

IODINE IN LIQUID PETROLATUM.*

BY A. H. CLARK.

Of all the things used in medicine nothing seems to have attracted the attention of all classes of users as has iodine. Perhaps more romantic schemes for the cure of all the ills which afflict mankind have centered in iodine therapy than in any other one drug. Iodine is being used in every conceivable way from crystals to colloid; in vapor; combined as iodide, iodate and the like; organic, inorganic, simple and complex; internal, external and by injection, and yet there seems to be no end to the ingenious schemes for its exploitation.

One of these schemes, and one so simple that it seems at first sight to be hardly worth serious consideration, is that of a solution of iodine in liquid petrolatum. Solutions of this kind have frequently been offered to physicians and the laity. The thing of particular interest is the claim made as to the percent free iodine. Five percent is frequently claimed. Examination of some of these products in the Chemical Laboratory of the A. M. A.¹ revealed the fact that they did not contain the claimed amount of free iodine. These questions at once arose: Was the low free iodine content due to intentional fraud, the result of carelessness, or ignorance? Was it impossible to prepare a solution containing five percent, or did the iodine slowly combine with the oil and disappear?

The A. M. A. Chemical Laboratory² conducted some experiments on the solubility of iodine in liquid petrolatum, which indicated that a saturated solution would contain about 1.4 percent. These experiments did not show conclusively that no iodine was absorbed during the process of solution.

For this reason, further experiments were conducted with the view of determining both the solubility in and extent to which iodine is absorbed (disappears as free iodine), if at all, by liquid petrolatums of various kinds. Theoretically such hydrocarbons should not absorb iodine. The results of these experiments are here given.

A sample of iodine was prepared by sublimation from a mixture with potassium iodide. This sample when dried over sulphuric acid assayed 99.98 percent iodine. Portions of this sample were used in all the subsequent experiments.

To prepare solutions of definite concentrations, in all cases expressed as percent by weight, an accurately weighed quantity of iodine was placed in a glass-stoppered bottle and an accurately weighed quantity of liquid petrolatum added. The mixture was subjected to treatment as indicated in the various experiments and from the weights of iodine and petrolatum used the percent of iodine was calculated.

The method of assay employed was: A weighed quantity of the iodine solution was transferred to a bottle or flask by means of several small amounts of chloroform, about 50 Cc. in all. To this was added about 25 Cc. potassium iodide solution. The mixture was then titrated with tenth-normal sodium thiosulphate until on thorough shaking no iodine passed into the aqueous layer.

To 2.1248 Gm. iodine was added 199.3 Gm. liquid petrolatum. The mixture

* Contribution from the Chemical Laboratory of the American Medical Association.

¹ Annual Rep. of the Chem. Lab. A. M. A., 1915, p. 106; *Ibid.*, 1917, p. 87.

² *Ibid.*, 1910, p. 88.

was shaken frequently each day and after forty days there seemed to be still a few particles of iodine undissolved. The supernatant solution was assayed, however, and found to contain 1.038 percent iodine. The iodine added was 1.055 percent. Six months later 1.025 percent iodine was found.

To 5.1832 Gm. of iodine was added 199.5 Gm. liquid petrolatum. The mixture was heated to 100° C. for four hours shaking frequently. The iodine was in perfect solution. The percent iodine would then be 4.95. Upon cooling, iodine in abundance crystallized out. After standing a few hours, with frequent shaking, the iodine in solution was determined. This was found to be 1.425 percent.

These two experiments indicate: First, that the previous findings of the A. M. A. Chemical Laboratory are correct in that only about 1.4 percent free iodine is retained in solution in liquid petrolatum at room temperature. Second, that the quantity of iodine absorbed by liquid petrolatum at room temperature, in seven months at least, is practically none. Third, that iodine dissolves rather slowly in liquid petrolatum at room temperature.

In the experiments, the results of which are tabulated below, the iodine and liquid petrolatum were heated at 100° for about four hours, shaking frequently to hasten solution. After cooling they were assayed, and again assayed at intervals as indicated in the table.

Kind of liquid petrolatum used.	Date of manufacture and first assay.	Iodine weighed.	Petrolatum weighed.	Percent iodine used.	Percent iodine found.	Percent iodine Nov. 17, 1918.	Percent iodine May 19, 1919.
Stanolind.	10, 17, 18	2.089	188.4	1.096	1.085	1.068	1.067
Squibb.	10, 14, 18	1.9569	186.78	1.0306	1.0232	1.013	1.009
Unknown, bulk*. . .	10, 28, 18	1.9497	158.2	1.225	1.133	1.075	1.095
Parke, Davis & Co.	10, 24, 18	2.0869	167.43	1.241	1.2488	1.191	1.180

* Considerable dark sediment formed in this sample during the heating process.

† It should be pointed out here that while every sample showed some absorption, the amount, with the exception of the unknown bulk, is so small that it might even be accounted for on the basis of "experimental error." Every ordinary precaution was taken to insure accuracy, but since about 15 Gm. of the solution was used for each determination, it is seen that an error of 0.3 Cc. in the titration would indicate a greater absorption of iodine than that noted.

Conclusions: These experiments show:

A solution of iodine in liquid petrolatum is saturated when it contains about 1.4 percent iodine.

The amount of iodine absorbed (disappearing as free iodine) by liquid petrolatum, when in contact at room temperature for as long as seven months, or in contact at 100° C. for four hours, or both, is relatively insignificant. Also all the absorption seems to take place during the heating and in the first month of contact.

DICHLORAMIN-T AND PETROLATUM DRESSING FOR BURNS.*

BY TORALD SOLLMANN, M.D.

Dichloramin-T as a wound antiseptic has the very real advantage of furnishing a continuous supply of the antiseptic agent, securing a continuous action over

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