

**Mercurous iodide : read before the British Pharmaceutical Conference in London, July 1900 / by Frederick B. Power.**

**Contributors**

Power, Frederick B. 1853-1927.  
Wellcome Chemical Research Laboratories.

**Publication/Creation**

London : Wellcome Chemical Research Laboratories, [1900]

**Persistent URL**

<https://wellcomecollection.org/works/hjp95yd2>



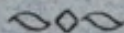
Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>

# MERCUROUS IODIDE

BY

FREDERICK B. POWER, PH.D.

[Read before the British Pharmaceutical Conference in London, July, 1900]



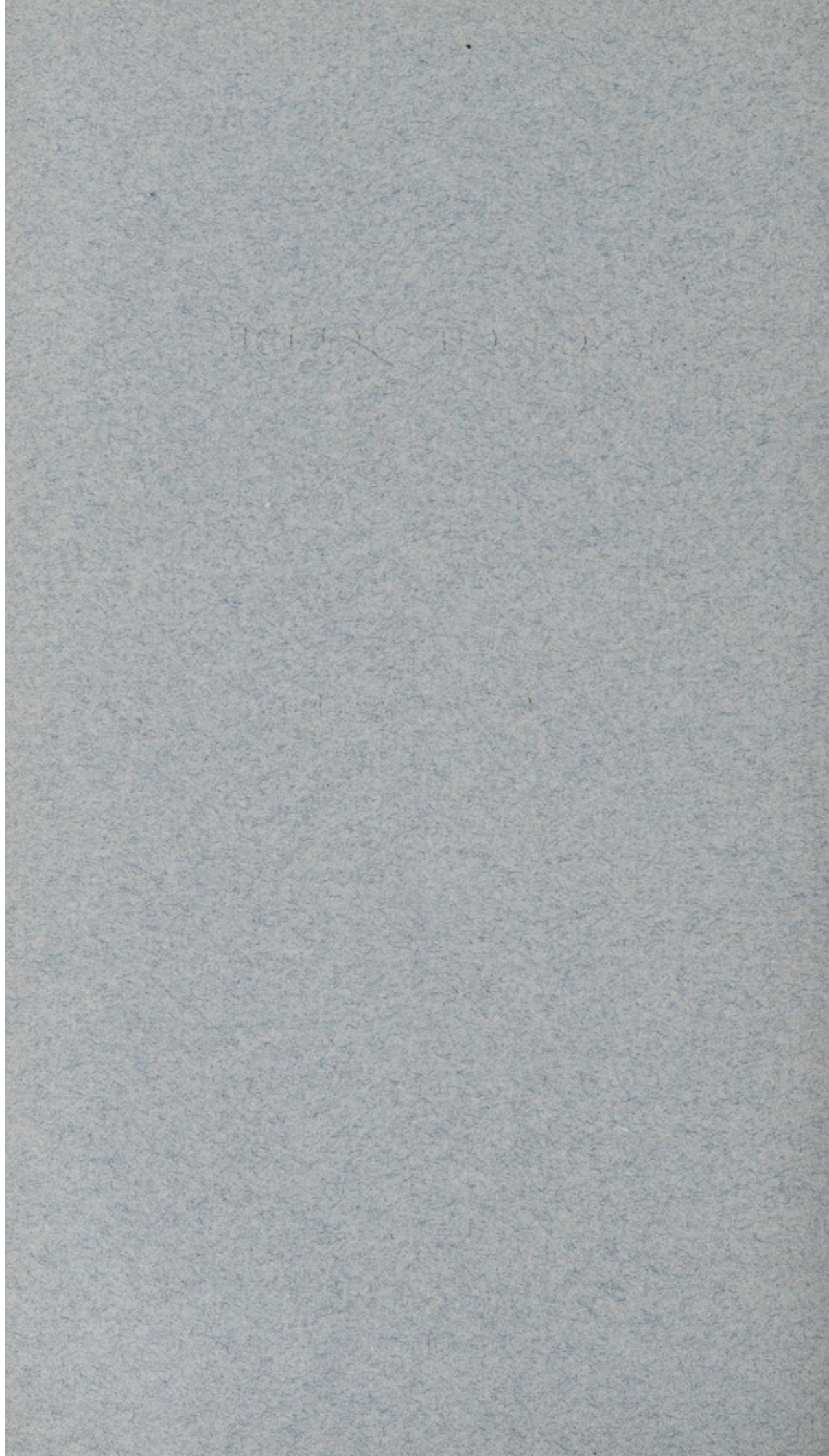
THE WELLCOME CHEMICAL RESEARCH LABORATORIES

FREDERICK B. POWER, PH.D., *Director*

6, King Street, Snow Hill

LONDON, E.C.







