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THE PHYSICIAN'S CONCISE GUIDE TO:

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Fish & Fish Oil Fallacies

The Science and Definitive Experiments Conclusively Show
their Worthlessness in Preventing both
Cardiovascular Disease and Cancer

From: *The Hidden Story of Cancer* (2010 edition) by Prof. Brian Scott Peskin*
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There is simply no one better in the 21st century at developing practical health-related solutions based on the world's leading medical and nutritional science. **"Science - Not opinion" is Brian's trademark.** When Brian is through explaining a topic it is "case closed!" When he says it, you "can take the information to the bank!"

Unlike most of his peers' recommendations, Brian's health and nutritional recommendations have stood the test of time. **Brian has never had to reverse or significantly alter any of his medical reports—reports that have tackled everything from the dangers of soy, to the wrongly popularized need for fiber in the diet, to his warning about the potential harm of supplementing with copious amounts of omega-3.** In 1995 he published the report "Fiber Fiction" and finally, eleven years later, others in research are acknowledging the silliness of recommending fiber in the diet of a human being. Brian's latest crusade is to warn of the dangers of excess omega-3 (in particular, fish oil) and how it will lead to increased cases of skin cancer. The list goes on and on...

Brian received an appointment as an Adjunct Professor at Texas Southern University in the Department of Pharmacy and Health Sciences (1998-1999). **The former president of the University said of his discoveries: "...His nutritional discoveries and practical applications through Life-Systems Engineering are unprecedented."** Brian earned his Bachelor of Science degree in Electrical Engineering from Massachusetts Institute of Technology (MIT) in 1979. Brian founded the field of *Life-Systems Engineering Science* in 1995. This field is defined as *The New Science of Maximizing Desired Results by Working Cooperatively with the Natural Processes of Living Systems*. To many, Brian is THE MOST TRUSTED AUTHORITY ON HEALTH AND NUTRITION IN THE WORLD.

Brian continues to be a featured guest on hundreds of radio and television shows both nationally and internationally. His sheer number of accomplishments during the last decade of the 20th century and into the 21st century are unprecedented and uniquely designate him as the #1 authority in the world of what really works and why. Forget listening to the popular press or most popular so-called health magazines. Their editors simply don't understand the complicated science that they write about – they merely "parrot" what everyone else says without independent scientific verification. Their recommendations often have no basis in reality of how the body works, based on its physiology.

Brian has dedicated his life to provide the truth – which is almost always opposite to what everyone says. Here's why Brian is the #1 man in America to listen to when it comes to your health.

* Brian Peskin earned his Bachelor of Science degree in Electrical Engineering from Massachusetts Institute of Technology (M.I.T.) in 1979. He received an appointment as an Adjunct Professor at Texas Southern University in the Department of Pharmacy and Health Sciences (1998-1999). The former president of the University said of Brian's discoveries: *"...His nutritional discoveries and practical applications through Life-Systems Engineering are unprecedented."*

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Parent Essential Oils (PEOs): The DIFFERENCE

I am often asked how my EFA-based recommendations differ from others. The answer is simple but very significant. The term “Essential Fatty Acids” is being misused so frequently that I was compelled to coin a new phrase, *Parent Essential Oils* (PEOs).

This term “Parent Essential Oils” refers to the only **two true essential fatty acids**: parent omega-6 (LA) and parent omega-3 (ALA). The term “parent” is used because these are the whole, unadulterated form of the only two essential fats your body demands, as they occur in nature. Once **PEOs** are consumed your body changes a small percentage of them—about 5%—into other biochemicals called “derivatives,” while **leaving the remaining 95% in parent form**.

This is crucial to understand. There are a host of omega-6 and omega-3 oils being sold as EFAs that are *not* EFAs, but rather nonessential derivatives such as EPA, DHA, and GLA. Fish oils are made up almost exclusively of omega-3 *derivatives*. Scientifically and biochemically, calling derivatives such as EPA, DHA and GLA by the term “EFA” is wrong. **Derivatives are not EFAs because they are not essential**—your body has the ability to make them *as needed*. My research has shown that supplementing with the derivatives so commonly found in the marketplace and mislabeled as “EFAs” can easily be harmful to your health.

Why are the parent forms—PEOs—so important? Many of the EFAs sold in the stores consist of manufactured EFA derivatives. To be clear, your body doesn’t need or want these derivatives, because it makes its own derivatives out of the **Parent Essential Oils** (PEOs) you consume *as it needs them*. Taking fish oil and other health-foodstore “EFAs” often overdoses you with derivatives, which can be very harmful.

Don't make the common "EFA mistake" by unknowingly substituting derivatives for parents! **Since the term has become so confused by so many it is time to focus on the essence of what they are and why they are so vital to our health and well being.**

From this point forward Parent Essential Oils (PEOs) take center stage.

Physicians and health professionals around the world rely on my scrupulously detailed research. Understanding how PEOs work is essential to your daily nutritional regimen. I recommend that everyone always demand to see solid science before taking any supplements or medications so you can avoid future problems.

