# SCIENTIFIC SECTION



## A MODIFIED ASSAY FOR SOLUTION OF MAGNESIUM CITRATE.*

BY W. F. REINDOLLAR AND H. E. CHANEY.

Although Solution of Magnesium Citrate has enjoyed official status since 1850, it was not until the appearance of the ninth decennial revision of the Pharmacopœia, in 1916, that an assay was provided. This assay, which is practically identical with the present one, is unsatisfactory in several respects. It requires evaporation of the solution to dryness and subsequent charring of the organic material prior to precipitating the magnesium. This is a cumbersome procedure and, unless extreme care is exercised, will be attended by loss of superheated particles which are ejected with explosive violence. Furthermore, a long period of standing followed by drying and ignition of the precipitate is directed, which greatly lengthens the time period required for a single determination.

Various suggestions have been made to simplify and shorten this procedure. Noteworthy is that of Mayer (1), verified by Haussmann (2), in which the original sample is diluted with distilled water and acidified, and precipitation is effected without recourse to a preliminary drying and charring. The practicability of this phase of the determination has been so thoroughly demonstrated that it has been accepted as part of the assay for solution of magnesium citrate in the forthcoming Pharmacopœia (3).

Recently J. P. Mehlig published a method (4) for determining magnesium as magnesium ammonium phosphate hexahydrate. The method involves the precipitation of this compound in the usual manner, its subsequent filtration and washing with dilute ammonium hydroxide, alcohol and ether on a Gooch crucible, drying in a desiccator for twenty minutes, and weighing. Compared with the ignition method this procedure, to quote the author, "is more rapid, less tedious, and more easily carried out, and there is no black residue." With a view to further simplifying the official assay a comparative study of this method and the Pharmacopœial determination was made. A dozen samples of solution of magnesium citrate, purchased in the open market and submitted to the Bureau of Chemistry during July and August were assayed by the U. S. P. XI procedure and by that of Mehlig. The results are tabulated on page 96.

### DISCUSSION OF RESULTS.

These results confirm the findings of Mehlig and demonstrate the applicability of his procedure to the official solution of magnesium citrate. Since there is no ignition, care must be observed to have the portion taken for analysis free from any insoluble extraneous material of an organic nature. If necessary filtration of the product must be resorted to. This was not found necessary for any of the samples examined.

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TABLE I.

| Sample. | MgO as $Mg_2P_2O_7$. | $MgNH_4PO_4.6H_2O$. | Deviation. |
|---|---|---|---|
| 4115 D | 1.529 | 1.543 | +0.014 |
| 4154 D | 1.542 | 1.546 | +0.004 |
| 4162 D | 1.566 | 1.563 | −0.003 |
| 4191 D | 1.689 | 1.695 | +0.006 |
| 4192 D | 1.739 | 1.732 | −0.007 |
| 4205 D | 1.533 | 1.540 | +0.007 |
| 4206 D | 1.515 | 1.519 | +0.004 |
| 4237 D | 1.585 | 1.575 | −0.010 |
| 4260 D | 1.825 | 1.840 | +0.015 |
| 4280 D | 1.600 | 1.610 | +0.010 |
| 4288 D | 1.872 | 1.875 | +0.003 |
| 4311 D | 1.552 | 1.561 | +0.009 |

SUMMARY.

A comparative study has been made of the U. S. P. XI and the magnesium ammonium phosphate hexahydrate methods in the assay of solution of magnesium citrate.

The latter has been found to be sufficiently accurate, and is more rapid, and less tedious than the official procedure.

REFERENCES.

(1) Mayer, J. L., JOUR. A. PH. A., 9, 253 (1920).
(2) Haussmann, H. W., *Am. J. Pharm.*, 103, 44 (1931).
(3) Page Proof, U. S. P. XI, page 218.
(4) Mehlig, J. P., *J. Chem. Ed.*, 12, 288 (1935).

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## A FURTHER NOTE ON THE STABILITY OF SODIUM SULPHITE.

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Reports have previously been made[1,2] on this subject and since quite a number of the specimens of sulphite are still in existence a final report is presented on their condition in March 1935. Some of these samples are twenty-three years old and none less than twenty-one years old. The final result is tabulated below and shows the condition of the samples after all these years of storage in a cupboard in the laboratory. Special comment is made in a few cases. Complete data on each sample may be had by reference to the original articles.

The method of assay used in 1935 was that of the U. S. P. IX, the same method originally used.

CONTENT OF $Na_2SO_3$.

| Manufacturer. | No. | Original. | 1914. | 1916. | 1935. | Container. |
|---|---|---|---|---|---|---|
| A | 2 | 90.80 | 91.40 | 90.89 | 91.03 | Paper |
| A | 4 | 90.80 | 90.84 | 89.50 | 80.09 | Glass |
| A[1] | 6 | 45.19 | 45.19 | 39.50 | 1.37 | Tin can |

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[1] *Druggists Circular*, 58, 8, 456 (Aug. 1914).

[2] *Ibid.*, 60, 7, 396 (July 1916).