

COMPLETE OMEGA-3 ESSENTIALS

Ingredients: Each Two Soft Gelatin Capsules Supplies: EPA 600 mg, DHA 300 mg, ALA (Alpha-Linolenic Acid) 100 mg, Vitamin E (D-Alpha Tocopherol) (natural) 100 i.u., Mixed Natural Tocopherols 4 mg.

Supportive Function: Nutritional support for non-specific inflammatory response and a healthy immune system, normal brain and nervous system development/function and kidneys. Use as part of the diet to help maintain healthy cholesterol and triglyceride levels. Mood enhancer. Take with Complete Omega-3 Co-Factors for best results.

When is Complete Omega 3 Essentials helpful?

Nutritional support for a multitude of health categories, including chronic pain/swelling; inflammation; cardiovascular; osteoarthritis; normal brain and nervous system development/function; immunoregulation; disc herniation; depression; autoimmune (i.e. RA, Lupus, etc.); diabetes; insulin sensitivity; Alzheimer's; colitis; anti-aging; cholesterol; triglycerides; plaque formation; MS; asthma; allergies; psoriasis; dermatitis; organ transplant survival; kidney function; vaccination, C reactive protein, etc.

Clinical Applications and Research:

Health benefits: One long detailed article (23 pages), containing 172 references, touts some of the many health benefits of fish oil. The benefits include positive influences on: Inflammation, pain, swelling, kidney function, MS, rheumatoid arthritis, psoriasis, autoimmune diseases, cardiovascular disease, organ transplant, asthma, diabetes, inflammatory bowel, hypersensitivity/allergy, non-rheumatoid joint inflammation, gene expression, immune cells, fever, erythema, vascular permeability, edema, and others (Calder PC. Immunoregulatory and Anti-inflammatory Effects of n-3 Polyunsaturated Fatty acids. Brazilian J Med and Biol Res 1998; 31(4): 467-90.)

This article also pointed out that fish oil acts on receptor operated calcium channels. Calcium channel blocker drugs, used to regulate high blood pressure, operate on a similar mechanism. Additionally, the effect on gene expression, of factors such as cytokines, adhesion molecules, and nitric oxide synthase, can affect cell membrane receptor proteins which alters the membrane's sensitivity to inflammatory mediators. This is yet another way in which fish oil can modulate the inflammatory response.

“Chronic inflammation, which is detrimental to tissues, is the basic pathogenic mechanism of hypersensitivity reactions against xenobiotics. Other frequent pathologies, for instance atherosclerosis, chronic hepatitis, inflammatory bowel disease (IBD), liver cirrhosis, lung fibrosis, psoriasis, and rheumatoid arthritis are also chronic inflammatory diseases.... Dietary supplements ranging 1-8 g per day of omega 3 fatty acids have been reportedly beneficial in the treatment of IBD (inflammatory bowel disease), eczema, psoriasis and rheumatoid arthritis... treatment with omega-3 long-chain PUFA reduces mucosal damage (Gil A. Polyunsaturated fatty acids and inflammatory diseases. Biomed Pharmacother. 2002 Oct; 56(8): 388-96.)

Fibromyalgia/chronic fatigue: Patients with Fibromyalgia/chronic fatigue are suspected

of having blood coagulation defects, where their blood is too thick and not able to deliver nutrients appropriately, or remove toxins efficiently. Blood coagulation has been tied to the fatigue experienced by these patients (Kop WJ et. al. Relationship of blood coagulation and fibrinolysis to vital exhaustion. *Psychosom Med* 1998 May-Jun; 60(3): 352-8). The blood thinning effect of fish oil allows more oxygen delivery to the tissues and therefore more support for tissue repair. “Most symptoms of Gulf War Illness (GWI) are similar to Chronic Fatigue Syndrome (CFS) and/or Fibromyalgia (FM). We investigated whether these symptoms are associated with an activated coagulation system as has been reported in some cases of CFS/FM. ... Our findings show activation of the coagulation system in GWI. This evidence of a hypercoagulable state suggests that symptoms may be due to poor blood flow and, therefore, a basis for the potential utility of anticoagulant therapy” (Hannan KL, et. al. Activation of the coagulation system in Gulf War Illness: a potential pathophysiologic link with chronic fatigue syndrome. A laboratory approach to diagnosis. *Blood Coagul Fibrinolysis* 2000 Oct; 11(7): 673-8). Symptoms of fatigue, myalgia and depression improved in another study after supplementation with fish oil (Horrobin, D.F., BCh, Essential Fatty Acids, Immunity and Viral Infections. *Journal of Nutritional Medicine*, 1990; 1:145-151).

