



Toll Free: 1-877-563-8848

Fax: 250-380-2681

Email: info@innatechoice.com

Website: www.innatechoice.com

Omega 3 in Health & Illness

Omega 3 for Wellness and Prevention

The role of Omega-3 EFAs (specifically EPA and DHA) in the promotion of health and the prevention of illness has been studied a great deal in recent years. Both scientists and practitioners are celebrating the results that have been found to date and with every research study the importance of EFAs for health promotion and illness prevention becomes more evident.

Omega 3 essential fatty acids (EFAs) are some of the most crucial essential nutrients for human and other animal health ever identified. Over 2000 scientific studies provide evidence of the importance of EPA and DHA essential fatty acids for the maintenance and restoration of health and the prevention of disease.

Omega 3 EFAs are extremely important in the structure and function of every cell in the body and the function of your cells is what determines your health. Your cells are what determine your immune function, healing, hormone levels, heart function, cholesterol levels, blood pressure, digestion, moods etc. Literally, the function and health of your cells determines every aspect of your health. EPA and DHA omega 3 EFAs are part of every cell membrane and are required to maintain the proper shape, flexibility or fluidity, and “slipperiness” of cell membranes.

The flexibility and “slipperiness” of cell membranes is important for the flow of blood through blood vessels and decreasing the risk of stroke and heart attack. This fluidity or flexibility of cell membranes is also crucial to ensure the proper flow of nutrients into cells as well as the proper shape of cell receptors for hormones such as insulin.

In addition, EFAs are required for proper nerve signal transmission (memory, concentration, cognitive ability, muscle coordination and strength) and immune function including defence against cancer. This is why EPA and DHA deficiency are linked with cognitive impairments and learning and behaviour disabilities such as ADHD, with depression, and with decreased cognitive ability and increased risk of Alzheimer’s and dementia in the elderly. EPA and DHA deficiency is also highly correlated with increased risk of breast, colon, and prostate cancer.

EPA and DHA omega 3 EFAs also play a major role in regulating inflammation via substances called prostaglandins. EPA and DHA Omega 3 fatty acids produce anti-inflammatory prostaglandins while Omega 6 fatty acids produce pro-inflammatory prostaglandins.

Having a diet that is toxic with Omega 6 or deficient in Omega 3 EFAs creates a pro-inflammatory state within the body. This is very significant because inflammation is at the root of virtually all of the common chronic illnesses such as heart disease, stroke, diabetes, and depression as well as the autoimmune and atopic diseases such as arthritis, Crohn's Disease, irritable bowel, psoriasis, eczema, allergies, fibromyalgia, lupus, and multiple sclerosis. Inflammation is also a major factor in dysmenorrhea (menstrual pain and/or cramping), headaches, and back and neck pain.

Omega 3 EFAs play a role in virtually every human function including growth and development, digestion, brain and nerve function, immune function, hormone production and regulation, maintenance of skin and bones, regulation of healing and inflammation, heart function, vision, cholesterol levels, and even emotions and behaviour.

This is why supplementing with Omega 3 EFAs has been shown to help people with so many different illnesses. In reality supplementing with Omega 3 EFAs will help anyone that is deficient in Omega 3 EFAs whether they have a diagnosed illness or not. The fact of the matter is that everyone needs Omega 3 EFAs and due to dietary practices virtually everyone in Western society is deficient. Without these essential nutrients cells cannot function properly and illness is inevitable even though it may take years before symptoms arise.

This does not mean that a deficiency in Omega 3 EFAs is the only cause of all illness; that would be an unscientific and illogical claim. However, it does absolutely mean that if someone is deficient in Omega 3 EFAs their cell function and thus their health is compromised and will be improved when they begin to supplement – this is an indisputable scientific fact. Obviously if Omega 3 EFAs are needed for proper cell function and cell function determines our health then Omega 3 EFAs are a significant determining factor in health. This is exactly what research indicates.

The above information is why we stress the importance of supplementation BEFORE illness develops. It is both dangerous and illogical to wait until illness develops to begin to take care of yourself or your children or your pets! How can we PREVENT ILLNESS or PROMOTE HEALTH if we wait until we are already ill before we take action?

Healthy Pregnancy and Infant and Childhood Development

Research is clear that pregnant women, the fetus, newborn infants and children all require sufficient EPA and DHA for proper health and development and the prevention of disability and illness. Very importantly, the EFA intake of the mother determines the amount of these vitally important nutrients that she can supply to her developing fetus and to her newborn infant during breastfeeding. Sufficiency of EPA and DHA Omega 3 EFAs as found in Omega Sufficiency™ is so important researchers from the Mayo Clinic recommended that EPA and DHA be supplemented in every pregnancy and that refined and hydrogenated fats be avoided during this critical period.

Scientific research indicates that deficiencies in EPA and DHA Omega 3 EFAs have significant consequences to both mother and child. In 1996, Frank Oski, retired chairman of pediatrics at Johns Hopkins University led a campaign of alarmed researchers and clinicians who bombarded the FDA with over 1,000 letters pleading and demanding that they ensure the health and welfare of our children by mandating the addition of DHA to infant formula.

