Salmon Oil Update - 1996

NOTE: This information is for educational purposes only. Anyone with a medical condition should consult a physician for proper diagnosis and treatment.

OMEGA-3 Oils

Omega-3 oils (salmon and flax oil) get their name from the fact that they have an open space beginning at the third position in the fat molecule. This is contrasted to omega-6 oils (corn oil) which have an open space at the sixth position.

Omega-3 oils are important in the diet because they provide two of the most important fats for building tissue and construction of tissue hormones called prostaglandins. EPA (eicosapentaenoic acid) is the precursor to the body's primary anti-inflammatory tissue hormones or prostaglandins. DHA (docosahexaenoic acid), is a primary structural component of many of the body's most active structures including brain, and nerve cells.

Modern man has a widespread deficiency of omega-3 oils. A hundred years ago 40-50% of the fat consumed consisted of omega-3 fats while today it is only about 5-10% of the fat consumed. Research showns that these oils are involved in prevention of serious health problems.

Flax Oil vs. Salmon Oil

Omega-3 oils are found in leafy greens, flax, wheat, soy and fish. The omega-3 oils in fish are in a different form than in vegetable foods-- they are more unsaturated. The omega-3 oils in flax have 3 open spaces, while those in fish have five (EPA) or six (DHA) open spaces. The open spaces in a fat are one of the key factors in determining the biologic activity of an oil.

Fish oils often work better in supplementation because the body can have a difficult time converting an omega-3 found in flax oil to EPA or DHA--the more active members of the omega-3 family. The enzyme which desaturates fats in the body and thus makes them usable is blocked by viral activity, by hydrogenated oils and other factors.

Primrose Oil

Evening primrose, borage, and black currant oils are sources of DGLA which leads to anti-inflammatory tissue hormones. Unfortunately, these oils can also be converted by the body into arachidonic acid, the primary inflammatory fat in the body. The EPA in salmon oil inhibits this conversion. Thus these two oils work quite nicely together.[1]

Reference:

1. "Clinical Review of Dietary Therapy For Rheumatoid Arthritis", Darlington, L.G. and Ramsey, N.W., *British Journal of Rheumatology*, 1993;32:507-514.

Purity and Potency

Is quality important? We feel that it is and this feeling is supported by an article published by the Center for Science in the Public Interest.

The article states, "Contaminants, like PCB's, accumulate in fish fat, so make sure your fatty fish comes from unpolluted waters. Salmon is usually a safe bet."

The product we recommend is "concentrated Salmon Oil solely from health-screened, disease-free salmon selected exclusively for human consumption."[1] GNLD Salmon Oil meets all of these criteria. Routine testing for pesticides, herbicides, and heavy metals has found no contamination in the GNLD product.

A study conducted by Tufts University found that the average EPA content of the 10 major fish oil products on the market was only 38% of what was on the label. When the Neo-Life product was tested, it had over 100% of the EPA listed on the label![2]

REFERENCES:

1. Liebman, Bonnie, "Good Fats," *Nutrition Action Health Letter*, Center for Science in the Public Interest, July/August 1986, p.6.

2. Tufts University *Diet and Nutrition Letter*, Volume 5, Number 11, January 1988. A Neo-Life Research Report is available on this topic.

Benefits of Fish Oils

Heart Disease

Repeated studies have shown an inverse relationship between consumption of fish and risk of the development of heart disease. Possible explanations for this follow.

Triglycerides

Fish oil has been shown to lower triglyceride levels. Triglycerides thicken the blood and make it more difficult for the heart to pump.

One study found a 25% drop in triglyceride with fish oil supplementation. The "good" HDL cholesterol went up in this study and the "bad" VLDL cholesterol went down. Results were noticeable after 6 weeks. The fish oil was given twice daily. [1]

In another study thirty-one patients with documented coronary heart disease were given fish oil capsules containing 6 gm of omega-3 fatty acids or received an olive oil placebo for a duration of 28 months. Fish oil lowered triglyceride levels by 30%.[2]

Another study of 251 patients found that fish oil lowered triglycerides by 19%. Four grams a day were given.[3] Two to four grams a day are the levels usually used successfully to decrease triglycerides and reduce the risk of clotting.[4] Triglyceride levels can drop significantly in 7-10 days with intake of salmon oil.[5]

Cold Hands and Feet

Fish oils will often help with cold hands and feet. As triglycerides are lowered, the blood flows more freely through the body's tiny capillaries. Fish oils also improve the fluidity of the membranes of blood cells. This makes it easier for them to flow through tiny capillaries in fingers and toes.