Allergy: Dietary intake of the omega 6’s (arachidonic acid) was positively associated with seasonal allergic rhinoconjunctivitis (Wakai, K. et al. Seasonal allergic rhinoconjunctivitis and fatty acid intake: A cross-sectional study in Japan. *Ann Epidemiol* 2001 Jan; 11(1): 59-64.) Omega 3’s from fish oil competitively inhibit the production of all the inflammatory modulators from omega 6’s. Other atopic diseases such as bronchial asthma and atopic dermatitis are characteristically associated with an imbalance between different types of T cells and cytokines, leading to an increase of IgE and histamine, which gives rise to allergic symptoms (Strannegard O and Strannegard I.L. *Allergy* 2001; 56(2): 91-102).

Asthma: Fish oils make anti-inflammatory substances. Fish oil can block some of the inflammatory leukotrienes, and leukotrienes are responsible for most of the inflammation that is involved in asthma attacks. Leukotrienes are 1,000 times more potent as stimulators of bronchial constriction than histamine (Murray M and Pizzorno J, *Encyclopedia of Natural Medicine*, Prima Publishing, CA. p. 152). It is believed that asthma sufferers may have an imbalance in fatty acid metabolism, subjecting them to risk for elevated leukotriene production (Yen SS & Morris HG. *Biochem Biophys Res Com* 1981; 103:774-79).

Stroke: In a study of almost 80,000 women in the Nurses’ Health Study, those with higher intakes of fish had a lower risk of stroke. In a subgroup of the study, significantly reduced risk of thrombotic infarction was found in the women who ate fish 2 or more times per week. Mechanisms may include: inhibition of platelet aggregation, lowered blood viscosity, suppressed formation of leukotrienes, reduction of plasma fibrinogen blood pressure levels, and reduction of insulin resistance (Hiroyasu I, et al. Intake of fish and omega 3 f.a. and risk of stroke in women (*JAMA* 2001; 285(3) Jan 17:304-312).

Bipolar disorder/depression: Omega 3 fatty acids improved the short-term course of illness in a preliminary study of patients with bipolar disorder. The omega 3 groups performed better for nearly every outcome measure (Stoll, A.L. et al. Omega 3 fatty acids in bipolar disorder: a preliminary double blind, placebo-controlled trial. *Arch Gen Psychiatry* 56(5): 407-12).

“Fish oil blocked the abnormal signaling in the brain which we think is present in mania and depression” – Andrew Stoll, lead researcher in a study published by the Am Med Assoc *Arch Gen Psychiatry* (Fatty oil in fish eases depression. Reuters May 14, 1999). Also, “Stoll said omega 3 fatty acids boost levels of the neurotransmitter serotonin in the brain – similar to the effect of popular anti-depressants such as Prozac”. One of the mechanisms may be that the omega 3’s replenish the lipid bilayer surrounding brain cells that receive

signals from chemical transmitters. As Dr. Murphy points out, the fat we eat affects the ability of neurotransmitters like serotonin and dopamine to dock on membrane receptor sites and initiate their respective physiological functions.

Brain development/regeneration of nerve cells: Consumption of omega 3's by eating fish once a week significantly reduces risk of Alzheimer's (Barberger-Gateau, P. et al. *BMJ* 2002; 325 Oct 26:932-933). This article also noted a specific role of the omega 3 fatty acids in the regeneration of nerve cells.

Sudden death/arrhythmia: A randomized trial suggested that dietary supplements of omega 3's might reduce the risk of sudden death among survivors of a heart attack. The main cause of sudden death among these men in the study was cardiac arrhythmia. Other evidence supports the association of the omega 3's with reduced risk of sudden death among men who have not experienced prior cardiovascular disease (Albert, C. et al. Blood levels of long chain n-3 fatty acids and the risk of sudden death. *NEJM* Apr 11, 2002; 346(15): 1113-1118.) The DHA in fish oil could have a positive influence in heart failure by increasing efficiency of pump and increasing the force of contraction (Grynberg A et al. Effect of docosahexaenoic acid and eicosapentaenoic acid in the phospholipids of rat heart muscle cells on adrenoceptor responsiveness and mechanism. *J Mol Cell Cardiol* 1995 Nov; 27(11): 2507-20).