EPA and DHA deficiency in pregnancy has been scientifically linked to post-partum depression, pre-term delivery, delays in intrauterine growth, and pregnancy-induced hypertension.

Studies have shown that EPA and DHA Omega 3 fatty acids are crucial for brain growth and development, intelligence, learning, and behaviour. Researchers in Dallas conducted a randomized, controlled study on DHA and mental development in term infants (2000). They found that adding DHA to infant formulas improved both motor and cognitive function of infants.

In the recent Oxford – Durham study significant improvements were found in reading, spelling, and behaviour over 3 months of EPA/DHA supplementation; 7 of 16 of the participants who were diagnosed with ADHD no longer met the diagnostic criteria for ADHD after supplementation! A study published in the journal *Physiology of Behaviour* showed that deficiencies in Omega 3 fatty acids were significantly correlated with behaviour problems in boys aged 6 to 12.

The evidence is clear; pregnant women, breastfeeding women, infants, and children all require sufficient EPA/DHA as found in Omega Sufficiency™ for proper health and development and for the prevention of disability and illness.

References

- Birch, E. E., Garfield, S., Hoffman, D.R., Uauy, R, Birch, D.G. A randomized controlled trial of early dietary supply of long-chain polyunsaturated fatty acids and mental development in term infants. *Developmental Medicine in Child Neurology*, 2000, March, 42(3), p 174-81.
- Burgess et al. Long -chain polyunsaturated fatty acids in children with attention-deficit hyperactivity disorder. *Am J Clin Nutr*, 2000 71 (1): 327-330
- Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S
- Connor, W.E. et al. Increased docosahexaenoic acid (DHA) levels in human newborn infants by the administration of sardines and fish oils during pregnancy. *Lipids* 1996; 31 (suppl): S183-7.
- do Nascimento, CM, Oyama, LM. Long chain polyunsaturated fatty acids essential for brain growth and development. *Nutrition*, 2003 Jan: 19 (1): 66
- Farquharson, J. et al. Infant cerebral cortex phospholipids fatty acid composition and diet. *Lancet* 1992;340:810-13.
- Holman, Ralph T., Johnson, Susan, Ogburn, Paul (Mayo Clinic) Deficiency of essential fatty acids and membrane fluidity during pregnancy and lactation. *Biochemistry, Proc. Natl. Acad. Sci. USA*, Vol. 88: 4835-4839, June 1991.
- Lucas, A. et al. Breast milk and subsequent intelligence quotient in children born pre-term. *Lancet* 1992; 339: 261-4
- Makrides, M. et al. Fatty acid composition of brain, retina, and erythrocytes in breast and formula fed infants. *Am J Clin Nutr* 1994; 60: 189-194
- Myanaga, K., K. Yonemura, and K. Yazawa. (1996). DHA shortens P300 latency in healthy persons. In *International Conference on Highly Unsaturated Fatty Acids in Nutrition and Disease Prevention*. Bxarcelona, Spain.
- Olsen, SF, Secher, NJ, Tabor, A, Weber, T, Walker, JJ, Gluud. (2000). Randomized clinical trials of fish oil supplementation in high risk pregnancies. *British Journal of Obstetrics and Gynecology*, vol.107(3), p. 382-95.
- Richardson AJ, Montgomery P. The Oxford-Durham study: a randomized, controlled trial of dietary supplementation with fatty acids in children with developmental coordination disorder. *Pediatrics*. 2005 May;115(5):1360-6.

Stevens, LJ, Zentall, SS, Abate, ML, Kuczek, T, Burgess JR. (1996). Omega-3 fatty acids in boys with behavior, learning, and health problems. *Physiology of Behaviour*, vol. 59(4-5):915-20.

Cardiovascular Health

Evidence for the importance of EPA and DHA Omega 3 fatty acids in cardiovascular health promotion and illness prevention, recovery, and survival is well documented in the scientific literature. The American Heart Association has recently recognized the importance of the Omega-3 essential nutrients EPA and DHA found in Omega Sufficiency™ for promoting cardiac health, lowering blood triglycerides and C. reactive protein and protecting against cardiovascular disease.

Even the American Government now widely recognizes the importance of EPA and DHA Omega 3 fatty acids with respect to cardiovascular health. The White House's Office of Management and Budget (OMB) sent a letter to Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA) requesting the departments promote the consumption of Omega-3 fatty acids.

OMB official John D. Graham in his letter to HHS and USDA wrote, "Both epidemiological and clinical studies find that an increase in consumption of Omega-3 fatty acids results in reduced deaths due to CHD (cardiovascular heart disease)." He goes on to say that "The government should make this life-saving information as widely available as possible."

A recent review article on this topic concluded that fish oils should be included in prevention programs for coronary heart disease. The study concludes that Omega-3 polyunsaturated fatty acids as found in Omega Sufficiency™ appear to (a) slow the development of atherosclerosis, (b) prevent fatal arrhythmias, and (c) decrease mortality following a heart attack.