Fish Oil Failures from 1990 and 2002 Predicting Alzheimer's Failure

An article in the superb *Townsend Letter for Physicians* published in 2002 addresses fish oil's continued failure. It is tragic that so few physicians and healthcare practitioners see and utilize science:¹

- "[W]e cannot begin to conceptualize without considering the importance of fatty acids as the human brain is 60% lipid. *Dendrites and synapses are up to 80% in lipid content.* Although Arachidonic acid (AA) has been given a negative association, it [**AA, an omega-6 derivative**] is the most prominent essential fatty acid in the red cell and comprises **12% of the total brain** and 15.5% of the body lipid content.
- "*If AA is depleted by overdosing with marine or flax oil establishing the balance of the EFAs is profoundly impaired.*
- "Often both prostaglandin one and two series relating to omega six metabolism are compromised when flax and marine oils are overdosed or lipid intake is insufficient.
- When AA [an omega-6 derivative], the lead eicosanoid of the body, is suppressed due to excess intake of omega 3 [including its derivatives DHA/EPA from marine oils], toxicity or disease, the control circuitry of the body is impaired as is clearly viewed in the patient's presentation...."
- In essence, **phospholipids and their essential fatty acid components play a vital role in the cell signaling systems in the neuron.**" [Emphasis added.]

1 Foster, John, S. et al., The Detoxx System, *Townsend Letter* (Nov. 2002), (http://www.townsendletter.com/Nov_2002/detoxxsystem1102.htm).

► *Life-Systems Engineering Science Commentary*

This was published back in 2002. Another warning about fish oil published in 1990 from the medical textbook *"Omega-6 Essential Fatty Acids: Pathophysiology and Roles in Clinical Medicine"*, New York: Wiley-Liss, 1990, pages 24-25, "Many doctors and investigators seem to be under the impression that the n-3 EFAs are much more important than the n-6 EFAs. **Nothing could be further from the truth....**" It is a tragedy that the health and medical fields don't utilize the science published in their own medical textbooks.

Newsflash 2010: DHA and Fish Oil Shown Completely Worthless with Alzheimers

Once again, the main “active ingredient” in fish oil, DHA, has failed to cure or prevent disease. Researchers recently concluded that DHA (also found in krill oil, algae, mussels, etc.) failed to improve cognitive impairment in Alzheimer disease victims. Previously this year, it was reported that fish oil failed to reverse heart disease in diabetic women; and if failure was not bad enough, another 2010 study showed that fish oil actually promoted aggressive colon cancer in mice. This latest, very well-designed study published in *JAMA*, one of America’s top medical journals, dispels the naive notion that DHA and therefore fish oil is beneficial in cognitive disorders.¹

- “Conclusion: Supplementation with **DHA compared with placebo did not slow the rate of cognitive and functional decline in patients with mild to moderate Alzheimer disease.**
- “This study was designed to determine if supplementation with DHA would slow the rate of cognitive and functional decline in patients with *mild to moderate Alzheimer disease*. Despite enrollment of the target population of individuals with low baseline DHA...
- “The hypothesis that DHA slows the progression of mild to moderate Alzheimer disease was **not supported**, so there is *no basis for recommending DHA supplementation for patients with Alzheimer disease*.
- “**In summary**, these results indicate that **DHA supplementation is not useful** for the population of individuals with mild to moderate Alzheimer disease.” (Emphasis added.)

► Life-Systems Engineering Science Commentary

Once again, a carefully controlled study shows that the active ingredient in fish oil has little benefit for a human being. The EFA derivative docosahexaenoic acid (DHA) is the most abundant long-chain

1. Quinn, J, et al., “Docosahexaenoic Acid Supplementation and Cognitive Decline in Alzheimer Disease: A Randomized Trial,” *Journal of the American Medical Association*, November 3, 2010; Vol. 304, No. 17, pages 1903-1911.

polyunsaturated fatty acid in the brain. Alzheimer sufferers were given the DHA supplement (algae-based) for 18 months. If fish oil were beneficial we should certainly see a positive result in Alzheimer's patients. This length of time is sufficient to see an improvement. However, there wasn't any improvement whatsoever. This negative result shows that the problem has nothing to do with the EFA-derivatives "solving the problem."

There is recent confirmation of this finding of the vast superiority of parent essential oils over fish oil with its derivatives DHA and EPA. Here is what was stated:²

- "...[A] higher level of α -linolenic acid (ALA; 18:3n-3) [parent omega-3] significantly decreased the risk of mild dementia...."
- "However, erythrocyte levels of docosahexaenoic acid (22:6n-3) [DHA] and eicosapentaenoic acid (20:5n-3) [EPA] were not significantly related with the risk of mild dementia and MMSE-K score."
- "In conclusion, ALA derived from plant sources of n-3 PUFA, but not eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA] from fish, decreased the risk for mild dementia among the Korean elderly."

