When I began to import cod liver oil, in order to sell it along with the high-vitamin butter oil I was manufacturing, I felt it imperative to go to Iceland and Norway to visit the various cod liver oil factories there. At that time, most cod liver oil in America was imported from Scandinavia, with a small amount coming from China. What I learned is described in an article published in the Fall, 2005 issue of Wise Traditions and posted at westonaprice.org.

To summarize my findings, all the factories were engaged in industrial processing of cod liver oil, which involved alkali refining, bleaching, winterization and deodorization. Each of these steps, especially the deodorization, removes some of the precious fat-soluble vitamins, especially vitamin D. The resulting products can be divided into four categories. First is a fully cleaned and deodorized product with nothing added back in. Products with very low levels of vitamin A with virtually no vitamin D are of this type. To obtain meaningful levels of vitamins A and D from these products would require consuming many tablespoonfuls – a practice that is not only difficult to achieve, especially for children, but poses the danger of supplying an excess of polyunsaturated fatty acids.

The second type is a non-deodorized product with some vitamin A/D still in the oil. This oil is highly heated but not fully distilled to clean up the issues resulting from the rendering process. But it is carbon filtered if this is considered a plus. The third type is the fully cleaned and deodorized cod liver oil with synthetic vitamins added back in. Most of the cod liver oils on the market fall into this category. (You’ll need to check with the individual manufacturer to verify whether their cod liver oil falls in this category.) These vary in dose from about 1100 to 4600 IU vitamin A per teaspoon and 180 to 460 IU vitamin D per teaspoon. One company, Nordic Naturals, now adds supplemental vitamin D to their Nordic Naturals Vitamin D brand, to compensate for the vitamin D removed during processing. The final category is the fully cleaned and deodorized product with natural vitamins added back in. This is the so-called high-vitamin cod liver oil, standardized at 2340 IU vitamin A per gram (11,700 IU per teaspoon) and 234 IU vitamin D (1170 IU per teaspoon). This is the type of cod liver oil imported into the U.S. and sold under the Blue Ice label; it is also sold by Radiant Life and Dr. Ron’s UltraPure.

Handwriting on the Wall

With only one factory still engaging in the relatively expensive process of adding natural vitamins back into processed cod liver oil, it was easy to see the handwriting on the wall. The odds that this factory would soon fall in with the others and start adding synthetic vitamins instead of natural ones were great. I was also concerned that we had no cod liver oil manufacture in the U.S. What would happen if FDA found some reason to prohibit imports? And finally, I was offended by the industrialization of a sacred food. I now fully understand that today’s fish oil industry has committed the same crime to a historically sacred food as the dairy industry has committed on milk.

As predicted, the factory in question ceased using natural vitamins early this year. When my current stock runs out, this relatively natural high-vitamin cod liver oil will no longer be available.

Return to Old Method

Fortunately, I had anticipated this eventuality several years ago when I began contemplating manufacturing cod liver oil myself. I wanted to produce a cod liver oil that contained only natural vitamins and, if possible, do it without the industrial alkali and deodorizing treatments. I also wanted
to produce cod liver oil in the traditional way, which is by fermentation. I had read that in Roman times, long before refrigeration, fish guts were placed in a barrel with sea water and allowed to ferment. What came out the bottom of the barrel was a watery fermented fish sauce called garam, widely used as a seasoning (probably the precursor of Worcestershire sauce). The oil floated to the top and was collected carefully. This fermented fish oil was undoubtedly the civilized world's first health elixir, reserved for the soldiers and nobility. It is said that the soldiers refused to march without their daily ration of liquoramin.

South Sea Islanders put great store in shark liver oil – enduring considerable danger to procure the sharks even though other, less dangerous-to-catch seafood was plentiful. To prepare the oil, they put the livers inside the leathery stomachs of the shark and hung them in the trees for several months. As it ferments, the oil gradually comes out of the livers and fills the hanging stomachs! The yield is about one liter per shark.

