

## **Eicosapentanoic Acid (EPA) & Docosahexaenoic Acid (DHA)** **AN ESSENTIAL HEALTH REQUIREMENT FOR EVERYONE**

*“Fish Oil Therapy!”* A project started by Wildegeest Foundation in 2006 because of our belief that *laissez-faire* attitudes towards fats and oils, including fish oils, are damaging the American diet, and denying important benefits.

There are at least 8000 published papers, over half in professional journals, that describe the benefits of the two most important omega-3 fatty acids in fish oils (EPA and DHA).

The evidence keeps building - that our need for EPA and DHA is just as real as our need for Vitamin C, which was denied scurvy-ridden people until the 20<sup>th</sup> Century. We must not condone scurvy- ad lib-dishing out of EPA/DHA Benefits.

### **Fish Oil Therapy Project (FOTP) - Protocol**

At the start of the four month trial, each volunteer agreed to take a daily dose of three capsules (3 grams) of a carefully selected Wild Alaskan Sockeye Salmon Oil (total 690 mg. Omega-3 long chain fatty acids incl. 330 mg. EPA and 300 mg/ DHA. [www.vitalchoice.com](http://www.vitalchoice.com) .

At the start and end of the four month interval, FOTP volunteers' blood samples were submitted to OmegaMetrix Laboratory in Kansas City for Omega-3 Index (O3I) determinations.

Their reliable assay method was needed to monitor the percentages of EPA+DHA = Omega-3 Index (O3I), measured by analysis of the lipids in red blood cells (RBCs). The percent findings, on a 0 to 12% scale are interpreted as a measure of cardiovascular risk. Dr. Harris has stated that the (O3I) target for everyone should be at least 8%.

As an unexpected bonus, OmegaMetrix also provided the fatty acid data that was part of (O3I) determinations :- Total Omega-3 fatty acids - Alpha-linolenic acid - EPA - DPA - DHA - Linoleic Acid - Arachidonic Acid, thereby providing important information concerning Omega-6/Omega-3 and AA/EPA ratios.

Nine participants completed a Dietary Questionnaire. While this limited sampling could not produce definitive results, there were replies that indicated how lifestyle and food preferences influence (O3I), including fish consumption, salad dressings, store-bought baked goods, and the extent to which the Protective and Prudent Dietary recommendations were followed.

Twenty participants, under medical supervision, received an additional estimate of cardiovascular risk, basis **NMR LIPOPROFILES** [www.liposcience.com](http://www.liposcience.com) . The reports included LDL Particle No.:(LDL-P) and Small LDL-P; Lipids : Total Cholesterol, LDL-C, Triglycerides, and other important information.

### **. Observations Suggested by FOTP**

FOTP has accumulated large amounts of background information, still under review, but certain observations are of immediate interest::

#### **1. U. S. Population Deficient in EPA/DHA, Suffers Elevated Omega-6's**

Our study demonstrated similar disturbing trends, with only 25% of the participants in the O3I - > 8.0% range and 35% in the O3I <6% range, and Omega 6/Omega 3 & AA/EPA ratios were elevated when O3I was low..

## **2. Will Seafood Twice/Week Satisfy EPA/DHA Requirements?**

There are well-informed opinions that this is not a reliable way to assure adequate intake of EPA/DHA, since those who make the worst selections are the poor, the uneducated, and the victims of contrived misinformation.

## **3. Should Fish Oils be Added to Manufactured Foods?**

The addition of fish oils (liquid, encapsulated, or other form) into manufactured foods listed by FDA, is a poor and deceptive way to address the EPA/DHA deficiency problem, and is a practice that wastes suitable sources of EPA and DHA.

## **4. Should fish oils be taken without antioxidants?**

Fish oils contain polyunsaturated fats which contain a certain amount of natural antioxidants, or protective measures protect their stability. However, FOTP participants were urged to seriously consider the American Cancer Society dietary list of natural antioxidants.

## **5. How does Participant Explain Omega-3 Index = 12.7%?**

No fair! Your narrator organized the project and had read a great deal about how to make fish lipids work. He decided that the fish oil should be taken before breakfast, the capsules swallowed with the help of buttermilk (emulsifier) and followed by a natural antioxidant preserve made from blueberries and prunes.