You have already discovered that the body makes EFA derivatives from the parent PEOs on an "as needed" basis. When will physicians understand that because the brain has a 100:1 parent omega-6 to parent omega-3 ratio, the key is all in the important, essential PEOs – the EFA "parents," – not the much less important EFA- derivatives. How much longer and how many more fish oil failures will it take before the medical community begins to comprehend this physiologic fact?

Contrary to fish oil's failure, we have seen PEO's incredible success from the recent landmark IOWA study. PEOs in the correct physiologic quantities and ratios provide rapid improvement to the cardiovascular system, increasing arterial compliance REGARDLESS of the subject's condition.

2. Malgeunsinae, K., et al., "Erythrocyte α -linolenic acid is associated with the risk for mild dementia in Korean elderly," *Nutrition Research*, Volume 30, Issue 11, November 2010, pages 756-761.

Warning!

Fish Oil Increases Risk of Colon Cancer

An October 7, 2010 article entitled “Link Between Fish Oil And Increased Risk Of Colon Cancer In Mice,” published in *Medical News Today* and the medical journal *Cancer Research*, revealed some startling information from a group at Michigan State University led by Jenifer Fenton, a food science and human nutrition researcher:¹

- ““We found that mice *developed deadly, late-stage colon cancer* when given high doses of *fish oil*,’ [Fenton] said.”
- “More importantly, with the **increased inflammation**, it **only took four weeks** for the tumors to develop.”
- “**...not only** the mice **receiving the highest doses** of DHA but those receiving *lower doses as well*.”
- ““Our findings support a *growing body of literature implicating harmful effects of high doses of fish oil consumption in relation to certain diseases*,’ Fenton said.”
- ““We hypothesized that feeding fish oil enriched with DHA to mice would decrease the cancer risk; **we actually found the opposite**.””
- “Contrary to expectations, DFO [*dietary fish oil*] **induced severe colitis and adenocarcinoma [epithelial tissue cancer of the colon] formation**. DFO consumption was associated with *decreased CD8+ cell frequency and diminished CD69 expression* on CD4+ and CD8+ T-cell populations. Mice consuming DFO **also exhibited higher FoxP3+ CD25+ CD4+ T regulatory cell frequency, FoxP3 expression, and altered L-selectin expression** during infection.”
- “ [Fenton] said people already receiving enough omega-3 fatty acids through their normal diet and foods have no need for added supplementation.” (Emphasis added.)

1. “Link Between Fish Oil And Increased Risk Of Colon Cancer In Mice,” *Medical News Today (Colorectal cancer)*, Article URL: www.medicalnewstoday.com/articles/203683.php#post, October 7, 2010; and Woodworth, Hillary, L., et al., “Dietary Fish Oil Alters T Lymphocyte Cell Populations and Exacerbates Disease in a Mouse Model of Inflammatory Colitis,” *Cancer Res* 0008-5472.CAN-10-1396; Published OnlineFirst August 26, 2010; doi:10.1158/0008-5472.CAN-10-1396. *Cancer Res*; 70(20); 7960–9.

► Life-Systems Engineering Science Commentary

Once again we see confirmation of the horrific effects that we have been reporting from fish oil supplementation. Of significant note is the fact that Fenton and her fellow researchers *fully expected the fish oil to have the opposite and extremely positive effect of reducing cancer risk — not increasing it!*

This result is directly aligned with the fact that this cancer, adenocarcinoma, occurs in epithelial-based tissue (such as the lining of the colon). You will already understand, if you have read my work, that there is no omega-3 component to epithelial tissue (just as with skin).

That means that omega-3 supplementation cannot benefit epithelial tissue. *Quite the opposite; a pharmacological overdose of omega-3 derivatives is predicted to harm such tissue.* This study has now demonstrated pharmacological overdoses of omega-3 derivatives from fish oil do harm such tissue by causing an *increase* of cancer.

Fish oil supplement manufacturers often recommend “high dose” amounts. But the prevalent pharmacological overdoses of DHA and EPA from fish oil supplements range from **20-fold** overdoses of DHA to **250-500-fold** overdoses of EPA—far more than your body would ever produce on its own. **Even so-called “low dose” fish oil supplementation approaches these overdose values.**

In her experiment, Fenton comments, “Currently, there is a call by academics and the food industry to establish dietary guidelines for omega-3 consumption...” *It is high time a researcher questioned utilizing such arbitrary, haphazardly dangerous overdose amounts.*

It is also significant that Fenton points out that her findings **“support a growing body of literature implicating harmful effects of high doses of fish oil consumption in relation to certain diseases.”** Finally an increasing number of negatives about fish oil supplementation are being exposed and published in the medical journals, and the truth is slowly being recognized by more of the medical and nutritional community.

