

About one year ago, Dr. Kaayla T. Daniel [apologies for referring to Dr. Daniel as Ms. previously] emailed me her concerns about our BLUE ICE™ Fermented Cod Liver Oil. In response, I offered Dr. Daniel an all expense paid trip to our facility to so that she may observe anything she would like and audit our work to her content. The offer was met with silence. I also emailed her a number of test results that I immediately had conducted on random samples of our products in response to her concerns. Again, the results were met with silence. We have never communicated on the subject once the offer for her to visit was made. Rather than base her conclusions on firsthand knowledge she relies on unspecified conversations, Internet rumor, and her own speculations about our processes and quality control that she recently published in a report titled "Hook, Line and Stinker: The Truth About Fermented Cod Liver Oil". There are 111 pages she has compiled and we will attempt to submit a discussion on most if not all of her points in a subsequent report.

Unfortunately, she has had a misunderstanding about our fermented cod liver oil products and is trying to use the industry standard to regulate these special products. The bottom line is that our products have a long history of being food safe and healthful. This has not changed.

We have just completed a food safety expiration date testing that shows our products are safe even after 4 years. Despite this, our new labels use just a 2-year expiration date.

After years of working with various labs to find out the actual value of vitamin D in our products, we have found that the most effective measure of the characteristics of our fermented cod liver oil is a rat bioassay. They feed rats the cod liver oil and measure bone or calcium assimilation. The conclusion of the rat bioassay was that our fermented cod liver oil was very active in vitamin D and the scientist spearheading this research indicated that the closest lab data was UBE. We have used UBE since based on this recommendation. One phrase that this scientist taught me that I think is proving to be more and more true is "The only way to test vitamin

D is to feed it to rats, rats don't lie.' Just because one measures a molecule does not equate to activity.

A word on our process: our simple process uses salt, fish broth starter, and livers. We do not dilute our oil, add anything, or use molasses, other sugars, or algae. I know it sounds too simple but it is exactly as we describe. No different than fermented fish sauce or pickled fish products.... See blog post here:

<http://www.greenpasture.org/utility/showArticle/?ObjectID=9251&find=herring&happ=siteAdministrator>

BLUE ICE™ Fermented Cod Liver Oil is one of the most natural cod liver oil made today. The process is as old as the written word utilizing today's bioscience.

We include below years of test data on food safety. It includes vitamin tests, rat bio assay tests, fermentation break down study (PV and anisidine), and toxic aldehyde.

General Food Microbiological Testing

Year	E Coli cfu/g	Total coliforms cfu/g	Aerobic plate count cfu/g	Mold cfu/g	Salmonella org/25g
2010	n.d.	n.d.	<2	n.d.	negative
2011	n.d.	n.d.	<50	n.d.	negative
2012	n.d.	n.d.	<1	<1	negative
2013	n.d.	n.d.	<2	<2	negative
2014	n.d.	n.d.	n.d.	<1	negative

Note: n.d. is non-detected

Heavy Metal

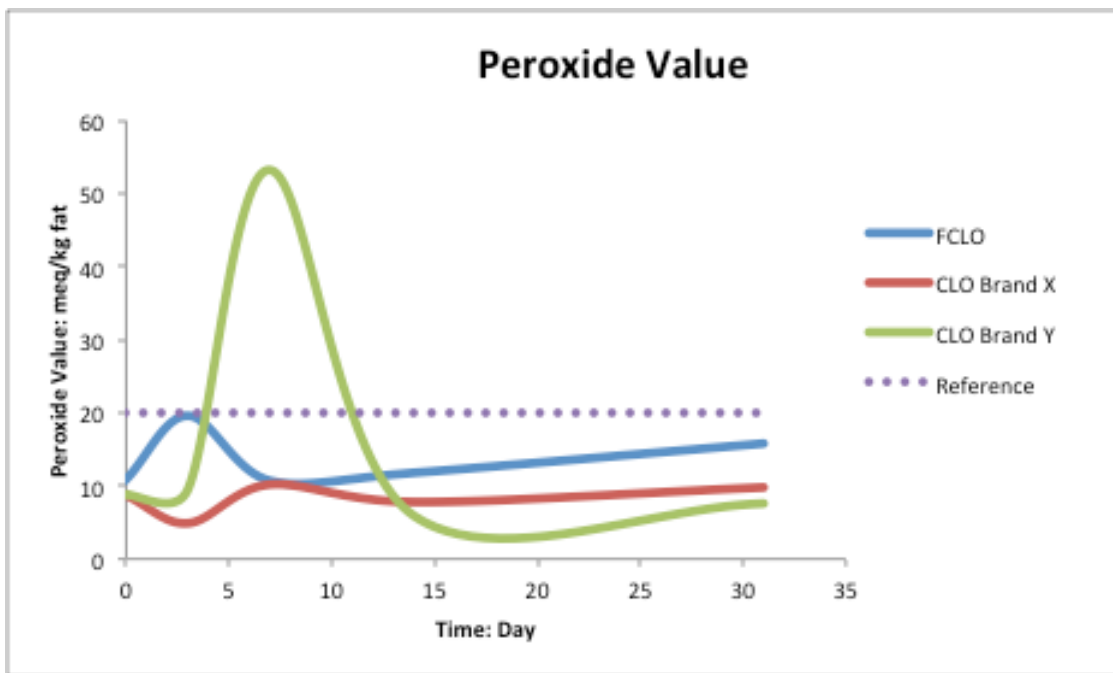
Year	Cadmium ppm	Lead ppm	Mercury ppm	Total Heavy metals ppm
2011	n.d.	n.d.	n.d.	n.d.