## MERCUROUS IODIDE.

By FREDERICK B. POWER, PH.D.

ALTHOUGH mercurous iodide is not recognised by the British Pharmacopœia, it is considerably used in this country, and has recently been brought somewhat more prominently to notice by a suggestion from a committee of Canadian pharmacists that the pure yellow iodide, obtained by the interaction of mercurous nitrate and potassium iodide, should be included in the Indian and Colonial Addendum of the Pharmacopœia (*Chemist and Druggist*, September, 1899, p. 448). The preparation recommended by the Committee is therefore that which was adopted by the U.S. Pharmacopœia of 1890, under the title of *Hydrargyri Iodidum Flavum*, but which had really been introduced into medicine some time previously by a New York firm of manufacturing chemists.

The method for the preparation of a pure precipitated mercurous iodide was proposed by Henry Maclagan in 1883 (*Proc. Amer. Pharm. Assoc.*, 1883, p. 209). He regarded the process then official in the United States and most of the other pharmacopœias, by triturating together mercury and iodine, as objectionable, particularly because of the invariable formation of red iodide, and the difficulty of removing the latter. Another more complete paper on the same subject was published by Maclagan in 1884 (*Proc. Amer. Pharm. Assoc.*, 1884, p. 442), in which he gave analyses of the pure and commercial iodide, proving that pure mercurous iodide has a bright yellow colour, and also disproving the existence of the so-called mercurioso-mercuric iodide. The fact that pure mercurous iodide, both in its crystallised and in its amorphous form, has a yellow colour, was likewise definitely established by A. Stroman, *Ber. d. deutsch. chem. Ges.*, 20, 1887, p. 2818 (see also *Pharm. Journ.*, January, 1898, p. 87). Further proof of the non-existence of a mercurioso-mercuric iodide,  $\text{Hg}_4\text{I}_6$ , which was first announced by Boullay, and has been stated by Schlagdenhauffen (*Amer. Journ. Pharm.*, 1877, p. 598) to be contained in ordinary mercurous iodide, when prepared either by trituration or precipitation, has recently been afforded by Francois (*Pharm. Journ.*, January, 1898, p. 68), who shows that the supposed compound is simply a mixture of the two iodides.

Edward Soetje (*Proc. Amer. Pharm. Assoc.*, 1888, p. 167) has also given a process for the preparation of pure mercurous iodide, but which was essentially the same as that proposed by Maclagan



and adopted by the U.S. Pharmacopœia. He washed the product only with water, and not finally with alcohol, as directed by the latter work, which does not seem to be necessary.

Ten years ago Messrs. William Martindale and W. H. Salter presented a paper to the Conference on the subject of "Hydrargyri Iodidum Viride for Medicinal Use" (*Pharm. Journ.*, September, 1890, p. 259), which was followed by quite an extended discussion. In this paper they refer to the accepted instability of the preparation formerly official in the British and German Pharmacopœias, and state:—"As there is still a considerable demand for it for medicinal use, our object has been to ascertain how far this stigma is deserved, and, if possible, to find a remedy for it." In commenting on a method proposed by Lefort (*Pharm. Journ.*, 1873, p. 823) for the preparation of mercurous iodide by precipitating a solution of mercurous acetate with potassium iodide in the presence of sodium pyrophosphate, the authors remark:—"We have not tried this process, because we have understood the product to be unstable; *it is, we fear, too pure to be stable.*"

Messrs. Martindale and Salter then consider that the difficulties experienced with this preparation may be best overcome by the use of a large excess of mercury, and they suggested a method for making a green iodide of mercury by the old process of trituration, but with the use of 25 per cent. more mercury than is theoretically required, so that about 13.2 per cent. of free mercury is contained in the finished product. The authors then arrive at the following general conclusions:—"The samples are not pure. If the preparations were again made official this could be recognised. But we hold that a green iodide of mercury can be so prepared, and with reasonable care it can be kept sufficiently stable and uniform in appearance for use in medicine. The instability of this preparation, we think, has been overestimated, as the amount of mercuric or red iodide found in the worst sample examined is insignificant, and we therefore consider that it has been condemned without just cause, as the dose, 1 to 3 grains, in the last (1867) B.P. was misleading and much too large,  $\frac{1}{6}$  to  $\frac{1}{2}$  grain being the dose usually given, and generally with good results. It is mild in action, and as a useful remedy we feel sure it will continue to be prescribed."