In fact, *the negative results of fish oil supplementation and its increased risk of cancer were already discussed and published back in 2000* at The International Society for the Study of Fatty Acids and Lipids (ISSFAL) 4th Congress, which met on June 4-9, 2000 in Tsukuba, Japan, and was reported in the article titled “Omega-3 Polyunsaturated Fatty Acids, Inflammation and Immunity,” by Philip C. Calder, Institute of Human Nutrition, University of Southampton, Bassett Crescent End, Southampton, UK—if anyone had cared to look!

In contrast, we have long maintained that parent essential oils derived from specific plant-based, organically grown and processed seed sources, termed “PEOs,” can never lead to an overdose such as occurred in this study.

As always, we caution that one should be wary of animal studies, as they often do not translate consistently to results in humans.

However, while mice are herbivores, if challenged they will eat anything (omnivore physiology). Therefore, we agree that this result showing increased colon cancer from fish oil needs to be taken very seriously.

FISH OIL RECOMMENDATIONS ARE WORTHLESS OR EVEN HAZARDOUS TO YOUR HEALTH!

The greatness of fish and fish oil in the prevention of cardiovascular disease is shouted from every mountaintop. However, few human trials have examined whether fish oil supplements actually decrease heart disease risk. In those that did, the results were negative. Furthermore, fish oil worsened the blood sugar in diabetics. Did that evidence proving fish worthless in preventing cardiovascular disease or helping to reduce existing cardiovascular disease force the “experts” to tell you that they were only guessing about fish oil’s supposedly positive health effects – that they were only guessing that it works? No. As you will discover, fish oil is worthless at best and harmful at worst.

2010 Newsflash: Fish Oil WORTHLESS in Preventing Heart Disease in Type I Diabetic Women

As the June 28, 2010 *Medical News Today* article titled, “Women With Type 1 Diabetes Receive No Heart Benefit From Omega-3,” states:¹

- “Consuming higher amounts of **omega-3 fatty acids [derivatives]** **does not appear to lower heart disease risk for women with type 1 diabetes**, according to a University of Pittsburgh Graduate School of Public Health study presented at the *70th Scientific Sessions of the American Diabetes Association*.
- “Omega-3 fatty acids [omega-3 derivatives], primarily found in fish, [*supposedly*] promote heart health by preventing the buildup of cholesterol in the arteries. Little is known about the effect of consuming omega-3 in *people with type 1 diabetes, who are at much greater risk for heart disease*.
- “Although omega-3 [derivatives] is *typically associated* [not directly causal] with decreased risk for cardiovascular disease, this may not be the case for women who have type 1 diabetes....” (Emphasis added.)

1. “Women With Type 1 Diabetes Receive No Heart Benefit From Omega-3, *Medical News Today (Diabetes)*, Article URL: <http://www.medicalnewstoday.com/articles/193107.php>, June 28, 2010.

► Life-Systems Engineering Science Commentary

— We see how fish oil FAILS in preventing heart disease. The population group is Type I diabetic women — a treatment group that needs as much assistance as possible because diabetics have a significantly increased risk of cardiovascular disease. Therefore, this is an ideal population and easier to utilize to see if the fish oil stops heart disease.

Once again, fish oil failed miserably. The article mentions fish oil's *supposed* metabolic pathway of cholesterol reduction and how fish oil is merely “associated” with a supposed reduction in CVD. You will soon discover that mere “associations” in medicine and medical science are meaningless. True experiments showing direct “cause/ effect” relationships are required and when these are performed, fish oil fails time and time again.

You will also discover that LDL-cholesterol, in and of itself, is meaningless — all that matters is cholesterol's structure, **which fish oil modifies only to an insignificant degree**. Therefore, fish oil would be predicted to fail in preventing CVD, and it does fail.

(1) A 2002 article in the medical journal *Cardiovascular Research*, titled “Effect of dietary supplementation with omega-3 fatty acids on progression of atherosclerosis [plaque buildup in interior of arteries] in carotid [heart to brain] arteries,” by Angerer, P., et al.,² details the results of a randomized trial undertaken with the primary objective to clarify the effect of omega-3 polyunsaturated fatty acids on cerebral arteries or stroke was undertaken. Contrary to what you are told about the supposed positive benefits of fish, fish oil supplements, and omega-3, here are their findings:

Both **fish oil** groups and the control groups showed close to equal atherosclerotic progression (**getting more clogged**). Fish oil **did not stop thickening of the artery**. On the contrary, the artery wall got thicker (bad) with fish oil ingestion!

“In this group of selected patients with documented coronary artery disease, omega-3 PUFA [polyunsaturated fatty acids] **given for 2 years did not demonstrate an effect on slowing progression** of atherosclerosis in carotid arteries as measured by ultrasound.”

1.65 grams per day of fish oil supplement were taken. This is a great enough dose to cause adverse immunity and bleeding effects.

2. Angerer, P., et al., *Cardiovascular Research*; 54:183-190, 2002.

► Life-Systems Engineering Science Commentary

These results were published in 2002 showing the failure of fish oil to specific arterial clogs or prevention of stroke. Did this stop guessing by “experts” in the nutritional and medical fields from declaring how great fish oil supplements were? No, not at all.