A description of traditional European cod liver oil processing is provided by F. Peckel Möller in an article entitled “Cod-Liver Oil and Chemistry,” published in London, 1895. “The primitive method … is as follows. As soon as the fishermen reach the Voer [pier], and finish separating the livers and roes, they sell the fish and carry the livers and roes up to their dwellings. In front of these are ranged a number of empty barrels into which the livers and roes are placed, separately of course. The fishermen do not trouble to separate the gall-bladder from the liver, but simply stow away the proceeds of each day’s fishing, and repeat the process every time they return from the sea, until a barrel is full, when it is headed up and a fresh one commenced. This is continued up to the end of the season, when the men return home, taking with them the barrels that they have filled. The first of these, it may be noted, date from January, and the last from the beginning of April, and as on their arrival at their homes the fishermen have many things to arrange and settle, they seldom find time to open their liver barrels before the month of May. By this time the livers are, of course, in an advanced state of putrefaction. The process of disintegration results in the bursting of the walls of the hepatic cells and the escape of a certain proportion of the oil. This rises to the top, and is drawn off. “Provided that not more than two or three weeks have elapsed from the closing of the barrel … to its being opened, and if during that time the weather has not been too mild, the oil is of a light yellow color, and is termed raw medicinal oil. As may be supposed, however, very little oil of this quality is obtained. Indeed, as a rule there is so little of it that the fishermen do not take the trouble to collect it separately. Nearly all the barrels yield an oil of a more or less deep yellow to brownish color: this is drawn off, and the livers are left to undergo further putrefaction. When a sufficient quantity of oil has again risen to the surface, the skimming is repeated, and this process is continued until the oil becomes a certain shade of brown. The product collected up to this point is known as pale oil … By this time the month of June has generally been reached, and with the warmer weather the putrefaction is considerably accelerated, and the oil now drawn off is of a dark brown color, and is collected by itself. It is rather misleadingly called light brown oil … When no more can be squeezed out, the remainder is thrown into an iron caldron and heated over an open fire. By this process, the last rests of oil are extracted from the hepatic tissues, which float about in the oil like hard resinous masses … In order to fully carry out the extraction, it is necessary to raise the temperature considerably above the boiling point of water … The oil prepared in this way is very dark, almost black, and with a greenish fluorescence in reflected light. In thin layers and by transmitted light it shows a brown color, and it is therefore termed brown oil …”

The writer then describes processing methods introduced to Norway in the 1850s by Peter Möller, which resulted in a much purer, consistently light-colored oil made from fresh, not putrefied livers, considerably more palatable in terms of taste and smell. He notes, however, that the “brown oils are actually used to a certain extent for medicinal purposes at the present day.”
After reading this passage, and foreseeing the demise of the last natural cod liver oil from Europe, I was determined to produce a light brown fermented cod liver oil according to the old methods.

**Production of Fermented Cod Liver Oil**

But how to do this on a large scale? That was the challenge I was facing. It has taken six dedicated years of work to get to the point of offering the fermented cod liver oil to the community. The first challenge was to figure out a way to ferment the livers in large vats; and the second was to find the livers. The method we have developed processes the cod liver oil through a proprietary non-heating natural lacto-fermentation. The process can take up to six months and is carefully handled throughout the process to ensure the oil is clean and natural. Industrialized fish oils, including cod liver oil, are heavily carbon filtered and heated after rendering or extracting. We have developed a unique cleaning process that does not use carbon filters or heat. Both heat and carbon filters remove flavors, odors, colors and nutrients, and also denature the fragile unsaturated fatty acids such as DHA and EPA.

Our cod liver oil “factory” is a large building in north central Nebraska. We prefer to call it our cod liver oil green house. The building was built to store potatoes, but was gutted by fire soon after completion. It had been sitting empty all these years and came on the market at just the time we were looking for a facility, and became available to us at virtually no cost. We cleaned it out, washed and painted the walls, painted it and installed a new steel roof. The building currently holds six fermenting vats of just under 10,000 gallons each.