Cholesterol/Triglycerides: Omega 3's lower LDL cholesterol, and also have a favorable effect on reducing triglycerides (Hu, F.B. *JAMA* 2002; 288(20): 2569-2578). Since hormone replacement therapy (HRT) can raise triglycerides significantly, "Taking omega-3 supplements might be good co-therapy for women taking HRT" says Ken D. Stark, a doctoral candidate at the University of Guelph, in Canada and lead researcher of a study published in the *American Journal of Clinical Nutrition*. The 35 women in the study, half of whom were on HRT, each were given a daily dose of fish oil concentrate containing 4 grams of omega-3 fatty acids.

Osteoarthritis: Supplementation with omega 3's reduced the release of proteoglycan metabolites from articular cartilage and abolished aggrecanase and collagenase activity (Curtis, C.L. *Arthritis and Rheumatism* 2002; 46(6): 1544-1553). Also, as Dr. Murphy points out, supplementation of omega 3's can be important in both quiescent and active osteoarthritis.

Back Pain/Disc Herniation: PGE2 is the principal mediator related to the induction of sciatica and low back pain. It provokes ectopic firing of nerve roots, indicating that it may play a part in the chemical irritation of nerve roots. Dorsal root ganglion neurons can be sensitized by PGE2. "PGE2 possesses the capability of causing pain, or enhancing pain-inducing substances such as bradykinin...it is suggested that COX-2 may be involved in the pathogenesis of lumbar disc herniation through upregulation of PGE2 production" (Miyamoto, H et al. *Spine* 2002; 27(22): 2477-2483).

C reactive Protein: DHA is associated with reduced C reactive protein, which is an independent risk factor for heart disease, and an important marker of inflammation that is being related to several diseases with suspected inflammation etiology. "The inverse correlation between CRP and DHA may reflect an anti-inflammatory effect of DHA in patients with stable coronary artery disease and suggest a novel mechanism by which fish consumption may decrease the risk of coronary artery disease" (Madsen T et al. C-reactive protein, dietary n-3 fatty acids, and the extent of coronary artery disease. *Am J Cardiol* 2001 Nov 15; 88(10): 1139-42).

General Immune System: The fatty acids in fish oil can influence the immune system by their effect on cytokines, macrophages, and other immune molecules. Cytokines and

macrophages are immune defense molecules highly involved in the inflammatory response.

“Inclusion in the diet of high levels of omega 3’s significantly reduces the movement of human monocytes towards chemotactic agents and the production of proinflammatory cytokines by human mononuclear phagocytes... Such omega 3-induced effects may be of use as a therapy for acute and chronic ... disorders” (Kremer, JM (ed.) Progress in Inflammation Research: Medicinal fatty acids in inflammation. Birkhauser Verlag, 1998, as cited by Dan Murphy, DC, DABCO).

Autoimmune disease: The fatty acids in fish oil can influence the autoimmune system by their effect on cytokines, macrophages, and the MHC II complex. The MHC class II complex is a genetically set cell coding system that determines susceptibility to autoimmune disease. Fish oil affects T-cells, adhesion molecule expression, signal transduction and MHC class II expression (reduces the expression of these autoimmune-susceptible cells) (Immunoregulatory and anti-inflammatory effects of omega 3 polyunsaturated fatty acids. Brazilian Journal of Medical and Biological Research 1998 Apr;31(4):467-90, as cited by Dan Murphy, DC, DABCO). Omega 3-induced effects may be of use as a therapy for “disorders which involve an inappropriately-activated immune response” (Kremer, JM (ed.) Progress in Inflammation Research: Medicinal fatty acids in inflammation. Birkhauser Verlag, 1998, as cited by Dan Murphy, DC, DABCO). **Part of a non-pharmacological approach to SLE (lupus) is to “treat both symptoms and the underlying inflammation”, and a diet high in fish oil is part of the recommended protocol** (Ioannou Y, Isenberg DA. Current concepts for the management of systemic lupus erythematosus in adults: a therapeutic challenge. Postgrad Med J. 2002 Oct; 78(924): 599-606.)

Suggested Dosage: 2 capsules daily or as directed

Size: 90

Vegetarian: No

Contraindications: Fish oil can thin the blood and should not be combined with blood thinning drugs. Thinning the blood is normally considered to be advantageous because of the effect on reduced risk for blood clots/heart attack. Although blood thinning can hypothetically raise risk for hemorrhage/stroke, fish intake has been associated with reduced risk for stroke (Hiroyasu I, et al. Intake of fish and omega 3 fatty acids and risk of stroke in women. JAMA 2001; 285(3) Jan 17:304-312.)