If fish oil supplements worked, they should have been able to at least stop a preexisting arterial clog from worsening. If they couldn’t, then there is no reason to assume that the fish oil could possibly prevent a clog from *beginning*. There would be no causal mechanism that would allow that effect. Examining an existing clog’s growth rate is a very good test, similar to examining the growth of an existing cancer tumor.

However, when science, instead of opinion was used, the results were shocking: Fish oil supplements alone were found worthless.

(2) The article, “The Effect of Dietary Omega-3 Fatty Acids on Coronary Atherosclerosis: A Randomized, Double-Blind, Placebo-Controlled Trial,” Clemens von Schacky, et al., *Annals of Internal Medicine*;130:554-562, 1999, states that “Ingestion of fish or other sources of omega-3 fatty acids, such as fish oil capsules, has been called a comprehensive strategy toward the prevention of atherosclerosis.” Here is why their study showed that assertion is incorrect — at the end of 2 years, BOTH groups had **worsened clogging**. The same NEGATIVE result as above.

3) Harvard Medical School was involved in the next study, called “Controlled Trial of Fish Oil for Regression of Human Coronary Atherosclerosis,” Frank M. Sacks, et al., *Journal of the American College of Cardiology* Vol. 25, No. 7, June 1995: 1492-8. The daily dose was 6 grams of fish oil vs. 6 grams of olive oil in the control group.

Their conclusion was “Fish oil treatment for 2 years **DOES NOT** promote major **FAVORABLE CHANGES** in the diameter of atherosclerotic coronary arteries.” That means clogging was not decreased with the fish oil supplement.

(4) Here’s more negative news of the incorrectness of widespread omega-3 supplement overdose recommendations by physicians and nutritionists. With growing support among health advocacy organizations for consuming fish rich in omega-3, the following study by Burr, et al., has reported **no benefit of oily fish and an ADVERSE (harmful) effect of fish oil**

supplements on CHD mortality (death).³ In this study, even consuming fish didn't prevent you from dying!

- This study looked at patients with angina (severe heart pain caused by restricted blood flow) to be divided into two groups: those consuming more fish and those consuming fish oil supplements. Here are the results:
 - Those patients eating **two servings of fish weekly**, had **no “protection” benefit** from death due to cardiovascular causes. If consuming fish helped heart-related health then one would expect to see fewer deaths from the fish eaters. This did not happen.
 - Those patients consuming three (3) **fish oil capsules** (omega-3-derivatives) daily had an adverse (**negative**) **effect!** The fish oil capsules harmed them because this group had more cardiovascular-related deaths. (Emphasis added.)

► *Life-Systems Engineering Science Commentary*

Again, these four studies showed a complete opposite result from what we have been told regarding the supposed benefits of fish and fish oil supplements. Everyone is looking in the wrong direction, wasting time and money, for the answer to increased blood flow – thus increasing oxygenation and, as you will discover, maximum protection against contracting cancer.

It gets even worse. Fish oil supplements can significantly decrease the effectiveness of your immune system, increasing your risk of contracting cancer. The International Society for the Study of Fatty Acids and Lipids (ISSFAL) 4th Congress, which met on June 4-9, 2000 in Tsukuba, Japan, reported the following in the article titled “Omega-3 Polyunsaturated Fatty Acids, Inflammation and Immunity,” by Philip C. Calder, Institute of Human Nutrition, University of Southampton, Bassett Crescent End, Southampton, UK:

- “...[S]tudies indicate that at the levels used, fish oil [omega-3 derivatives] **decrease a wide range of immune cell responses** (natural killer cell, cytotoxic T lymphocyte activities, lymphocyte proliferation and production of IL-2 and IFN-γ (1,2))...”
- “...Recent studies have indicated that relatively low levels of the long chain omega-3 fatty acids (EPA or DHA)...are **sufficient to bring about some of the suppressive effects ...**”

3. Burr, et al., “Lack of benefit of dietary advice to men with angina: results of a controlled trial,” *Eur J Clin Nutr* 2003, 57:193-200.

- “... This decrease (of inhibited lymphocyte proliferation and natural killer cell activity) causes increased cellular bacteria [infection] and impaired tumor cell killing.”

A drug called Omacor® consists of approximately 90% active fish oil (omega-3 derivatives). It is used to reduce high levels of triglycerides. However, according to the manufacturer’s 2005 medical brochure, it appears that the lowered immunity warning reported above was confirmed.⁴

- Under “Adverse Reactions,” there were **double the number of people who developed infections (reduced immunity) while taking the drug** compared with those not taking the drug!
- Users suffered more flu syndrome, **indicating a lowered immune system.**
- 4 times more people suffered skin rash **while taking the drug.” Note: You will discover why the skin rash result is predicted based on their oil EFA-based formulation.**

(Emphasis added.)