2012	n.d.	n.d.	n.d.	n.d.
2013	n.d.	n.d.	n.d.	n.d.
2014	n.d.	n.d.	n.d.	n.d.

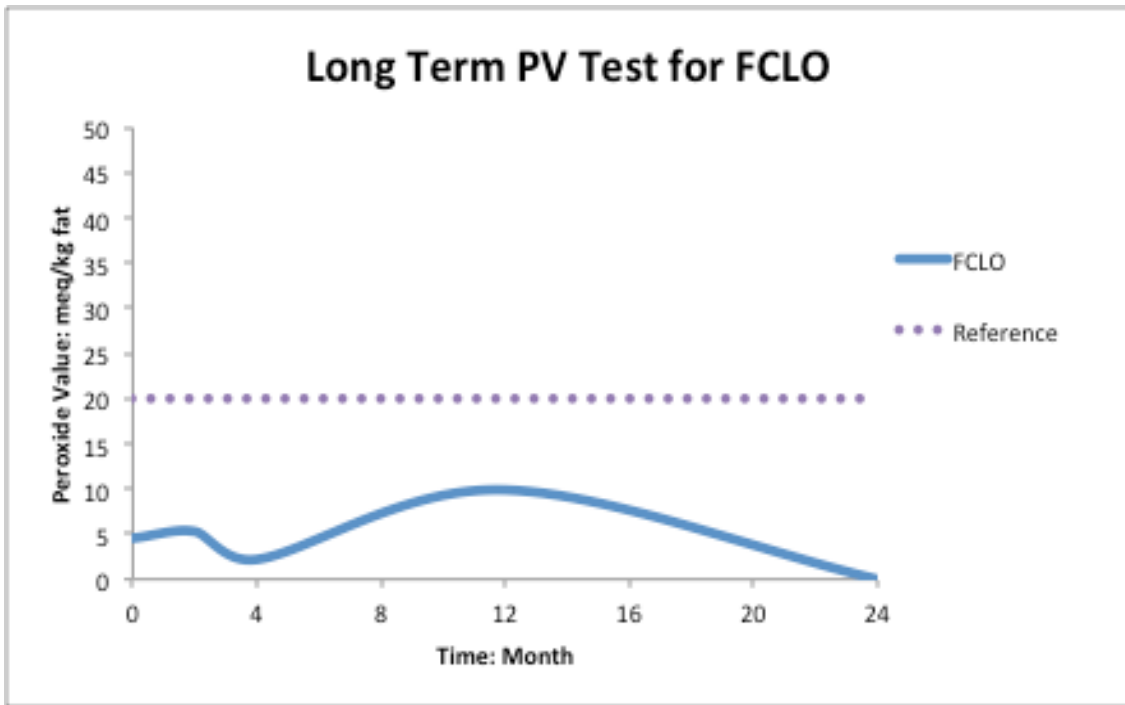
Note: 1. ppm is parts per million.
 2. n.d. is non-detected