As previously stated, a pure, yellow mercurous iodide has been officially recognised by the U.S. Pharmacopœia since the 1890 revision, and in the meantime has been made on a large scale by chemical manufacturers and extensively employed in medical practice. So far as known to the writer, no observation has been recorded during this period as to its instability when properly



kept, nor of any untoward effects resulting from its use. In connection with these facts it was thought of interest at this time to obtain specimens of yellow mercurous iodide from some of the leading American manufacturers and to examine them for their purity, as they would represent products that have been kept for indefinite periods, and such as are constantly being supplied for medicinal use. In addition to these, analyses were made of a sample of mercurous iodide prepared by the writer according to the U.S. Pharmacopœia method, the product, however, being only washed with water, and of a sample made by the same method on a larger scale. For the purpose of comparison preparations were also made, by the process of trituration, according to the methods of the German Pharmacopœia Supplement, the French Codex, and the formula proposed by Messrs. Martindale and Salter.

Having ascertained that all the preparations were quite free from mercuric iodide, the amount of iodine or pure mercurous iodide contained in them was determined by the method employed by Messrs. Martindale and Salter, which was found to give accurate results.

About 0.5 to 0.8 gm. of the salt was accurately weighed into a small flask, and 5 gm. of pure granulated zinc and 10 c.c. of 36 per cent. acetic acid added. The flask was heated on a water-bath, and the liquid agitated occasionally until all the mercurous iodide had dissolved, which usually required about twenty minutes. The contents of the flask were then washed into a beaker, and a slight excess of silver nitrate solution added, together with about 1 c.c. of pure nitric acid, diluted with a little water. The liquid was then heated to boiling for a few minutes, and after the precipitate had completely subsided it was filtered off, washed, dried, and ignited.

The atomic weights employed in the calculations were as follows:  $Hg = 200.3$ ;  $Ag = 107.93$ ;  $I = 126.85$ .

The specimens examined may be designated as follows:—

(1) Prepared by the writer, according to the method of the U.S. Pharmacopœia, 1890.

(2) Prepared on a larger scale by the same method, and kept for over six months.

(3), (4), (5), (6). Specimens of yellow mercurous iodide obtained in original sealed packages from manufacturers in New York, Philadelphia, and St. Louis.

(7) Prepared, by trituration, according to the German Pharmacopœia Supplement. The proportions directed are 10 parts of iodine to 16 parts of mercury, the theoretical proportions for mercurous iodide being 10 parts of iodine to 15.79 parts of mercury. The Swiss Pharmacopœia also adopts the proportions of 10 to 16.



(8) Prepared, by trituration, according to the French Codex, but without extracting the product with boiling alcohol. The proportions directed are 10 parts of iodine to 16.66 parts of mercury.

(9) Prepared, by trituration, according to the method of Messrs. Martindale and Salter, with the proportions of 10 parts of iodine to 19.67 parts of mercury. This preparation is of a decidedly greenish colour, that of the French Codex being also greenish, while the German is described as greenish-yellow, but is really a dull yellow. The intensity of the green colour is naturally dependent upon the relative proportions or excess of mercury employed.

The following table presents a résumé of the analytical results obtained:—

No.	Weight of Salt Taken.	Weight of AgI Found.	Percentage of Iodine.	Percentage of $\text{Hg}_2\text{I}_2$ .
			Calculated for $\text{Hg}_2\text{I}_2$ 38.77.	
(1)	0.8478	0.6102	38.88	
(2)	0.6646	0.4708	38.27	
(3)	0.5514	0.3902	38.23	
(4)	0.5056	0.3588	38.34	
(5)	0.5282	0.3862	39.50	
(6)	0.4856	0.3438	38.25	
(7)	0.6446	0.4484	37.58	96.92
(8)	0.8884	0.6024	36.63	94.47
(9)	0.6238	0.3788	32.80	84.60

When tested according to the U.S. Pharmacopœia for mercuric iodide all the commercial samples, as well as the other preparations, were found to be quite free from this contamination, with the single exception of No. 5, which contained slight traces of it. This specimen was contained in a white glass bottle, and had apparently become somewhat altered by exposure.

These results indicate that precipitated mercurous iodide is quite uniform in composition, and also sufficiently stable when properly protected. The evidence that has thus far been obtained from its therapeutic use is also of a satisfactory character. It is naturally for the therapist to decide whether a mercurous iodide containing more or less free mercury is preferable to the pure salt for medicinal use, but the facts now available would appear to thoroughly justify the suggestion of the Canadian committee that the pure yellow iodide should be adopted in the proposed Indian and Colonial Addendum of the Pharmacopœia.

THE WELLCOME CHEMICAL RESEARCH LABORATORIES.