2004: Fish Oil Also Worthless in preventing arterial inflammation! Maybe you’ve been told that consuming fish protects you against arterial inflammation. In the medical field C-reactive protein (CRP) is known to be a strong marker indicative of vascular problems. But guess what? **Fish oil did absolutely nothing significant to decrease the inflammation** as evidenced by the failure of CRP to decrease.

Here is the medical journal’s quote: “...Thus within the timeframe of this study, there **was no evidence for an anti-inflammatory effect as judged by CRP levels....**”⁵

WARNING: Fish Oil Causes Brain Damage in Adults and Infants

That’s right. Experiments performed between 1988 and 1992 conclusively showed **abnormalities in brain tissue resulting from administration of fish oil**. If anyone cared to look before issuing fish oil recommendations, here’s what the researchers reported in the article titled, “The Effects of Dietary

4. © 2005 “Introducing The Body of Evidence,” Reliant Pharmaceuticals, Inc. (September 2005), page 17.

5. *Current Atherosclerosis Reports*; 6:461-467, 2004, Mori, Trevor, et al., “Omega-3 Fatty Acids and Inflammation.”

n-3/n-6 Ratio on Brain Development in the Mouse: A Dose Response Study with Long-Chain n-3 Fatty Acids,” by P.E. Wainwright, et al., *Lipids*, Vol. 27, no 2 (1992), pages 98-103 reported:

- “Feeding of **fish oil** [omega-3 “derivatives”] to **adult rats** resulted in a **rapid increase** in levels of 22:5n-3 and 22:6n-3 as well as 20:5n-3 [**omega 3 series**] (which is **usually present in brain in only trace amounts**) with corresponding **decreases** in 22:5n-6 as well as 20:4n-6 [**omega-6 series**], suggesting that the **brain may be vulnerable to an excess of long-chain n-3 PUFA** [**polyunsaturated fatty acid**].”⁶
- “The **developing brain**, because of its affinity for long-chain n-3, may be **particularly susceptible to such effects**.”
- “There is **particular concern** that that decreases in 20:4n-6 [omega-6 series] may be associated with **adverse effects**.” (Emphasis added.)
- “Nevertheless, the findings may be of **relevance to questions concerning the provision of long-chain n-3 FA** [from fish oil] **in human infant feeding**.”⁷

► Life-Systems Engineering Science Commentary

One must always exercise caution regarding animal studies’ application to humans. However, mice make good animal models in this respect since Lands et al. showed that EFA metabolism in rodents is similar to that in humans. (Lands WEM, Morris A, and Libelt B, “Quantitative effects of dietary polyunsaturated fats on the composition of fatty acids in rat tissues,” *Lipids*, Vol. 25, 1990, pages 505-51.) Therefore, **overdosing on omega-3 can be hazardous to your brain and your health at any age**. Anyone could have found this information if they cared to look. Don’t worry, you’ll learn all about these complicated sounding technical terms later. It was important that you see this now.

You will soon discover that the key to eliminating this problem is to develop a completely new understanding of how these essential oils work in your body.

Glycemic (blood sugar) control WORSENS during fish oil administration.

6. Bourre, J.M., et al., “*Biochim. Biophys. Acta* 969, 1988, pages 458-461 and Bourre, J.M., et al., *Biochim. Biophys. Acta* 1043, 1990, pages 149-152.

7. Carlson S.E. and Salem Jr., N. *Health Effects of w-3 Polyunsaturated Fatty Acids in Seafoods*, (edited by Simopoulos, A.P., et al.), Karger, Basel, Switzerland, Vol. 8, 1991, pages 74-86.

If the above information wasn't shocking enough, there is more bad news regarding fish oil supplements. The publication titled "Dose-Response Effects of Dietary Marine Oil on Carbohydrate and Lipid Metabolism in Normal Subjects and Patients With Hypertriglyceridemia," by Stacpoole, P, Alig, A., Ammon, L, and Crockett, E., published in *Metabolism*, Vol. 38, No 10 (October), 1989, pages 946-956 states:

"The glycemic [blood sugar] control of [all of] the four insulin-dependent diabetic patients worsened during the fish oil administration.

"...[T]he insulin dose of the subjects had to be increased throughout the six-month period of fish oil administration to maintain constant blood glucose and glycosylated hemoglobin concentrations (HbA1average blood sugar level).

"Despite the stable bodyweight by patients on the basal diet, glycosylated hemoglobin levels after six months of fish oil administration increased 16% from 4.9% to 5.7%. Note: This is an awful effect for a diabetic.

"Another important finding of our investigation was that consumption of a fish oil-enriched diet worsens glycemic tolerance." (Emphasis added.)

Furthermore, there is additional recent confirmation that fish oil significantly reduces the glucose metabolic clearance rate, an awful effect for a diabetic. You need to know that *British Medical Journal of Nutrition* (2003), 90, 777-786 published, "Fish-oil supplementation reduces stimulation of plasma glucose fluxes during exercise in untrained males":

"It is concluded that fish oil reduced Rd [rate of glucose disappearance] glucose by 26% by reducing glucose metabolic clearance rate ..." "[I]t was observed in healthy human subjects that a 3-week supplementation of the diet with **fish oil (6g/day)** **decreased by 40% the insulin response** to an oral glucose challenge without altering either endogenous glucose production or plasma glucose utilisation.