References:

1. "Effects of a New Fish Oil Concentrate on Plasma Lipids and Lipoproteins in Patients With Hypertriglyceridaemia", Mackness, M.I., et al, European Journal of Clinical Nutrition, 1994;48:859- 865.

2. "Controlled Trials of Fish Oil For Regression of Human Coronary Atherosclerosis", Sacks, Frank M., M.D., et al, Journal of the American College of Cardiology, June 1995;25(7):1492-1498.

3. "Long-Term Metabolic Effects of N-3 Polyunsaturated Fatty Acids in Patients With Coronary Artery Disease", Eritsland, Jan, et al, American Journal of Clinical Nutrition, 1995;61:831-6.

4. "Fish Oils and Their Possible Role In The Treatment of Cardiovascular Diseases", Semplicini, Andrea and Valle, Roberto, Pharmac. Ther.,1994;61:385-397.

5. Harris, William and Connor, William, "The Effects of Salmon Oil Upon Plasma Lipids, Lipoproteins, and Triglyceride Clearance", Transactions of the Association of American Physicians, xciii, 1980, p. 148.

Platelet Stickiness

Fish oils have the ability to decrease the stickiness of blood platelets, a major risk factor for heart disease. These

are the components of the blood that clump together to stop bleeding when a person is cut.

Excessive stickiness of blood platelets will increase the risk of atherosclerosis. Fish oils inhibit the formation of tissue hormones which increase the stickiness of platelets.

A study evaluating 226 patients found EPA concentrations in platelets was inversely associated with coronary artery disease for men. DHA concentrations in platelets was inversely associated with coronary artery disease for women. These are the two primary fats in fish oils.[1]

Reference:

1. "Can Linoleic Acid Contribute to Coronary Artery Disease," Hodgson, Jonathan M., et al, *American Journal of Clinical Nutrition*, 1993;58:228-234.

Blood Pressure

Fish oils tend to lower blood pressure. They work better with calcium than on their own. Recent research indicates that lead poisoning may be a key factor in high blood pressure in the United States, a legacy from the use of leaded gasoline in automobiles. Lead damages the fluidity of the membrane (this is called tanning) of the red blood cell -- this decreases the ability to filter through tiny capillaries. Salmon oil and Vitamin E improve the fluidity of cell membranes, the first by supplying high quality oils and the second by inhibiting the damaging effects of lead and other heavy metals. Calcium is antagonistic to lead which explains at least part of its benefit.[1]

In hypertensive patients, randomized controlled trials confirm omega-3 fatty acids may reduce systolic blood pressure by 5 mmHg and diastolic pressure by 4 mmHg. This blood pressure decrease can be enhanced by restricting salt.[2]

1. Ferretti, R.J. et al., "Factors Influencing Lead Poisoning in Vitamin E Deficiency, Levander Nutrition Institute," USDA, Beltsville, MD.

2. "Fish Oils and Their Possible Role In The Treatment of Cardiovascular Diseases", Semplicini, Andrea and Valle, Roberto, *Pharmac. Ther.*,1994;61:385-397.

Salmon Oil and Vitamin E

Vitamin E should be supplemented with Salmon Oil. In one study of eleven healthy men, a hefty intake of 15 grams of fish oil increased the tendency of oxidation to take place in the body within four weeks. Blood sugar increased in those not taking Vitamin E. Lack of Vitamin E also inhibited beneficial effects of fish oil in decreasing blood stickiness.[1]

Reference:

1. Effect of Fish Oil and Vitamin E Supplementation on Lipid Peroxidation and Whole-Blood Aggregation in Man," Brown, Jonathan E. and Wahle, Klaus W.J., et al, *Clinica Chimica ACTA*, 1990;193: 147- 156.

Cancer

Studies show an inverse relationship between fish consumption and thyroid cancer[1] They may also reduce the risk of breast cancer.[2] Fish oils may also make it more difficult for cancers to spread and may reduce incidence of bowel cancers.[3]

Horrobin reports that in initial work high quality oils are very potent at killing cancer cells. He writes, "There is evidence that cancer cells are depleted of essential fatty acids. Oxygenated metabolites of essential fatty acids are produced either by cyclooxygenase or lipoxygenase enzymes and involved in normal control of cell division. Providing essential fatty acids to cancer cells beyond the 6-desaturation step, which appears to be slow in many cancer cells, might control cancer cell division. In vitro and animal evidence has now shown this consistently. Supplementation with GLA, DGLA and EPA are able to kill all human cancer cell lines tested to date at concentrations which do not harm normal cells. For success in utilizing essential fatty acids in cancer, doses must be high and the cancer cells must be exposed to essential fatty acids for an extended period of time."[4] Horrobin's work is preliminary, but it supports the long standing work of Johanna Budwig of Germany who has used omega-3 oils and sulfur containing amino acids for administration to cancer victims for many years with considerable success.