Vitamins, DHA and EPA

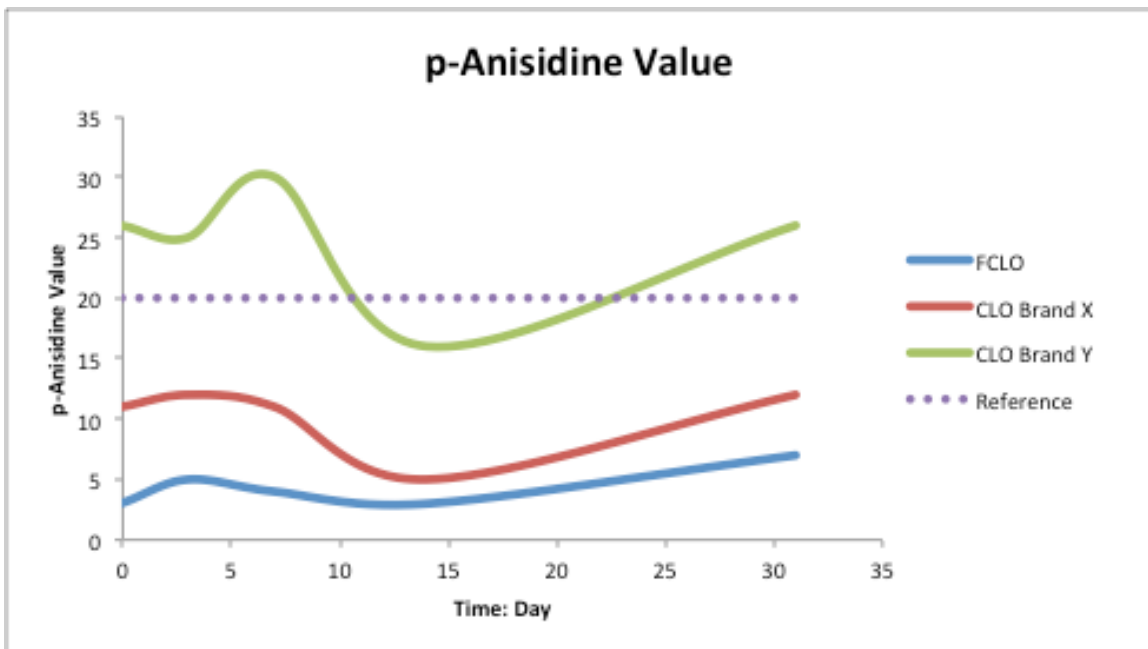
Year	Vitamin A IU/ml	Vitamin D IU/ml	DHA %	EPA %
2010	2018	1357	6.7	15.2
2011	3130	727	8.7	12.5
2012	1804	716	7.5	13.3
2013	1707	580	6.5	13.0
2014	2854	1191	6.9	12.9



The Peroxide Value for Different Cod Liver Oils



The Peroxide Value for Fermented Cod Liver Oil in 24 months



The p-Anisidine Value for Different Cod Liver Oils

And here are some scientific facts for free fatty acids:

If one or more of the fatty acids is removed from the triglyceride, the fatty acid is called a free fatty acid. Free fatty acids can be produced by enzymatic activity (lipases), oxidation and other chemical reactions. Actually, in the body, most of the fat is hydrolyzed by enzymatic activity to release free fatty acids and mono- or diglycerides in order for the digestive tract to absorb the fat into the body. Once absorbed, these components will reform triglycerides and involve into metabolism. The fatty acids (including free fatty acids) are important in the metabolism of energy production, energy storage, membrane formation, and cellular signaling transpiration. In industry, some companies use the level of free fatty acids for evaluation of the sales value. The level of free fatty acids can be used as an index for oxidation level in the oil. Oxidation processes can release the free fatty acid from the triglyceride which can happens during prolonged heating at high temperature. The presence of free fatty acids, in turn, can speed up oxidative reactions. There are no official standards for free fatty acids, and again, free fatty acid levels indicate nothing about the health safety by the oil industry. The test for free fatty acids is a titration where any chemical that can neutralize a base is listed as a free fatty acid.

The whole article can be found here:

<http://www.greenpasture.org/utility/showArticle/?ObjectID=9091&find=Fish%20Oil%20Oxidation%20and%20Oxygen%20&happ=siteAdministrator>

In regard to aldehyde, here is some sentences quoted from Dr. Martin Grootveld BSc, PhD, FIBMS, CBiol, FSB, FRSC in De Montfort University:

“... I am pleased to let you know that we did not detect any toxic lipid oxidation products in your Blue Ice Fermented Cod Liver Oil sample... In addition we performed some heating experiments on your oil, and found that this process (which readily induces and /or perpetuates these products in many commercially available oils) generates little or none of these toxic agents in your oilSomewhat surprising but valuable results....”

The rat bioassay results conducted for fermented cod liver oil demonstrated the vitamin D activity is high in rat test. Note, it was the active form of Vitamin D in the rat body (1,25-OH-cholecalciferol), and the rat testing did not differentiate the Vitamin D2 or D3. The rat bioassay just told the real Vitamin D takes part in the body metabolism.