In a study of over 6000 middle aged men conducted at the Veterans Affairs Medical Center the evidence showed that men with a higher blood level of DHA had a 50% lower risk of developing heart disease than did men with lower levels.

This is clear evidence of the significant preventative effects of supplementation with fish oil such as Omega Sufficiency™ against the development of coronary heart disease.

Research has also shown that Omega-3 fatty acid supplementation improves recovery and survival from heart attack. A 1997 study showed that the rate of cardiac death was significantly decreased in a population of cardiovascular patients who increased their intake of Omega 3 EFAs.

Fish oil supplementation has also been shown to be beneficial for those with atherosclerosis and to reduce the risk of heart attack.

A study out of Johns Hopkins University School of Medicine showed supplementation with fish oil significantly helped to normalize blood pressure and many studies have shown the importance of EFAs for healthy cholesterol metabolism.

Research clearly shows that sufficient dietary intake of EPA and DHA as found in Omega Sufficiency™ is vital for cardiovascular health and for the prevention and survival of cardiovascular illness.

References

Angerer P, von Schacky C., 2000. Omega-3 polyunsaturated fatty acids and the cardiovascular system. *Current Opinions in Clinical Nutrition and Metabolism Care*, 3(6),439-45.

Appel, LJ, Miller ER, Seidler, AJ, Whelton, PK. (1993). Does supplementation of diet with fish oil reduce blood pressure? A meta-analysis of controlled clinical trials. *Archives of Internal Medicine*, vol. 153(12),p. 1420-38.

Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S

Goodnight, SH et al. Polyunsaturated fatty acids, hyperlipidemia and thrombosis. *Arteriosclerosis* 1982; 2: 87-113

Harris, WS et al. Effect of fish oil on VLDL triglyceride kinetics in man. *J Lipid Res* 1990;31:1549-58

Harris WS, Isley WL., 2001. Clinical trial evidence for the cardioprotective effects of omega-3 fatty acids. *Current Atherosclerosis Reports*, vol. 3(2), p. 174-9.

Simon, Joel A., et al. Serum fatty acids and the risk of coronary heart disease. *American Journal of Epidemiology*, Vol. 142(5), p. 469-76

Simopoulos, AP (1997). Omega-3 fatty acids in the prevention-management of cardiovascular disease. *Canadian Journal of Physiological Pharmacology*, Vol. 75(3), p.

von Schacky, Clemens, et al. (1999). The effect of dietary omega-3 fatty acids on coronary atherosclerosis. *Annals of Internal Medicine*, Vol. 130, April 6, 1999, p. 554-62.

^ Top

Cognitive and Emotional Health

Every membrane of every nerve cell in the brain requires essential fatty acids to function properly. Deficiencies in Omega 3 fatty acids, especially EPA and DHA have been conclusively linked to decreased brain function including decreased cognitive abilities, aberrant behaviour, increased aggression, increased depression, autism, increased memory loss, accelerated brain aging, degeneration, and dementia and to decreased normal brain and cognitive development in children (see section above on pregnancy and children).

Furthermore, sufficient dietary intake of EPA and DHA Omega 3 fatty acids as found in Omega Sufficiency™ has been shown to be effective in promoting cognitive and emotional health and development and in preventing cognitive and emotional illness and disability. Supplementation with EPA and DHA has also been shown to help restore normal function in those already afflicted with the aforementioned cognitive and emotional illnesses and disabilities.

Because they are so important in the structure and function of brain cells, EPA and DHA have powerful mood elevating and mood stabilizing qualities. There have been a significant number of studies confirming that EPA and DHA as found in Omega Sufficiency™ promote positive mood and help to overcome the depression that is commonly associated with EPA and DHA deficiency.

A study published in Archives of General Psychiatry in 2002 showed that depression is related to EPA deficiency and that supplementation with EPA showed "strong beneficial effects on items rating depression, anxiety, sleep, lassitude, libido, and suicidality." Importantly, these results were found in people who were not responding to pharmaceutical antidepressants.

A study out of Spain in 1996 researched the relationship between the dietary intake of EPA and DHA and the speed of the p300 brain wave which is linked to memory and learning ability. Supplementation with EPA and DHA significantly improved the speed of the p300 brain wave. An increase in p300 brain wave speed is correlated with increased memory and learning ability and decreased loss of memory and dementia. Without doubt, sufficient dietary intake of EPA and DHA as found in Omega Sufficiency™ is required for proper brain function, healthy bright mood, and the prevention and improvement of cognitive and emotional illnesses.