## **REFERENCES**

**Emulsification** : Gaqraiova, L, et al *A randomized cross-over trial in healthy adults indicating improved absorption of omega-3 fatty acids by pre- emulsification. Nutrition J., Vol. 6, (4) 2007*

**Fish Oils Role in Health and Disease** : U. S. Intake has declined over the years. Man evolved on ratio Omega-6/Omega-3 of 1:1, and today the ratio is 10:1, or more, implemented in excess blood clotting, allergic and inflammatory disorders, certain cancers. The average U.S. daily intake is only 50 mg.EPA and 80 mg. DHA per person. Warns that fish oil supplements should always be stabilized to prevent oxidation and rancidity. . Simopoulos, Artemis. *Omega-3 fatty acids in health and disease and in growing development. Amer. J. Clin.Nut. Vol. 54, 1991, pp.438-463. .*

**Natural antioxidants** : Talalay directs the Laboratory for Molecular Pharmacy which in 1992 discovered the health promoting properties of sulforaphane glucosinolate, the cancer fighting chemical abundant in Brassica family (broccoli). Anft, M., *A Nibble of Prevention. Johns Hopkins Magazine, Ap. 2008.*

**Oxidative Stress** : Because the structural integrity of the membrane depends on the bio-physical properties of the different phospholipid species, the inherent high ability of n-3 fatty acids to oxidize may eventually prevent hemolysis by trapping most of the free radicals and reducing the variety of oxidized

fatty acids. Laurence, M., et al. *Moderate intake of n-3 fatty acids is associated with stable erythrocyte resistance to oxidative stress in hypertriglyceridemic subjects. Amer.J. Clin. Nut. 2001: 74: 449.*

**Polyunsaturated Fats, Safe or Not Safe** : The most common PUFA's are linoleic acid, linolenic acid, EPA and DHA. Linoleic acid has the (n-6) and the others have the (n-3) configuration. Thinks there is safety in <10% caloric intake, but beyond that cautions antioxidants

. Some evidence n-6 PUFA's involved in initiating cancer. Eritsland, J. *Safety considerations of polyunsaturated fatty acids*. Amer.J. Clin.Nut, Vol. 71 (suppl) Jan.2000.

**Prudent Diet re: Eat Fish Regularly :** Authors conclude, even though food tables may show that some lean fish do contain EPA and DHA, for some reason these fish do not increase serum levels of EPA and DHA. Advice needs revision, to apply only to salt water fish (especially salmon, mackerel, sardines, herring). Philbert, et al, *Fish intake and serum fatty acid profiles from freshwater fish*. J. Clin. Nut.Vol.84, Dec. 2006, pp.1299.

**Prudent Diet re: Other fats Interference :** Researchers report that conversion of ALA to DHA in vegans is negligible and similar results applied to meat eaters. Concluded, ALA not effective in increasing DHA levels. Fokkema, M. Et al, *Short term supplementation of low-dose gamma-linolenic acid (GLA), alpha linolenic acid (ALA), or GLA+ALA does not augment LCP omega-3 status of Dutch vegans to an appreciable extent*. Prostaglandins, Leukotrienes and Essential Fatty Acids, Vol. 63, Nov. 2000, pp. 287 to 292.

**Prudent Diet re: Fish Oils Vital to Health :** Research over twenty years have shown EPA and DHA are essential elements in humsn nutrition. DHA is a vital component of the phospholipids in cell membranes throughout the body, particularly abundant in the brain, retina, and sperm. Fish oil supplementation significantly lowers overall triglyceride and cholesterol levels without affecting the level of HDL ("good cholesterol). Connor, J. *Importance of n-3 fatty acids in Health and Disease*. Amer. J. Of Clin. Nutrition, Vol. 71 (suppl) Jan. 2000. Pp. 171S-175S.

**U. S. Need for DHA :** Inadequate intake of DHA by most Americans , the building block of human brain tissue and the retina. Low levels have been associated with depression, memory loss, dementia, visual problems. DHA important to fetuses, infants; The DHA content of the infant's brain triples during the first three months ; the average DHA content of breast milk in the U. S. Is the lowest in the world - most likely because Americans eat so little fish. Levine, B, *Most frequently asked questions about DHA*, Nutrition Today, Vol. 32, Nov/Dec. 1997, pp 248-49.