

This solution was then stored under the usual conditions in 1-oz. prescription bottles, portions of the solutions also being placed in the electric oven at approximately 50° C. In addition, 8-oz. bottles of the concentrated preparation were stored under the usual conditions and at the end of each month, 1 fl. oz. of the concentrate was diluted with an equal volume of distilled water and stored for comparison with a control sample. Data follow in Table III.

TABLE III.—THE EFFECT OF DOUBLING THE CONCENTRATION OF ALL INGREDIENTS IN SOLUTION OF IRON AND AMMONIUM ACETATE.

Sample.	No. of Days before Ppt. Occurred.			
	Sunlight.	Diffused Light.	Darkness.	Oven.
U. S. P. Control	5	55	60	1
Concentrate	26	No ppt. 6 months	No ppt. 6 months	10

In addition, samples prepared by diluting the concentrate were fully as stable as freshly prepared control specimens, no difference being observed in any case between the times of precipitation.

It was concluded from the data in Table III, that a stable preparation can be prepared by doubling the quantities of active ingredients in Solution of Iron and Ammonium Acetate.

SUMMARY.

1. The deterioration of Basham's Mixture may be avoided by storing the solution at refrigerator temperature.
2. Basham's Mixture is very stable when prepared double strength; this concentrated preparation may be diluted to double its volume with distilled water just before it is dispensed.
3. The stability of Basham's Mixture may be improved by increasing the proportion of acetic acid or by the addition of alkali, but since these changes would alter the product somewhat, they are not considered as practical as the methods listed under 1 and 2.

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ANALYSIS OF MAGNESIUM CARBONATE.*

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Samples of Magnesium Carbonate were obtained from eight sources. These were subjected to routine analysis to discover how closely they compared, particularly as to MgO content and to find out how wide a range existed. Also to

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discover if the various samples conformed to the U. S. P. requirement as to limit of CaO. The results of the analysis are given in the following table:

TABLE I.

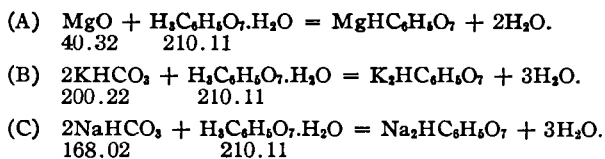
Samples.	% MgO.	% CO ₂ .	% H ₂ O.	% Al and Fe.		% CaO.
1	41.89	29.70	27.52	T	T	0.51
2	46.90	39.50	12.00	T	T	0.58
3	46.90	36.30	16.00	T	T	0.50
4	42.08	35.50	22.10	T	T	0.16
5	43.90	35.80	20.00	T	T	0.01
6	48.50	39.60	11.20	T	T	0.42
7	41.80	36.95	20.12	T	T	0.43
8	48.35	36.44	14.30	T	T	0.41

As shown in Table I, the samples analyzed have an MgO content ranging from 41.80% to 48.50% while the CaO content for all samples is well within the limit (0.80%) set by the U. S. P. X. The Al and Fe contents are negligible.

The foregoing results are of interest and importance when we consider the U. S. P. X formula for Solution of Magnesium Citrate:

Magnesium Carbonate.....	15.00 Gm.
Citric Acid.....	35.00 Gm.
Syrup.....	60.00 cc.
Purified Talc.....	5.00 Gm.
Oil of Lemon.....	0.10 cc.
Potassium Bicarbonate.....	2.50 Gm.
or, Sodium Bicarbonate.....	2.10 Gm.
Distilled Water, a sufficient quantity to make.....	350.00 cc.

On the basis of the following equations we can compute the quantity of Citric Acid to be used in the preparation of Solution of Magnesium Citrate, assuming that we wish to obtain MgHC₆H₅O₇ as the active agent in the finished solution.