References

- Bourre. J.M. Roles of unsaturated fatty acids (especially omega-3 fatty acids) in the brain at various ages and during ageing. *J Nutr Health Aging*. 2004; 8(3): 163-74.
- Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S
- Conquer JA, Tierney MC, et al., 2000. Fatty acid analysis of blood plasma of patients with Alzheimer's disease, other types of dementia, and cognitive impairment. *Lipids*, vol. 35(12):1305-12.
- De Vriess, S.R., Chrostophe, AF, Maes, M. In humans, the seasonal variation in polyunsaturated fatty acids is related to the seasonal variation in violent suicide and serotonergic markers of violent suicide. *Prostaglandins Leukot Essent Fatty Acids*: 2004 Jul; 71(1); 13-18.
- Edwards R, Peet M, et al. (1998). Omega-3 polyunsaturated fatty acid levels in the diet and in red blood cell membranes of depressed patients. *Journal of Affective Disorders*, vol. 48(2-3):149-55.
- Kyle, D.J. et al. Low serum docosahexaenoic acid is a significant risk factor for Alzheimer's dementia. *Lipids*. 1999;34 Suppl: S245
- Logan, AC. Omega-3 fatty acids and major depression: A primer for the mental health profession. *Lipids Health Dis*. 2004 Nov 09: 3 (1):25.
- Maes M, Christophe A, Delanghe J, Altamura C, Neels H, Meltzer HY (1999). Lowered omega-3 polyunsaturated fatty acids in serum phospholipids and cholesterol esters of depressed patients. *Psychiatry Res*, vol 85(3), p. 275-91.
- Morris, MC. et al. Consumption of fish and n-3 fatty acids and risk of incident Alzheimer disease. *Arch Neurol*. 2003 Jul; 60 (7): 940-6.
- Peet, M., Horrobin, D.F. A dose-ranging study of the effects of ethyl-eicosapentaenoate in patients with ongoing depression despite apparently adequate treatment with standard drugs. *Arch Gen Psychiatry* 2002 Oct;59(10):913-9.
- Vancassal, S, Durand, G, Barthelemy, C, Lejeune, B, Martineau, J, Guilloteau, D, Andres, C, Chalon, S. Plasma fatty acid levels in autistic children. *Prostaglandins Leukot Essent Fatty Acids*, 2001, July 65(1), p 1-7.

Healthy Regulation of Inflammation and Pain

Contrary to popular belief, both inflammation and pain are healthy, necessary parts of healing from acute stress and injury. Inflammation and pain can however become chronic and “hyper” when the body is in a chronic state of imbalance or toxicity or deficiency.

Sufficiency of EPA and DHA Omega 3 EFAs plays a major role in regulating inflammation via substances called prostaglandins. EPA and DHA Omega 3 fatty acids produce anti-inflammatory prostaglandins while Omega 6 fatty acids produce pro-inflammatory prostaglandins.

Having a diet that is toxic with Omega 6 or deficient in Omega 3 EFAs creates a pro-inflammatory state within the body. This is very significant because inflammation is at the root of virtually all of the common chronic illnesses such as heart disease, stroke, diabetes, and depression as well as the autoimmune and atopic diseases such as arthritis, Crohn’s Disease, irritable bowel, psoriasis, eczema, allergies, fibromyalgia, lupus, and multiple sclerosis. Inflammation is also a major factor in dysmenorrhea (menstrual pain and/or cramping), headaches, and back and neck pain.

It is well documented that restoring Omega 3 sufficiency and restoring the proper Omega 3:Omega 6 fatty acid ratios with EPA and DHA supplementation (Omega Sufficiency™) is effective at reducing excess inflammation and the pain and illnesses associated with it.

References

Altman R, Gray R. Inflammation in osteoarthritis. *Clin Rheum Dis* 1985;11:353.

Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S

Geusens, P., Wouter, C., Nijs, J., Jiang, Y, Dequeken, J. (1994). Long-term effect of omega-3 fatty acid supplementation in active rheumatoid arthritis, a 12-month, double-blind, controlled study. *Arthritis & Rheumatism*, 37(6), p. 824-829.

Glueck CJ, McCarren T, Hitzemann R, et al. Amelioration of severe migraine with omega-3 fatty acids: a double-blind placebo controlled clinical trial. *Am J Clin Nutr* 1986;43:710 [abstr].

Harel Z, Biro FM, Kottenhahn RK, Rosenthal SL. Supplementation with omega-3 polyunsaturated fatty acids in the management of dysmenorrhea in adolescents. *Am J Obstet Gynecol* 1996;174:1335-8.

McCarren T, Hitzemann R, Allen C, et al. Amelioration of severe migraine by fish oil (omega-3) fatty acids. *Am J Clin Nutr* 1985;41:874 [abstr].

Simon, Joel A., et al. Serum fatty acids and the risk of coronary heart disease. American Journal of Epidemiology, Vol. 142(5), p. 469-76

Simopoulos, A.P. Omega-3 fatty acids in inflammation and auto-immune diseases. J Am Coll Nutr. 2002 Dec; 21 (6): 495-505

Simopoulos, AP (1997). Omega-3 fatty acids in the prevention-management of cardiovascular disease. Canadian Journal of Physiological Pharmacology, Vol. 75(3),

Volker, D, Fitzgerald, P., Major, G., Garg, M. (2000). Efficacy of fish oil concentrate in the treatment of rheumatoid arthritis. Journal of Rheumatology, Oct;27(10), p. 2305-7.

