dated January 9, 1913, is here for your inspection, in the original bottle in which it was placed. You will notice that it is perfectly bright and clear, with an attractive yellow color. (Sample was exhibited by author at meeting.)

A few weeks ago I constructed a formula for making *Syrupus Hypophosphitum*, U. S. P., along similar lines, and am using the formula in my store:

Calcium Hypophosphite	70. gms.
Hot Distilled Water.....	450. cc.

Dissolve and add:

Diluted Sulphuric Acid, U. S. P.....	1.50 cc.
--------------------------------------	----------

When mixed, rub in a mortar with

Potassium Sulphate	12.50 gms.
Sodium Sulphate, dried.....	10.00 gms.

Let stand over night, filter, and in the filtrate dissolve, in the cold:

Sugar	650.00 gms.
-------------	-------------

Previously mixed with:

Tincture of fresh Lemon Peel.....	5.00 cc.
-----------------------------------	----------

Finally strain through cotton and add:

Distilled Water, q. s. to.....	1000.00 cc.
--------------------------------	-------------

Keep in amber bottles.

Although at first glance these formulas may appear to be more complex than those of the U. S. P., yet in practice they are easily worked, and they present the great advantage that the pharmacist needs to carry in stock for making these syrups only one hypophosphite, viz., calcium hypophosphite, which is the most stable, the most reliable and by far the cheapest of the hypophosphites. Without any preliminary practice, I am confident that you will be able to make your stocks of these two syrups by the litre or by the barrel, with satisfaction to yourselves, the physician and the patient.

IDEALS IN PHARMACY.*

THEODORE J. BRADLEY, DEAN OF THE MASSACHUSETTS COLLEGE OF PHARMACY.

As this is the day on which you receive your degrees and commence to be graduates in pharmacy it is an appropriate time for you to consider your future course, and I wish to call your attention to some of the conditions that confront the pharmacist today, and have you consider with me certain of the principles that should be adopted and followed by every pharmacist who is to achieve a success that shall be permanently satisfactory to himself.

* An address given at the 1915 Commencement Exercises of the Albany College of Pharmacy.