

I am convinced by the results that I have been shown and have personally observed that profit-sharing is the quickest, the most economical, the surest and most effective method of converting the indifferent, thoughtless employee to a keenly interested, active co-partner in the business.

A NEW ANTIDOTE FOR CORROSIVE SUBLIMATE POISONING.

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With the publicity attending a fatal case of corrosive sublimate poisoning of a Southern banker a few months ago and as usually obtains, following the detailed description of such events in the daily press, a marked increase in the use of that poison for suicidal purposes, the thought must have occurred to many, how best to divert the public attention from this poison and what is an effective antidote.

It is not for us to discuss the *surgical* methods used in a few cases *after* the poison has entered the circulation, but what can be done at the outset in the way of mechanical relief by means of the stomach pump and emesis, the administration of albumen and mucilages or oils to retard the absorption in the stomach and intestines.

These general points will all occur to the good practitioner but he wants something else on which he can rely as an antidote. Studying over these matters, about a year ago, an idea came to me that by using one of the general alkaloidal reagents in reverse manner, we could solve the problem.

Obviously whatever was tried, should be safe in itself, and not make a bad matter worse, and also the employment of medicines beneficial in themselves, even if they failed in attaining the special object desired.

With such limitations I settled on the well-known *Mayers' Reagent* which as you all know, is a solution of *Mercuric Potassium Iodide* a general precipitant of the alkaloids. Selecting *Quinine* as the alkaloid to harness, I considered if we could administer the requisite potassium iodide and quinine in solution, after emptying the stomach, we could fill out *Mayers' formula* and the result would be (Mercuric Chloride—Potassium Iodide—Quinine Salt) insoluble in the acid gastric juice, and, as will be shown later, insoluble in the dilute alkaline intestinal liquids as certainly as we can tell from bottle reactions. While all my work was done in *Grammes*, the results, excepting *Mayers' formula* itself are given in *Grains*—the more popular term.

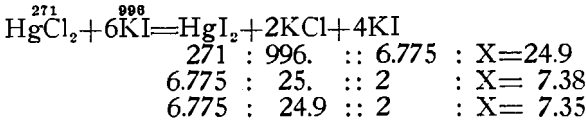
Mayers' reagent N1—20 is

Mercuric Chloride	6.775 grammes
Potassium Iodide	25.000 grammes
Distilled water to make 1 Litre.	

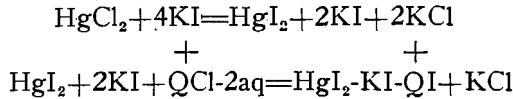
(You will notice the HgCl₂ to KI is about 1 to 3.75)

1 cc. Mayers' reagent N1—20 = .006775 Mercuric Chloride, .025 Potassium Iodide, and precipitates (approx) .0056 Quinine, gravimetric factor for alkaloid (average, *Lyons*) .311.

It is stated by authorities (U. S. D.) that Mayers' solution is HgI_2+2KI but on the basis of his proportions it would seem to be HgI_2+4KI .



and the formula seems to provide a slight excess of potassium iodide



corresponding to

MODIFIED MAYERS'

Mercuric Chloride	2.	grains
Potass. Iodide	4.9	grains
Quin. Muriat	4.	grains (2.91)

Slower in precipitating the quinine, than Mayers' which in *grains* would call for

MAYER.

Mercuric Chloride	2.	grains
Potass. Iodide	7.5	grains
Quin. Muriat	4.	grains (2.91)

The filtrates in both cases were free from mercury (H_2S or K_2S). The *modified* Mayer filtrate showed very *slight* test for iodine (HNO_3 +chloroform). Filtrate from *Mayer* tested a little stronger but still slight.

In both equations however, there is no appreciable solvent action of the potassium iodide in solution on the precipitate which in Mayers' was 6.64 grains

Modified Mayers' 4.00 grains.

Choosing quinine hydrochlorate because of its solubility, the following formula was constructed:

Mercuric Chloride	2	grains
Dissolved in H_2O	2	ounces
Potassium Iodide	7.5	grains
Quinine hydrochlorate (large excess)	20	grains
Hydrochloric acid 10%	55	minims
Dissolved in H_2O	4	ounces

Mix the two solutions which you observe contain acid to make the whole $2/10$ of 1% and filter after two hours on a tared filter. Wash and dry to constant weight on the water bath.

Weight dried precipitate	6.64	grains
Duplicate	6.625	grains

To determine if a small excess of potassium iodide in presence of quinine muriate has an appreciable solvent action on the precipitate trial was made using

Mercuric Chloride	1	grain
Potassium Iodide	7.5	grain
Quinine Muriate	4	grain

Net weight of precipitate dried on water bath to constant weight

.210 gramme=3.24 grains

which is practically the same proportion and answers the question in the negative.