Bone and Joint Health

Sufficiency of Omega 3 fatty acids plays an important role in bone and joint health and deficiency of EPA and DHA has been shown to be correlated with increased incidence and severity of both osteoporosis and osteoarthritis. (As Rheumatoid arthritis is considered an autoimmune disease it is covered in the Immune Health and Autoimmune Illness section)

Osteoporosis occurs when bone resorption (loss) occurs at a greater rate than bone formation. One of the most powerful influences on the rate of bone loss to bone formation is the pro-inflammatory mediator prostaglandin E2. Too much Omega 6 fatty acids and a deficiency of EPA and DHA Omega 3 fatty acids induces increased expression of prostaglandin E2 and leads to increased bone loss and decreased bone formation.

Research has shown that taking fish oil such as Omega Sufficiency™ on a regular basis can improve calcium absorption and increase bone formation. This is not surprising considering the known regulating effects of EPA and DHA in inflammation related to prostaglandin E2 levels.

Osteoarthritis is literally "inflammation of joints" from wear and tear and improper lubrication of the contact surfaces. As EPA and DHA are required to produce proper joint lubrication and to properly regulate inflammation and pain via the prostaglandin pathways it makes sense that EPA and DHA sufficiency is required for healthy, lubricated, comfortable joints.

Not surprisingly, research on supplementation with EPA and DHA from fish oil like Omega Sufficiency™ has shown improvements for people suffering with osteoarthritis.

The evidence regarding the necessity of dietary sufficiency of EPA and DHA for bone and joint health is conclusive. If you want healthy bones and properly lubricated joints you need to ensure the proper dietary intake of EPA and DHA Omega 3 fatty acids. Omega Sufficiency™ provides this for you and your family.

References

Altman R, Gray R. Inflammation in osteoarthritis. *Clin Rheum Dis* 1985;11:353.

Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S

van Papendorp DH, Coetzer H, Kruger MC. Biochemical profile of osteoporotic patients on essential fatty acid supplementation. *Nutr Res* 1995;15:325–34.

Seaman, D. Health care for our bones: A practical nutritional approach to preventing osteoporosis. 2004 *JMPT* (27) 9.

Stammers T, Sibbald B, Freeling P. Fish oil in osteoarthritis. *Lancet* 1989;ii:503 [letter Terano, T. Effect of omega 3 polyunsaturated fatty acid ingestion on bone metabolism and osteoporosis. *World Rev Nutr Diet*. 2001;88:141-47.

Menstrual Health

Several studies have shown that deficiency of omega-3 fatty acids is associated with increased incidence of menstrual pain and discomfort and research has shown improved menstrual comfort with fish oil supplementation. Dysmenorrhea (menstrual pain and/or cramping), like all pain and inflammation, is controlled by inflammatory mediators called prostaglandins. It is well documented that restoring sufficient EPA and DHA levels is effective at reducing excess pro-inflammatory prostaglandins and the pain associated with them.

References

Deutch, B. (1996). Painful menstruation and low intake of n-3 fatty acids. *Ugeskr Laeger*, July 15, 158(29), p. 4195-8.

Deutch, B. (1995). Menstrual pain in Danish women correlated with low n-3 polyunsaturated fatty acid intake. *European Journal of Clinical Nutrition*, July, 49(7), p. 508-16.

Harel Z, Biro FM, Kottenhahn RK, Rosenthal SL. Supplementation with omega-3 polyunsaturated fatty acids in the management of dysmenorrhea in adolescents. *Am J Obstet Gynecol* 1996;174:1335–8.

Simopoulos, A.P. Omega-3 fatty acids in inflammation and auto-immune diseases. *J Am Coll Nutr.* 2002 Dec; 21 (6): 495-505

Skin Health

Skin problems are recognized as one of the most common signs of Omega 3 fatty acid deficiency. Research links Omega 3 deficiency with dermatitis, psoriasis and eczema and improvements with supplementation of fish oil EPA and DHA as found in Omega Sufficiency™ have been well documented in the scientific literature.

References

Berth-Jones, J., Graham-Brown, RAC. Placebo Controlled Trial of Essential Fatty Acid Supplementation in Atopic Dermatitis. *Lancet* 1993; 341:1557-60.

Bittiner SB, Tucker WFG, Cartwright I, Bleeheh SS. A double-blind, randomised, placebo-controlled trial of fish oil in psoriasis. *Lancet* 1988;i:378-80.

Chestnut, J.L. *The Innate Diet & Natural Hygiene.* 2004

Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S

Kojima T, Terano T, Tanabe E, et al. Long-term administration of highly purified eicosapentaenoic acid provides improvement of psoriasis. *Dermatologica* 1991;182:225-30.

Kojima T, Ternao T, Tanabe E, et al. Effect of highly purified eicosapentaenoic acid on psoriasis. *J Am Acad Dermatol* 1989;21:150-1.

