

Available Cl ₂	5.35
Available Cl ₂ calculated as dry mass.....	29.98
Available Cl ₂ dry mass found.....	17.96
Available Cl ₂ loss on drying.....	12.02

The moist material was kept in a tightly closed vessel. After a lapse of two weeks the contents were analyzed for the available chlorine.

	Percentage.
Available Cl ₂ at the beginning.....	5.35
Available Cl ₂ after two weeks.....	3.67
Available Cl ₂ loss on standing.....	1.68

SUMMARY.

Dry chlorinated zinc compounds have been prepared with an available chlorine content of 16.4% and 17.96%, respectively.

Moist chlorinated zinc compounds lose their available chlorine content at an appreciable rate.

In the presence of OH⁻, the chlorination produces a mixture of larger available chlorine content.

Pure zinc hypochlorite should be an important therapeutic agent, that may be of service in the treatment of certain diseases of the eyes. The advantages of this chemical are manifold, since it possesses the combined oxidizing and anti-septic properties of the OCl⁻ and the astringent property of the Zn⁺⁺.

At a later date, work on this investigation will be resumed.

REFERENCES.

1. *Z. Ch. Ind.*, v. 8, 1885, p. 337. C. 1886, p. 57.
2. B. 47, p. 2233.
3. D. R. P. 188,521. C. 1907, II, p. 1950.
4. D. R. P. 195,896. C. 1908, I, p. 1109.
5. Gmelin-Kraut, "Handbuch der Chemie;" Moissan, "Traite de chemie."

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THE ANALYSIS OF TINCTURE OF SWEET ORANGE PEEL.

BY FRANK A. LEE.

Recently we had occasion to examine samples of so-called "Tincture of Sweet Orange Peel U. S. P.," to determine whether or not these were as labeled. The State Drug Inspector suspected that they were made from dried orange peel, rather than the peel grated from the fresh fruit, as directed by the U. S. P., and were intended primarily to be consumed as beverages. In the drying of the orange peel, practically all of the oil is lost. The samples of the tincture gave little or no precipitation on the addition of water; the taste was not bitter as would be expected. In view of the fact that the alcohol used as a menstruum for such purposes runs about 5% water, and considering the moisture content of the grated rinds of fresh oranges, the alcohol present should presumably be about 70 or 75%. Our results as tabulated below tend to confirm this assumption. The labels of the tinctures submitted stated alcohol content 85%. The most important index of purity should be the amount of orange oil present and, secondly, the amount of alcohol.

These results were obtained from samples prepared according to U. S. P. IX,¹

¹ U. S. P. IX, p. 447.

and analyzed for total orange oil¹ and alcohol.² It might be added here, that the taste of all samples prepared according to U. S. P. directions was extremely bitter and a heavy yellow cloudiness resulted on the addition of water. The taste alone of the pure tincture would prevent its being used as a beverage.

TABLE I.

Date of Purchase.	Kind.	Orange oil %.	Alcohol %.	Alcohol Menstruum %.	Diameter.	Color.	Skin.	Remarks.
	Navel	1.10	...	...	.....	Deep	Thick	.....
4/28/23	Navel	1.10	67.60	...	.....	Deep	Thick	.....
5/2/23	Navel	1.60	68.43	92.75	.....	Deep	Thick	.....
								Brown
5/22/23	Val.*	1.85	72.01	92.75	2½ in.	Light	Thin	Patches
5/22/23	Navel	1.30	68.00	93.50	3 in.	Deep	Thick	.....
5/22/23	Navel	1.25	70.00	92.75	2¼ in.	Deep	Thick	.....
6/1/23	Val.*	1.50	75.00	94.63	1-2 in.	Varied	Thin	.....
								Mod.
6/1/23	Val.*	2.35	70.80	94.63	2¼ in.	Deep	Thick	.....
								Mod.
6/1/23	Val.*	2.15	70.95	94.63	2¾ in.	Deep	Thick	.....
								Mod.
6/13/23	Val.*	2.00	68.86	94.25	2⅝ in.	Light	Thick	Spots on surface
6/13/23	Navel	1.60	68.86	94.25	3 in.	Deep	Thick	.....
6/13/23	Val.*	2.60	70.19	94.25	1¾-2¼ in.	Light	Thin	Some spots
								Mod.
								Brown
10/4/23	Val.*	2.50	70.00	94.25	2½ in.	Deep	Thick	Spots
10/4/23	Val.*	2.90	71.40	94.25	2⅝ in.	Varied	Thin	Spotted
12/11/23	Japanese	1.10	68.27	94.25	2½ × 1¾ in.	Deep	Normal	.....