"[N]-3 long-chain fatty acids are incorporated into membranes whose composition remains altered at least 18 weeks after interruption of fish-oil supplementation..." "The main observation of the present study is that a supplementation of the usual diet with **6 grams fish oil / day during a period of 3 weeks reduced stimulation of both HGP [hepatic glucose production] (-21%) and Rd glucose (-26%)** during exercise." (Emphasis added.)

► Life-Systems Engineering Science Commentary

You don't want a substance to increase blood glucose or insulin levels, negatively impact natural tumor killers, or compromise your immune system. You will discover why fish is not protective against heart disease; it is excessive in the wrong type of omega-3 and gives you an overdose of it, too. Fish oil does the opposite of what is desired in six areas: brain damage, decreasing natural tumor cell-killing ability, increasing harmful infection from bacteria, failing to stop arterial inflammation, raising havoc with your blood glucose system (insulin resistance), and decreasing critical PGI₂ production. With six strikes against it—the fish oil myth is out. (See three more confirming studies in Appendix XIII.)

One biological substance increases blood pressure and another one decreases blood pressure. Even though we frequently hear the terms “good” and “bad,” there is actually no “good” or “bad.” There are only complementary functions. We must ensure that our bodies receive sufficient biochemical substances to allow both effects to be carried out automatically.

Lastly, “Fatty Acid Composition of Serum Lipids Predicts Myocardial Infarction [Heart Attack],” *British Medical Journal*, Oct. 9, 1982, 285:993, reported that LA (parent omega-6) and most polyunsaturated fatty acids (EFAs) **including AA and EPA were lower (depleted) in heart attack victims.**

Parent to Derivative Ratios—Surprise! The Conversion is Much Less Than Everyone States

The major metabolic route of ALA (parent omega-3) in the body is beta-oxidation. This means that parent omega-3 is mainly burned for energy—not incorporated into cellular structure or used for derivatives—your body requires very little and will attempt to remove an excess if it can. **ONLY very little parent omega-3 is required for proper cell membrane structure.** However, if you are “overdosing” from supplements, based on incorrect advice, the excess will be forced into the cell structure as the *Lipids 2000* medical journal stated. ALA accumulates in specific sites in the body of mammals, and only a small portion of the dietary ALA is converted to DHA (Sinclair, A.J., et al., “What is the role of alpha-linolenic acid for mammals,” *Lipids* 2002 Dec; 37(12): 1113-23).

The next piece of shocking information is from “PUFA Newsletter” (www.fatsoflife.com). “Alpha-Linolenic Acid Conversion Revisited,” by Norman Salem, et al., states,

"A recent article in the PUFA [Polyunsaturated Fatty Acid] Newsletter indicated that in adult men and women the 'average estimated conversion of ... alpha-linolenic acid to n-3 LC-PUFA metabolites and docosahexaenoic acid was 17.3 ± 12.8 and 3.6 ± 3.8 percent, respectively (mean + SD)'. This is likely to be an overestimate of the actual overall conversion rates for several reasons. We see even with this excessive estimate of the parent omega-3 derivative conversion that theoretically no more than 37% of them are converted to derivatives." The article makes the case that in reality only about 5% of the parent ALA (omega-3) is converted into derivatives. Pawlosky and others calculate that less than a mere 1% goes to derivatives. The article ends with "The best estimates of alpha-linolenic acid conversion to n-3 LCPUFA are much smaller than those claimed...."

Omega-6 conversion is also overstated:

"... Linking LA and AA in this way also implies a direct conversion of LA [parent omega-6] to AA [omega-6 derivative], which is not the case. In fact, a very high dietary LA will reduce membrane AA [the opposite effect!]." Note: This is why it was reported in the article by S. Bunting, S. Moncada, and J.R. Vane, titled "Prostacyclin—Thromboxane A Balance: Pathophysiological and Therapeutic Implications," *British Medical Journal*, (1983) Vol. 39, No. 3, pages 271-276, that **"AA in the phospholipids of Eskimos [consuming lots of parent omega-6] is approximately one-third of that in Danes."**

(Crawford, M.A., "Commentary on the workshop statement. Essentiality of and recommended dietary intakes for Omega-6 and Omega-3 fatty acids," *Prostaglandins Leukot Essent Fatty Acids* 2000 Sep; 63(3):131-4.)