Filtrate evaporated to dryness in tared dish on water bath 16.4 grains. Using

the gravimetric factor .311 (Lyons) for the *Alkaloid* and calculating the salt from that, the p. p. 6.64 grains=originally 2.54 Qcl.

Residue from filtrate	16.4	grains
Deduct KCl (1 mol.)553	grains
Deduct KI (excess)15	grains
	15.697	grains
Add water of crystallization.	1.57	grains
	20.—17.267=2.733 grains	

Two grains Mercuric Chloride then in acid solution was precipitated as an insoluble mass by (2.54 grs. QHCl+7.5 grs.) Potass. Iodide in aqueous solution.

Calculated from residue of filtrate.....	2.733	grs.
Theoretically from above formula.....	2.91	grs.

Gm. .200 of the alkaloidal precipitate was rubbed up with 250 cc. 2/10 of 1% Na₂CO₃ solution, shaken vigorously at frequent intervals for several hours, filtered and residue on tared filter evaporated to dryness on water bath.

Weight of residueGm. .180

showing the maximum solvent action of the dilute alkali to have been 20 m. g. or less than 1/3 grain. As some of the Mercuric Antiseptic tablets on the market contain 1/3 of citric acid the action of that acid was considered, in presence of mercuric chloride on albumen solutions and also on the antidote described in this paper.

With the *antidote* no hindrance, but rather a more complete precipitation was noted.

With *albumen* solutions the following reactions were observed:

SOLUTION OF ALBUMEN is precipitated by HgCl₂ but this is prevented if an appreciable amount of citric acid is previously added to the mercury solution.

Mercuric Chloride+HCl (1%) is precipitated by albumen, insoluble in excess of HCl and practically insoluble in citric acid (large excess.)

Mercuric Chloride+Citric Acid is *not* precipitated by *albumen* except in rather large excess, but on further addition of dilute HCl (1%) a copious precipitate occurs. In case you have added a large excess of albumen there is no mercuric salt in the filtrate (H₂S.)

ALBUMEN (in excess) acidulated with 1% HCl remains clear; but on further addition of 1% Mercuric Chloride solution a heavy precipitate falls. The filtrate shows a faint yellow coloration with H₂S but no p. p. even on standing.

MERCURIC CHLORIDE (1%)+H Cl (1%)=No p. p. On further addition of albumen a heavy precipitate unchanged by adding H Cl in excess.

MERCURIC CHLORIDE+ALBUMEN in excess a light precipitate partially soluble *at first* in H Cl but precipitating again shortly.

MERCURIC CHLORIDE +CITRIC ACID is not precipitated at first, but by adding ALBUMEN in large excess a precipitate falls and on further addition of H Cl a copious precipitate falls. No *mercury* in filtrate.

To sum up:—Remove the stomach contents as thoroughly as possible, give plenty white of eggs and remove in the best way, wash out the stomach thoroughly,

then for every two (2) grains of Mercuric Chloride supposed to have been taken, administer the following:

Potassium Iodide	7.35 grains
Quinine Hydrochlorate	4. grains
Dissolved in water	4 ounces

For 10 grains Mercuric Chloride:

Potassium Iodide.....	36.75 grains
Quinine Hydrochlorate.....	20.00 grains
Distilled Water.....	4 ounces
Hydrochloric Acid (10%).....	m. 45

It forms a precipitate with the Mercuric Chloride, insoluble in dilute acids or alkali carbonates (.2%). While investigating these reactions I found another equation using 4.9 grains potassium iodide would work, but the precipitation is not so rapid or complete, nor does the precipitate separate as quickly, *an important point*.

A solution could be kept on hand ready for use of the formula above, with the addition of H Cl to make it 2/10 of 1%.

The study and analyses of the subject are somewhat intricate and perplexing, especially as to the composition of the precipitate with Mayer's reagent but the results for our purpose seem clear, well defined and simple. The well known chemicals, Quinine Muriate and Potassium Iodide are obtainable at any good drug store and with the proportions given, good results may be expected in accordance with my tests. A notable *excess* of the *iodide* is to be *avoided*, an excess of quinine does no harm but the proportions given should be followed.

It is to be hoped that these suggestions of the writer will be tried physiologically, and medical men use the results given in this paper to help solve a serious problem.

PYORRHŒA CURED BY EMETINE.

It is stated that an amœba has been found in the mouth lesions of subjects suffering from pyorrhœa; Barrett and Smith, of Philadelphia, consider this to be the cause of the disease. The local application of emetine hydrochloride solution is stated to have successfully cured the disease. Bass and Johns, of New Orleans, have confirmed the presence of this amœboid organism in cases of pyorrhœa, which is named *Entamœba buccalis*. They also find that emetine hydrochloride has a valuable curative action, and prescribe it in the form of hypodermic injections into the arm, in half-grain doses, at first once daily for three successive days, then every fourth day, finally every seventh day, until the gums have healed and the teeth again become firm. Local application of the solution should be made simultaneously.—*Nat. Drugg.*, 1914, 44, 522.