the object of dislodging the adherent crystals of monobromated camphor, the assays indicating that the encrustation of crystals represented 1.9 and 1.8%, respectively, of the total monobromated camphor content of the tablets. These experiments point out the possible effect of attrition in tending to lower the monobromated camphor content of tablets encrusted with this substance.

Since this substance is frequently employed in medicinal tablets and shows a certain degree of volatility which is manifested even at room temperature the effect of this tendency to volatilize, upon the content of this ingredient in compressed medicinal tablets, deserves consideration. Various batches of compressed compound medicinal tablets made to contain 0.5 grain of monobromated camphor along with several other medicinal ingredients when stored in cork-stoppered, flint-glass bottles in a dark closet for 1 year were moderately encrusted with glistening crystals of monobromated camphor at the end of the storage period and showed losses of from 3 to 9% of their content of monobromated camphor in that length of time. One sample from a partially-filled container showed a loss of 9.8%. On the average this type of tablet was found to lose around 5% of its monobromated camphor content in one year's storage under normal conditions, due to volatilization and to loss of crystals of monobromated camphor from the slight encrustation through unavoidable attrition.

While the loss of this substance which may be sustained by tablets when kept with reasonable care would probably be of little therapeutic significance, yet where the tablets are subjected to unsatisfactory conditions, such as exposure to direct sunlight, storage in an excessively warm location, undue attrition or exposure to air currents through neglecting to replace the stopper of the container, the loss may become serious.

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A STUDY OF THE DARKENING OF COD LIVER OIL IN THE PRESENCE OF IRON.*

BY A. E. BRIOD AND W. G. CHRISTIANSEN.

When poultry cod liver oil is handled in iron drums, the oil frequently darkens upon aging, and in order to study this change an extensive series of observation and analytical experiments was set up so as to include (*a*) the condition of the oil and (*b*) the contact with the iron surfaces. A typical sample of market poultry oil was used; *firstly*, in its original condition; *secondly*, after clarification through ordinary filter paper; *thirdly*, after drying the clarified oil, and *fourthly*, after alkali refining and drying the clarified oil. Each of these four types of oil was stored under four conditions: (*a*) without the presence of iron; (*b*) in contact with iron so that iron surface is 11.6 sq. cm. per 100 cc. of oil; (*c*) as in (*b*) except that the surface exposed is 116 sq. cm. per 100 cc. of oil, and (*d*) as in (*b*) except that part of the iron surface is above the level of the oil—in (*b*) and (*c*) the iron was completely immersed in the oil. The sheet iron used in this work was pickled prior to use. The results of this study are presented in the following table:

* Scientific Section, A. PH. A., Baltimore meeting 1930.—No discussion.

TABLE I.

Exp. No.	Type of oil.	Contact with iron sq. cm./100 cc. oil.	Original Condition of Oil. Moisture.	Acidity.	Iron content pts./ million.	Color Lovibond units.	Color, after 3 months.	Color change.	Iron content pts./ million.	Change in iron pts./ million.
1	As received	None	0.10%	1.25%	29	35Y 9.5R	35Y 13.2R	3.7R	...	...
2	As received	11.6	0.10	1.25	29	35Y 9.5R	35Y 13.5	4.0R	...	...
3	As received	1.16	0.10	1.25	29	35Y 9.5R	35Y 23.0	13.5R	187	+157
4	As received	1.16 (iron partly exposed)	0.10	1.25	29	35Y 9.5R	35Y 15.0	5.5R	74	+ 45
5	Clarified	None	0.07	1.20	15	35Y 9.5R	35Y 9.8R	0.3R	12	− 3
6	Clarified	11.6	0.07	1.20	15	35Y 9.5R	35Y 14.1	4.6R	25	+ 10
7	Clarified	11.6	0.07	1.20	15	35Y 9.5R	35Y 15.7	6.2R	28	+ 13
8	Clarified	11.6 (iron partly exposed)	0.07	1.20	15	35Y 9.5R	35Y 15.1	5.6R	...	...
9	Clarified and dried	None	0.012	1.15	17	35Y 9.3R	35Y 10.0R	0.7R	...	...
10	Clarified and dried	11.6	0.012	1.15	17	35Y 9.3R	35Y 10.5	1.2R	12	− 5
11	Clarified and dried	11.6	0.012	1.15	17	35Y 0.3R	35Y 12.0	2.7R	19	+ 2
12	Clarified and dried	11.6 (iron partly exposed)	0.012	1.15	17	35Y 9.3R	35Y 12.5	3.2R	...	...
13	Clarified, refined and dried	None	0.017	0.03	14	28Y 2.6R	28 2.3R	−0.3R	...	...
14	Clarified, refined and dried	11.6	0.017	0.03	14	28Y 2.6R	30 2.5	2Y −0.3R	8	− 6
15	Clarified, refined and dried	11.6	0.017	0.03	14	28Y 2.6R	35 3.0	7Y 0.4R	9	− 5
16	Clarified, refined and dried	11.6 (partly exposed)	0.017	0.03	14	28Y 2.6R	30 3.5	2Y 0.9R	..	...

It is evident from the above results that dehydration without removing the fatty acids retards the darking and prevents any increase in the iron content of the oil when the latter is stored in contact with iron. If, in addition to being dried the oil is alkali refined, the rate of color change is still further decreased. Probably the dehydration is the more important factor, because when the moisture is removed the acid in the oil loses some ability to attack the iron. If the acid were removed without any dehydration, it is likely that acidity would redevelop and the corrosion and color change would proceed as in an oil which has merely been clarified.

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