Mayser P, Mrowietz U, Arenberger P, et al. W-3 Fatty acid-based lipid infusion in patients with chronic plaque psoriasis: Results of a double-blind, randomized, placebo-controlled, multicenter trial. *J Am Acad Dermatol* 1998;38:539-47.

Schmidt, M.A. *Smart Fats: How dietary fats and oils affect mental, physical, and emotional intelligence.* 1997

Immune Health and Cancer Prevention

As immune system function is intricately linked with both neurological and hormonal signalling and inflammation it should come as no surprise that scientific research is providing incontrovertible evidence regarding the importance of EPA and DHA Omega 3 fatty acids for healthy immune function and cancer prevention and survival/recovery. The research that EPA and DHA are essential for proper nerve signalling, hormonal production and regulation, immune function, and the regulation of inflammation is overwhelmingly conclusive.

Other likely physiological connections between EPA and DHA sufficiency and cancer prevention are the link between membrane fluidity, insulin resistance, and sex hormone binding globulins which are required to reduce the amount of free circulating hormones. An increase in free unbound circulating hormones is very highly correlated to an increase risk of cancer. Deficiency of EPA and DHA is linked with cell membrane rigidity which can cause insulin resistance. Insulin resistance causes a decrease in sex hormone binding globulin and an increase in circulating insulin both of which have been linked to significant increased cancer risk.

It is also significant that an increase in the ratio of Omega 6 to Omega 3 fatty acids has been shown to increase the risk of cancer. As previously mentioned, the average Western Diet is dangerously toxic with Omega 6 fatty acids and dangerously deficient in Omega 3 fatty acids, particularly EPA and DHA.

Supplementing with EPA and DHA from fish oil like Omega Sufficiency™ has been shown to significantly reduce the risk of breast, colon, and prostate cancer and to decrease the rate of tumor growth in patients who have already developed cancer.

References

Astorg, P. Dietary N-6 and N-3 polyunsaturated fatty acids and prostate cancer risk: a review of epidemiological and experimental evidence. *Cancer Causes Control*. 2004 May; 15(4):367-86

Braden LM, Carroll KK. (1986). Dietary polyunsaturated fat in relation to mammary carcinogenesis in rats. *Lipids*, vol. 21(4), p. 285-8.

Chages, V. and Bougnoux, P. Omega-6/omega-3 polyunsaturated fatty acid ratio and cancer. *World Rev Nutr Diet*. 2003; 92:133-51

Chung BH, Mitchell SH, et al., 2001. Effects of docosahexaenoic acid and eicosapentaenoic acid on androgen-mediated cell growth and gene expression in LNCaP prostate cancer cells. *Carcinogenesis*, Aug;22(8), p. 1201-6.

Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S

Copyright 2007 Innate Choice Inc

Das UN. Reversal of tumor cell drug resistance by essential fatty acids. *Lipids*. 1999;34 Suppl:S103.

Donaldson, MS. Nutrition and cancer: A review of the evidence for an anti-cancer diet. *Nutr J*. 2004 Oct 20;3(1):19

Fay MP, Freedman LS. Meta-analyses of dietary fats and mammary neoplasms in rodent experiments. *Breast Cancer Res Treat*. 1997 Nov-Dec;46(2-3):215-23.

Gogos CA, Ginopoulos P, Salsa B, Apostolidou E, Zoumbos NC, Kalfarentzos F. Dietary omega-3 polyunsaturated fatty acids plus vitamin E restore immunodeficiency and prolong survival for severely ill patients with generalized malignancy: a randomized control trial. *Cancer*. 1998 Jan 15;82(2):395-402.

Gramaglia A, Loi GF, Mongioj V, Baronzio GF. Increased survival in brain metastatic patients treated with stereotactic radiotherapy, omega three fatty acids and bioflavonoids. *Anticancer Res*. 1999 Nov-Dec;19(6C):5583-6.

Kort WJ, Weijma IM, Bijma AM, van Schalkwijk WP, Vergroesen AJ, Westbroek DL. Omega-3 fatty acids inhibiting the growth of a transplantable rat mammary adenocarcinoma. *J Natl Cancer Inst*. 1987 Sep;79(3):593-9.

Maillard et al. N-3 and N-6 fatty acids in breast adipose tissue and relative risk of breast cancer in a case-control study in Tours, France. *Int. J Cancer* 2002 Mar 1;98 (1): 78-83

Mukutmoni-Norris M, Hubbard NE, et al., 2000. Modulation of murine mammary tumor vasculature by dietary omega-3 fatty acids in fish oil. *Cancer Lett*, Mar 13;150(1):101-9.
Reddy, B.S. Omega-3 fatty acids in colorectal cancer prevention. *Int J Cancer*. 2004 Oct 20;112(1):1-7

Yam D, Peled A, Shinitzky M., (2001). Suppression of tumor growth and metastasis by dietary fish oil combined with vitamins E and C and cisplatin. *Cancer Chemother Pharmacol*, 47(1), p.34-40.

