

## BIBLIOGRAPHY.

- (1) Otto Rosenheim and J. C. Drummond, *Biochem. J.*, 19 (1925), 753.  
 (2) E. L. Smith and V. Hazley, *Ibid.*, 24 (1930), 1942.  
 (3) K. H. Coward, F. J. Dyer, R. A. Morton and J. H. Gaddum, *Ibid.*, 25 (1931), 1102.  
 (4) E. R. Norris and I. S. Danielson, *J. Biol. Chem.*, 83 (1929), 469.

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THE VITAMIN POTENCY OF CERTAIN LOFOTEN (NORWEGIAN)  
 COD LIVER OILS.\*

BY GEO. E. ÉWE.

The geographical source of cod liver oil does not unfaillingly determine the vitamin potency or other important characteristics of cod liver oil, since variations in fishing, refining, storage, handling, etc., also contribute to the character of the finished product. It is as necessary to exercise discrimination in the selection of cod liver oil as in selecting any other commodity. This is particularly true in the case of cod liver oil in view of the decided variation in potency and chemical and physical characteristics of commercial supplies of this oil.

The following table is a contribution to the literature upon the subject of the vitamin potency of certain cod liver oils produced in the Lofoten Islands area of Norway:

Cod Liver Oil, Lot.	Vitamin "A" (Units per Gram) Not Less Than	Vitamin "D" (Units per Gram) Not Less Than
1	1000	108
2	1000	181
3	1000	111
4	1000	111
5	800	108
6	1000	156
7	1000	108
8	1000	108
9	1000	181
10	1000	181
11	1000	155
12	1000	155
13	1000	271
14	1000	181
15	800	155
16	1000	155
17	1000	155
18	1200	108
19	1200	155
20	1000	155
21	1000	155
22	1000	155
23	1200	155

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\* Scientific Section, A. Ph. A., Toronto meeting, 1932.

The U. S. P. method of assay was used for the determination of vitamin "A."

The vitamin "D" assay method consisted of the usual method of initiating the healing of induced rickets in albino rats. The rats were placed on the Steenbock and Black diet No. 2965 until rickets was well developed (about 21 days), then graded doses of the oil were administered for 8 days, the diet remaining otherwise unchanged. Two days after discontinuing the feeding of the oil the zones of epiphyseal cartilage of the hind leg bones were examined by means of X-ray photographs and by the so-called "line test" for the existence of a narrow and continuous line of calcification. The unit of vitamin "D" was taken as  $\frac{1}{8}$  of the total weight of the oil required to produce the above-mentioned degree of calcification and the number of units per gram of oil was ascertained by dividing 1 gram by the weight of the unit. Rats which failed to gain in weight throughout the depletion and dosing periods and which consumed the ration poorly were discarded in calculating the results of the tests. The rats were protected from ultraviolet rays throughout the tests.

The U. S. P. physical and chemical requirements, while of minor importance in comparison with the vitamin potency and certain other desirable characteristics, were essentially met by the above oils: specific gravity ranged between 0.920 and 0.922 at 25° C. (U. S. P. requires 0.918-0.927); between 0.25 and 0.50 cc. tenth-normal Sodium Hydroxide was consumed in the test for free acid (U. S. P. allows up to 1 cc.); unsaponifiable matter ranged between 0.86 and 1.54% (U. S. P. allows up to 1.5%); saponification value ranged between 183 and 184 (U. S. P. requires between 180 and 190) and the Iodine value ranged between 172.5 and 183 (U. S. P. requires between 140 and 180).

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## CHONDRUS BLEACHED WITH SULPHUR DIOXIDE.\*

BY CHARLES H. LAWALL AND JOS. W. E. HARRISSON.

About six months ago our attention was directed to the fact that a commercial product used as an ice cream thickener and stabilizer contained sulphites in an amount corresponding to about 1000 parts per million of SO<sub>2</sub>. Upon following up the case, we were told by the chemists representing the manufacturers that "the sulphites found are a natural constituent of one of the ingredients in the same manner as benzoic acid is a natural constituent of cranberries."

This was startling news if true, for no such constituent as naturally occurring sulphites has ever been reported in a vegetable product so far as we could learn.

The commercial product referred to was claimed to be a mixture of mucilaginous principles obtained by extracting the plant materials and subsequently drying and grinding the extracted mucilages.

Later, we were given a list of the ingredients of this commercial preparation and by taking them one by one and testing them for sulphites by the official method of the A. O. A. C. (Association, Official Agricultural Chemists), all were eliminated but the chondrus, and a sample of which obtained from a wholesale

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\* Scientific Section, A. P. H. A., Toronto meeting, 1932.