References:

1. "Longchain Serum Fatty Acids and the Risk of Thyroid Cancer: A Population-Based Case-Controlled Study in Norway", Berg, Jens P., et al, Cancer Causes and Control, 1994;5:433-439.

2. "The Role of Fatty Acids and Eicosanoid Synthesis Inhibitors in Breast Cancer", Noguchi, Masakuni, M.D., Oncology, 1995;52:265- 271.

3. "Polyunsaturated Fatty Acids and Cancer", Caygill, C.P.J. and Hill, M.J., European Cancer Prevention Organization, January 1995;6-7.

4. Review Article: Medical Uses of Essential Fatty Acids (EFAs)_, Horrobin, David F., Veterinary Dermatology, 1993;4(4):161-166.

5. Budwig, Johanna, Flax Oil as a True Aid Against Arthritis, Heart Infaction, Cancer and Other Diseases, Apple Publishing Co.,:Vancouver, Canada, 1994.

Inflammation

It appears to be possible to decrease the inflammatory response in the body by inclusion of fish oils in the diet.

This would have implications for inflammatory diseases such as arthritis, psoriasis, asthma, and migraine headaches.

One of the substances responsible for inflammation in the body is called a leukotriene. These compounds are temporary tissue hormones that are a thousand times more inflammatory than histamine. A dramatic drop in these substances has been noted as a result of supplementation with fish oils.

In one study seven normal people were fed 3.2 grams of EPA, a component of fish oil, daily for six weeks. The EPA content of white blood cells increased sevenfold. The release of the inflammatory leukotrienes in the body decreased by 37%.

Reduction in nasal congestion associated with asthma and allergies has been noted with recently developed medications with a similar mode of action to salmon oil.[2] Fish oils may also benefit irritable bowel problems.[3] Fish oils have been used to improve the quality of the coat in animals and also to improve skin conditions.[4] Fish oils can be of value in inflammatory skin conditions like psoriasis.[5]

REFERENCE::

1. Lee, Tak, et. al., "Effect of Dietary Enrichment with Eicosapentaenoic and Docosahexae-noic Acids on in Vitro Neutrophil and Monocyte Leukotriene Generation and Neutrophil Function", New England Journal of Medicine, 1985, vol. 312: 1217-24.

2. Knapp, HOward, R., "Reduced Allergen-induced Nasal Congestion and Leukotriene Synthesis with an Orally Active 5-lipoxygenase Inhibitor," *New England Journal of Medicine*, v323, Dec. 20, 1990, p. 1745. See also, Stechschulte, Daniel, "Leukotrienes in Asthma and Allergic Rhinitis," *The New England Journal of Medicine*, v323, Dec. 20, 1990, p. 1769.

3. "Intense Nutritional Support in Inflammatory Bowel Disease", Wu, Scott, et al, Digestive Diseases and Sciences, April 1995;40(4):843-852.

4. "Double-Blinded Crossover Study With Marine Oil Supplementation Containing High-Dose Eicosapentaenoic Acid For the Treatment of Canine Pruritic Skin Disease", Logas, Dawn and Kunkle, Gail A., et al, Veterinary Dermatology, 1994;5(3):99-104.

5. "Dietary Supplementation With Very Long-Chain N-3 Fatty Acids in Man Decreases Expression of The Interleukin-2 Receptor (CD25) on Mitogen-Stimulated Lymphocytes From Patients With Inflammatory Skin Diseases", Soyland, E., et al, European Journal of Clinical Investigation, 1994;24:236-242.

The Time Factor

Rudin's work indicates that results of supplementation are not immediate. Within 1-2 weeks tinnitus, dandruff, dry skin and fatigue began to improve in the patients he worked with. Marked improvement was noted within 6-8 weeks in such problems as cold sensitivity, food allergies, alcohol intolerance, easy bruising, and irregular sleep patterns.

Reference:

Rudin, Donald, "The Major Psychoses and Neuroses as Omega-3 Essential Fatty Acid Deficiency Syndrome: Substrate Pellagra", Biological Psychiatry, Vol. 16, No. 9, 1981, p. 837.