Yazawa, K. Importance of "health foods", EPA and DHA, for preventive medicine. *Rinsho Byori* 2004 Mar; 52(3):249-53

Immune Health and Autoimmune Illnesses

Research indicates that EPA and DHA from cold water fish oils like Omega Sufficiency™ are required for healthy immune function. Scientific evidence also indicates that a deficiency in EPA and DHA Omega 3 fatty acids can lead to altered immune function increasing the chance of autoimmune disorders such as rheumatoid arthritis, multiple sclerosis, lupus, and Crohn's disease.

Studies in populations consuming sufficient amounts of Omega-3 fatty acids show decreased incidence of inflammatory and autoimmune diseases. Epidemiological studies like this provide even more evidence of the essential role of EPA and DHA for proper immune function and thus the prevention of autoimmune disorders and other immune function related illnesses.

Research has also shown Omega-3 fatty acid supplementation to be of significant benefit for people who have already developed autoimmune conditions such as rheumatoid arthritis, lupus, multiple sclerosis, and Crohn's disease (see section on Digestive Health). The scientific literature indicates that for proper immune system function and for the prevention of autoimmune conditions sufficient intake of EPA and DHA Omega 3 fatty acids as found in Omega Sufficiency™ is vital. Without sufficient intake of these essential nutrients proper immune function is simply not possible.

References

Belluzzi A, Brignola C, Campieri M, et al. Effect of an enteric-coated fish-oil preparation on relapses in Crohn's disease. *N Engl J Med* 1996;334:1557-60.

Cendrowski W. Multiple sclerosis and MaxEPA. *Br J Clin Pract* 1986;40:365-7.

Connor, W.E. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr*, 2000 71(1): 171S-175S

Curtis, CL, Hughes, CE, Flannery, CR, Little, CB, Harwood, JL, Caterson, B. (2000). N-3 fatty acids specifically modulate catabolic factors involved in articular cartilage degradation. *Journal of Biological Chemistry*, vol. 275(2), p. 721-4

Ergas, D., Eilat, E., Mendlovic, S., Sthoeger. (2002). N-3 fatty acids and the immune system in autoimmunity. *Israeli Medical Association Journal*, vol. 4(1), p. 34-8.

Geusens, P., Wouter, C., Nijs, J., Jiang, Y, Dequeken, J. (1994). Long-term effect of omega-3 fatty acid supplementation in active rheumatoid arthritis, a 12-month, double-blind, controlled study. *Arthritis & Rheumatism*, 37(6), p. 824-829.

Goldberg P, Fleming MC, Picard EH. Multiple sclerosis: decreased relapse rate through dietary supplementation with calcium, magnesium and vitamin D. *Med Hypothesis* 1986;21:193-200.

Kelley VE, Ferretti A, Izui S, Strom TB. A fish oil diet rich in eicosapentaenoic acid reduces cyclooxygenase metabolites, and suppresses lupus in MRL-1pr mice. *J Immunol* 1985;134:2914-9.

Mate J, Castanos R, Garcia-Samaniego J, Pajares JM. Does dietary fish oil maintain the remission of Crohn's disease: a case control study. *Gastroenterology* 1991;100:A228 [abstract]

Simopoulos, AP. Omega-3 fatty acids in inflammation and autoimmune diseases. *J Am Coll Nutr.* 2002 Dec;21(6):495-505

Volker, D, Fitzgerald, P., Major, G., Garg, M. (2000). Efficacy of fish oil concentrate in the treatment of rheumatoid arthritis. *Journal of Rheumatology*, Oct;27(10), p. 2305-7.

Walton AJE, Snaith ML, Locniskar M, et al. Dietary fish oil and the severity of symptoms in patients with systemic lupus erythematosus. *Ann Rheum Dis* 1991;50:463-6.

Sexual and Reproductive Health

Research indicates that Omega-3 fatty acids play major structural and functional roles in sexual maturation, the health of sperm and eggs, the physical and mental health of pregnant mothers, and the neurological and cognitive development of the fetus.

EPA and DHA also appear to play a significant role in sexual desire. A recent study by Peet et al. showed that supplementation with EPA increased libido!

References

Connor, WE, Lin, DS, Neuringer, M. Biochemical markers for puberty in the monkey testis: desmosterol and docasaxanoic acid. *Journal of Endocrinology and Metabolism*, 1997, June, 82(6), p. 1911-6.

Holman, Ralph T., Johnson, Susan, Ogburn, Paul (Mayo Clinic) Deficiency of essential fatty acids and membrane fluidity during pregnancy and lactation. *Biochemistry, Proc. Natl. Acad. Sci. USA*, Vol. 88: 4835-4839, June 1991.

