

Methods of Producing Cod Liver Oil

Cod Liver Oil A Fixed Oil Obtained from the Liver of the *Gadus Macrocephalus* and other Species of the *Gadus*.

By FRANCIS M. TURNER

THE medicinal use of oil from the liver of the cod-fish dates back to the early part of the last century.

The technical use of the oil especially in tanning chamois and other leathers obtained many centuries ago.

The popularity of cod liver oil for medicinal use was periodic and just before the great discovery of the importance of vitamins in nutrition, its use had become negligible but when it was found that the fat soluble vitamin A was present in such enormous quantities, cod liver oil came into its own as a most potent therapeutic agent (it is estimated that cod liver oil possesses a vitamin value of 250 times that of the best fresh cows butter.) Today cod liver oil is in high favor and is gaining in use and popularity.

The cod oil of commerce and medicinal cod liver oil are manufactured from the same source; that is the liver of the fish. Cod oil intended for technical use in tanning is now and always has been made in a very crude manner, while the methods of production of the medicinal variety have made great advances.

The present-day sources of supply of this commodity are Norway, Denmark (Iceland), Great Britain, Newfoundland, Canada, United States (Atlantic & Pacific Coasts) and Japan—Norway being by far in the lead in quantity and value of the medicinal variety.

Methods of Manufacture

The commercial variety of the liver oil is always called cod liver oil, although other fish livers than that of the cod are used in its manufacture such as haddock, hake, and pollock livers. On the Atlantic coast of North America the fish are cleaned and the livers thrown in heaps or in a barrel; putrefaction ensues, the oil rising to the surface where it is collected. When no more oil is exuded the residual liver mass is thrown into kettles and heated, thus obtaining a further supply. The final residue is used as fertilizer. In general this is the method employed. The crude cod oil is then run into settling tanks where the foreign material and stearine separate out on standing; the clear oil is drawn off and is sold as "racked" oil. The crude oil fresh from the kettles is termed "unracked" oil. The liver residue from the steam rendering process is often put in bags and pressed in order to further lower the oil content. This liver meal is sold both for fertilizer and for mixing with other foods in feeding of poultry.

Medicinal cod liver oil is now much more carefully prepared. In the early days the medicinal cod liver oil was only a better variety of the technical oil made from fresher livers—it was a most disagreeable and nauseous article; only one possessed of an heroic frame of mind could approach the cod liver oil bottle. Today there is a marvelous change, the medi-

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IMPORTANT NOTICES TO A. O. C. S. MEMBERS

Standardization of Lovibond Glasses

Mr. Priest of the Bureau of Standards has agreed to standardize our 7.6 glasses for us now, if the following conditions are adhered to by our members;

First—Send *all glasses between 7.0 and 8.0* which you can spare to H. P. TREVITHICK, F14 Produce Exchange, New York.

Second—Agree that if some members are fortunate enough to obtain more than one correct 7.6, that they will turn them over to those who are unfortunate enough not to possess correct ones.

Third—That all 35 yellows be sent in also for correction for the quantity of red in them.

Fourth—All glasses must be in before July 10th in the Produce Exchange Laboratories.

By doing this, all the members

will be assured of having correct glasses for the 35 Yellow—7.6 red standard.

Mr. Priest will do this for us only on condition that the glasses be submitted in one group.

No further glasses can be standardized until the Bureau of Standards has completed further necessary preliminary investigations.

Preparation of Smalley Foundation Samples

Unfortunately for the Society, Mr. Monsalvatge will be unable to prepare the samples for the check-meal work, and it is necessary that some other member be appointed for this work. If any one has any suggestions will you please send them in to the President?

Mr. Monsalvatge has been very careful, painstaking and diligent in the work, and the Society regrets that he can no longer continue it.

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cinal cod liver oil is pale and not unpleasant in taste and odor.

The Norwegians were first to adopt improved rendering methods, the fresh caught fish were eviscerated, the selected livers washed and placed as rapidly as possible in tin lined apparatus and low pressure steam (about 10 to 15 lbs.) passed through. The oil rapidly separates and is immediately protected from the air until it undergoes further refining; the liver residue is then pressed and a second grade oil produced which is now largely used in feeding poultry and animals with most astounding results.

The oil is further refined by destearinizing or winterizing and

filtration, great care being taken to avoid undue exposure to the air.

Naturally, the Norwegian medicinal oil obtained the preference and was very generally specified by physicians on their prescriptions.

These improved methods were soon afterward adopted by the Newfoundland, Nova Scotia and New England cod liver oil manufacturers and today their product is equal in physical properties, if not superior to the Norwegian product, while it is claimed that the vitamin potency of the Atlantic North Coast oil is very much greater than the Norwegian oil and thus the pendulum of preference has swung to our coasts from those of Norway.

"Newfoundland oil can no longer be considered as inferior to Norwegian oil"—Lewkowitsch.