Thus, by using the calculated factors the amount of Citric Acid necessary for a given sample of Magnesium Carbonate can easily be computed.

$$(A) \quad \frac{210.11}{40.32} = 5.2110 \text{ factor for MgO.}$$

$$(B) \quad \frac{210.11}{200.22} = 1.0493 \text{ factor for KHCO}_3.$$

$$(C) \quad \frac{210.11}{168.02} = 1.2505 \text{ factor for NaHCO}_3.$$

EXAMPLE: For a Magnesium Carbonate of 48.5% MgO content:
 $15 \times 0.485 \times 5.211 = 37.91$ Gm. H₃C₆H₅O₇·H₂O is required.

The following table shows the results of similar calculations applied to all samples analyzed; also the total amount of H₃C₆H₅O₇·H₂O required for both Magnesium Carbonate and NaHCO₃ or KHCO₃. The amount necessary for the latter two substances is, of course, a constant, *i. e.*, 2.62 Gm.

TABLE II.

Sample No.	Amount of $\text{H}_3\text{C}_6\text{H}_5\text{O}_7 \cdot \text{H}_2\text{O}$ for Magnesium Carbonate, Gm.	Amount $\text{H}_3\text{C}_6\text{H}_5\text{O}_7 \cdot \text{H}_2\text{O}$ Required for Either KHCO_3 or NaHCO_3 , Gm.	Total Amount Required, Gm.
1	32.74	2.62	35.36
2	36.66	2.62	39.28
3	36.66	2.62	39.28
4	32.89	2.62	35.51
5	34.31	2.62	36.93
6	37.91	2.62	40.53
7	32.67	2.62	35.29
8	37.79	2.62	40.41

Table II reveals: (a) that for all of the samples analyzed the amount of Citric Acid in the U. S. P. formula is insufficient, assuming, of course, that $\text{MgHC}_6\text{H}_5\text{O}_7$ and either $\text{K}_2\text{HC}_6\text{H}_5\text{O}_7$ or $\text{Na}_2\text{HC}_6\text{H}_5\text{O}_7$ are desired as reaction products; (b) that in some cases, *i. e.* (2, 3, 6 and 8), the insufficiency is quite appreciable.

The results also assume NaHCO_3 and KHCO_3 as 100% pure, which, of course, is not true. The totals are, therefore, close approximations. No provision has been made for the slight amount of CaO .

It would seem then that the formula for Solution of Magnesium Citrate should be more flexible, *i. e.*, provide for varying proportions of Citric Acid proportional to the MgO content of the Magnesium Carbonate used.

It is well known that Solution of Magnesium Citrate precipitates upon standing. As one chemist recently stated, "Some batches have stood up for three years; others have precipitated in three weeks."

Pasteurization at 60°C . for one hour retards precipitation, but does not prevent it. Possibly better dispersion is thus effected.

It is logical to believe that when Magnesium Carbonate, high in MgO is used, precipitation will take place more quickly and in greater quantity.

It would be good Pharmacy to first analyze the Magnesium Carbonate, calculate the amount of $\text{H}_3\text{C}_6\text{H}_5\text{O}_7 \cdot \text{H}_2\text{O}$ necessary, and then *q. s.* to a volume such that the preparation will contain just slightly more than 1.5 Gm. MgO per 100 cc.

A product more uniform from the standpoint of chemical composition (qualitatively and quantitatively) and physiological action would thus be obtained.

A SUGGESTED FORMULA FOR WHITE LINIMENT.*

BY LAWRENCE H. BALDINGER.

From time to time different formulas have appeared in the pharmacy journals for a product known commonly as *White Liniment*. This liniment should not be confused with *Linimentum Terebinthinæ Aceticum*, *N. F. V*, known also as *Linimentum Album*. The *White Liniments* being manufactured by a number of pharmaceutical houses at present appear to be stable emulsions of fixed oils in which suitable stimulants and rubefacients have been dissolved.

White Liniment is often prepared extemporaneously by the pharmacist according to the following formula:

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