Lucas, A. et al. Breast milk and subsequent intelligence quotient in children born pre-term. *Lancet* 1992; 339: 261-4

Makrides, M. et al. Fatty acid composition of brain, retina, and erythrocytes in breast and formula fed infants. *Am J Clin Nutr* 1994; 60: 189-194

Peet, M., Horrobin, D.F. A dose-ranging study of the effects of ethyl-eicosapentaenoate in patients with ongoing depression despite apparently adequate treatment with standard drugs. *Arch Gen Psychiatry* 2002 Oct;59(10):913-9.

What illnesses have been associated with deficiency in EPA/DHA?

Omega 3 EFAs are extremely important in the structure and function of every cell in the body and the function of your cells is what determines your health. Your cells are what determine your immune function, healing, hormone levels, heart function, cholesterol levels, blood pressure, digestion, moods etc. Literally, the function and health of your cells determines every aspect of your health.

EPA and DHA omega 3 EFAs are part of every cell membrane and are required to maintain the proper shape, flexibility or fluidity, and “slipperiness” of cell membranes.

The flexibility and “slipperiness” of cell membranes is important for the flow of blood through blood vessels and decreasing the risk of high blood pressure, stroke and heart attack. This fluidity or flexibility of cell membranes is also crucial to ensure the proper flow of nutrients into cells as well as the proper shape of cell receptors for hormones such as insulin (insulin sensitivity).

In addition, EFAs are required for proper nerve signal transmission (memory, concentration, cognitive ability, muscle coordination and strength) and immune function including defence against cancer. This is why EPA and DHA deficiency are linked with cognitive impairments and learning and behaviour disabilities such as ADHD, with depression, and with decreased cognitive ability and increased risk of Alzheimer’s and dementia in the elderly. EPA and DHA deficiency is also highly correlated with increased risk of breast, colon, and prostate cancer.

EPA and DHA omega 3 EFAs also play a major role in regulating inflammation via substances called prostaglandins. EPA and DHA Omega 3 fatty acids produce anti-inflammatory prostaglandins while Omega 6 fatty acids produce pro-inflammatory prostaglandins.

Having a diet that is toxic with Omega 6 or deficient in Omega 3 EFAs creates a pro-inflammatory state within the body. This is very significant because inflammation is at the root of virtually all of the common chronic illnesses such as heart disease, stroke, diabetes, and depression as well as the autoimmune and atopic diseases such as arthritis, Crohn’s Disease, irritable bowel, psoriasis, eczema, allergies, fibromyalgia, lupus, and multiple sclerosis. Inflammation is also a major factor in dysmenorrhea (menstrual pain and/or cramping), headaches, and back and neck pain.

Omega 3 EFAs play a role in virtually every human function including growth and development, digestion, brain and nerve function, immune function, hormone production and regulation, maintenance of skin and bones, regulation of healing and inflammation, heart function, vision, cholesterol levels, and even emotions and behaviour.

Digestive Health

The health and function of the digestive tract is dependent on healthy cell structure and function. Digestive tract cells are exposed to many toxins and require a great deal of protective coating and repair and replacement. As EPA and DHA Omega 3 fatty acids are an integral part of cell membrane structure they are also an integral part of digestive health and vitally important for the prevention and healing from digestive tract injury and inflammation. Inflammation is a common problem associated not only with EPA and DHA deficiency but with digestive tract disorders such as Crohn's disease and ulcerative colitis.

Another crucial role of EPA and DHA in digestive health is their role in supporting the colonization of the digestive tract with healthy bacteria or probiotics. Probiotic bacteria are now highly recognized as one of the most important aspects of healthy digestion and healthy immune function. Probiotic bacteria help to digest food, to produce certain vitamins and other nutrients and they play a crucial role in controlling the numbers of harmful bacteria and fungi like yeast.

Supplementation with EPA and DHA as found in Omega Sufficiency™ has been shown to improve digestive tract health, prevent digestive tract inflammation and illness, and to significantly help those already suffering with digestive tract illnesses such as Crohn's disease and ulcerative colitis. EPA and DHA have also been shown to significantly reduce the risk of colon cancer.

References

Aslan A, Triadafilopoulos G. Fish oil fatty acid supplementation in active ulcerative colitis: a double-blind, placebo-controlled, crossover study. *Am J Gastroenterol* 1992;87:432-7.

Belluzi, A, Brignola, C, Campieri, M, Pera, A, Boschi, S, Miglioli, M. Dietary supplementation with fish oil in ulcerative colitis. *New England Journal of Medicine*, 1996, June 13, 334(24), p 1557-60.

Belluzzi A, Brignola C, Campieri M, et al. Effect of an enteric-coated fish-oil preparation on relapses in Crohn's disease. *N Engl J Med* 1996;334:1557-60.

Hawthorne AB, Daneshmend TK, Hawkey CJ, et al. Treatment of ulcerative colitis with fish oil supplementation: a prospective 12 month randomised controlled trial. *Gut* 1992;33:922-8.

Mate J, Castanos R, Garcia-Samaniego J, Pajares JM. Does dietary fish oil maintain the remission of Crohn's disease: a case control study. *Gastroenterology* 1991;100:A228 [abstract].