* Valencia oranges.

TABLE II.—ANALYSIS OF SAMPLES FOUND ON THE MARKET.

Alcohol.	Orange oil.	Conclusion.
79.00	Negative	Illegal
31.50	Trace	Illegal
72.50	Negative	Illegal
80.13	Negative	Illegal
57.75	Trace	Illegal
72.50	Negative	Illegal
79.50	0.40%	Questionable

The results given in Table II are entirely different from those in Table I. The first six of Table II could not have been made according to U. S. P. IX. The seventh, which was called questionable, may have been prepared according to the U. S. P. and then diluted with alcohol, or a mixture of fresh and dry orange peel used.

The first fourteen samples in Table I were prepared from California oranges. Results obtained from a check on Florida oranges indicate that the tincture prepared from them would run about the same, the orange oil being possibly a little higher.

In conclusion, it is suggested that a standard of not less than one per cent.

¹ Methods of Analysis of the Association of Official Agricultural Chemists (Sept. 1920), No. 21, p. 200. (Precipitation method.)

² *Ibid.*, No. 18, p. 199.

of orange oil and not more than seventy-seven per cent. of alcohol be present in the official tincture.

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BASAL METABOLISM DETERMINATION.*

BY J. ATLEE DEAN.

A New York physician has said, "We would feel less handicapped in caring for a patient with typhoid fever without a thermometer, than we would in directing the treatment of a toxic goiter without basal metabolic rate estimations."

Within the past few years this feeling, noted above, has become more and more evident among the more advanced medical practitioners. There are five different points where this test is of particular value.

1. In eliminating patients with pseudo-toxic goiter from the group of patients of true thyrotoxicosis;
2. In classifying patients with thyrotoxicosis;
3. In following the treatment of these patients;
4. In the diagnosis of myxedema of varying grades of severity;
5. In giving a rational method in deciding the dose of thyroid necessary in each individual case of myxedema.

In hospitals, and the higher type of diagnostic clinics, they speak of the basal metabolic rate with the same degree of familiarity as we do of the temperature, pulse and respiration, and it, therefore, behooves us to understand the principle of the test even if we are not familiar with the actual technic of obtaining the results.

Briefly described, the metabolic rate is obtained by measuring the amount of oxygen consumed in a given time. This appears simple, but when consideration is given to the following observations, a correction must be made for barometric pressure, for the temperature of oxygen within the apparatus, the test must be performed with a stop-watch, the sex and age of the patient demands a correction and the results are given in a percentage above and below the normal—it is easily seen that accuracy is essential.

The normal basal metabolic rate is obtained when the body is at rest, the patient having partaken of no food for fourteen hours, by using an average value of 4.83 calories per liter of oxygen, a normal respiratory quotient of 0.082 and the Du Bois formula of body surface.

The results are expressed as plus when they are above normal, minus when below normal; between plus 10 and minus 10 are usually regarded as ordinary.

Basal metabolic rate determination is another means by which chemistry can assist medicine in making a diagnosis and help the physician in determining the correct dosage after the diagnosis is made.

More will be heard of this interesting subject in the future.

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* Pennsylvania Pharmaceutical Association, Bethlehem, 1924.