The roof is a solar roof and we use natural sunlight for heat and light – we have lots of sunlight in Nebraska. Our next project is to start sun drying fish eggs in a part of the building. My other task was to find the livers. The search began several years ago – I picked up the phone and made many cold calls, most of which got me nowhere. People said I was crazy to want to purchase thousands of pounds of cod livers. Finally I met a Russian who took an interest in the project and found the livers for me – in Russia, they know about cod livers.

The first load of 10,000 pounds, which we used for experimental purposes, arrived two years ago. The first load for commercial production – 40,000 pounds of frozen cod livers – arrived in a tractor trailer – packed into pallets. Future deliveries will come by railroad!

**Testing Cod Liver Oil**

Our next challenge was to test the oils for nutrient content. Of course, we do the standard tests for pathogens, PCBs and heavy metals. We do this to every batch, and our batches are small, so the number of tests per gallon of product is substantially greater than typically carried out in the industry. The heavy metal levels are “not detectable” and the PCBs meet WHO .090 ppm standards, the limit to which these compounds can be measured.

Measuring nutrient levels turned out to be complicated. When you test industrial cod liver oils to which have been added synthetic vitamins A and D, you get graphs with well-defined peaks, indicating the presence of vitamin A or D. But the tests for our fermented cod liver oil came back showing a jagged line, with numerous peaks, no matter which method we used, and these peaks did not always match up with synthetic control peaks. The lab technicians were as surprised as we were. Their explanation was that this natural oil contains many isomers of vitamins A and D. We currently receive a wide range of nutrient values depending on the laboratory test method and interpretation of the analysis.

In general, the test totals are substantially higher for vitamin D than one would find in any
industrialized cod liver oil. Whereas the high vitamin cod liver oil contains almost 12,000 IU vitamin A and 1,200 IU vitamin D per teaspoon (five milliliters), the fermented oil contains 4,000-9,000 IU vitamin A per teaspoon and 3,000-4,000 IU vitamin D. The vitamin levels likely test lower because we are only testing for retinol and palmitate, not for all the other vitamin A isomers.

Anticipating increasingly stringent controls on supplements, we have decided to label the fermented cod liver oil as a food – which it certainly is. Thus the label will contain a suggested dose and list vitamin A as a percentage of the RDA. There will be no mention of vitamin D on the label. The suggested dose will be about 2 - 2.5 ml or about 1/2 teaspoon for adults, double for pregnant and nursing women and those under stress, and half that for children. Some practitioners are giving larger doses to treat serious health problems. The experience of Dr. Rosann Volmert indicates that best results are obtained using a combination of fermented cod liver oil and high-vitamin butter oil – a confirmation of Dr. Price’s own experience.

Since this product is a fermented one, we surmised that it would contain vitamin K2 as well as vitamins A and D. What we found was a range of quinones, which include the various forms of K2. The fermentation increases the total quinone count by 700-1600 percent compared to readings prior to the fermentation process. We have not identified the specific quinones but I suspect that the K2 category and Co-enzyme Q family will be important components within the quinone nutrients. The fermented cod liver oil tests at 4-8 mg per gram, compared to the high-vitamin butter oil at 23-25 mg per gram. Quinone testing presents a fertile field for further research.

Taking Cod Liver Oil

Most of those who have consumed the fermented cod liver oil report that it is not as fishy tasting as the industrialized varieties. However, because it is a lacto-fermented product, it can leave a slight sting on the back of the throat, which some find bothersome. It is best to take the oil mixed with a small amount of warm water, swallowing quickly. Adding something acidic such as lemon juice, apple cider vinegar or kombucha may help with the tingling at the back of the throat. Others report good results adding a little honey or maple syrup or “chasing fat with fat” by following the cod liver oil with cream, egg yolk or butter. Another way to minimize the throat tingle effect is to take it during or after a fatty breakfast.

Published in Wise Traditions, Volume 10 Number 1, Spring 2009, pages 26-31 (A publication of the Weston A. Price Foundation)

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