**WARNING: Too Much Omega-3, Omega Derivatives,
or Defective EFAs Ruin the Cell Membrane Structure
and Minimize Your Level of Anticancer Protection!**

A masterpiece of research conducted by William E. Lands, et al., titled "Quantitative Effects of Dietary Polyunsaturated Fats [EFAs] on the Composition of Fatty Acids in Rat Tissues," Department of Biological Chemistry, University of Illinois at Chicago, published in the medical journal *Lipids*, Vol. 25, No. 9, 1990, pages, 505-516, make it very clear:

“...The tissues **maintained a linear relationship [proportional]** between the amount of 18-carbon polyunsaturated fatty acids [EFAs] **in the diet** and in the **tissue**”

“...With higher amounts of 18:2n-6 [parent omega-6] in the diet, the rat tissues maintained **progressively higher** levels of 18:2n-6 [parent omega-6] in triglycerides. The linear trend was similar for plasma, liver, and adipose”

“...Similarly, the tissue maintained proportionately higher levels of 18:3 [parent omega-3] in the triglyceride fraction with higher influxes of dietary 18:3n-3 [parent omega-3]....”

“...These consistent linear trends [**the more I eat the higher the cellular content**] appeared to be independent of the amount of other fatty acids in the diets or the proportion of total calories as fat.”

“...Plasma, liver, and red [blood] cells *all tended to maintain n-3/n-6 [parent omega-3/6 ratio] of the diet being fed....*”

(Emphasis added.)

Surprisingly, it was known back in 1979 that **diet influenced EFA composition of the cell membrane**. This finding was published in *Cancer Research* in an article titled “Effect of Modification of Plasma Membrane Fatty Acid Composition of Fluidity and Methotrexate Transport in L1210 Murine Leukemia Cells,” Burns, C. Patrick, et al., *Cancer Research* 39, 1726-1732, May 1979:

“The plasma **membrane lipid composition** in L1210 murine leukemia cells was **dependent upon the type of fat fed** to the host animal.

“...The fatty acid **composition of mammalian cell membranes can be modified experimentally**. This can be accomplished in tissue culture by altering the lipid composition of the medium or in the intact animal by changing **the dietary fat [EFA] composition**. These modifications are **associated with changes in the physical and functional properties of the cell membrane....**” (Emphasis added).

► Life-Systems Engineering Science Commentary

Animal studies are to be viewed with caution. However, in this case, EFAs are metabolized in similar fashion to humans. The results apply, and

it was known back in 1979! This 1979 finding shows how even cancer cell membranes are modified based on dietary EFA levels. These landmark findings makes it clear that **the proper parent omega-6/3 ratio in the human diet is critical. Overdosing on too much parent omega-3 will force an improper excess into the tissue.** Ingestion of more unprocessed parent omega-6 likewise alters the cell membrane's composition. Nothing else can significantly alter this fact. Therefore, it is easy to correct a damaged parent EFA ratio by supplementation in the ratios this book suggests.

Never forget that omega-3 alone is worthless in the war against cancer!

Newsflash: 2006: "Omega-3 Fatty Acids Unlikely to Prevent Cancer," reported by the National Cancer Institute (NCI Cancer Bulletin, vol. 3/no. 5, Jan. 31, 2006)

"An analysis of numerous, large population cohort studies **did not detect evidence of a significant link** between dietary intake of omega-3 fatty acids (**found in fish**) and the incidence of several **major cancer types**, according to a review study published in the January 25, 2006, issue of the Journal of the American Medical Association.

"The reviewers analyzed 38 articles covering 20 population cohorts that included more than 700,000 individuals. The participants were studied for the effects of consuming omega-3—either in fish, dietary supplements, or both—on the incidence of 11 different types of cancer, although more than half of the reports were for either breast, colorectal, or prostate cancers.

"Across the cohorts, **no trend was found linking omega-3 fatty acids with a reduced overall cancer risk.** 'Likewise, there is **little to suggest that omega-3 fatty acids reduce the risk of any single type of cancer,**' the authors wrote."

"Dietary supplementation with **omega-3 fatty acids [alone] is unlikely to prevent cancer.**"

"CONCLUSIONS: **A large body of literature** spanning numerous cohorts from many countries and with different demographic

characteristics **does not provide evidence to suggest a significant association between omega-3 fatty acids and cancer incidence. Dietary supplementation with omega-3 fatty acids is unlikely to prevent cancer.**⁸ (Emphasis added.)

► *Life-Systems Engineering Science Commentary*

Did you see this finding proclaiming the worthlessness of omega-3 alone in the fight against cancer? Probably not.

Next, we see the precise reason so many cardiovascular disease researchers get it completely **WRONG**⁹:

“...[T]he inconsistent results obtained in some studies with EPA and DHA could be attributed to inadequate provision or utilization of n-6 fatty acids...” and **“Thus, on the whole, . . . EPA and DHA do not seem to have a very significant effect regarding blood lipids”** Because the vast majority of today’s cardiovascular researchers don’t look at the parent omega-6 pathways, but concentrate on omega-3 series derivatives from fish oil, they **NEVER DISCOVER THE TRUTH.**

The omega-3 derivatives are insignificant and inconsequential in blood lipid analysis. Regardless, they **INCORRECTLY** attribute the positive effects to omega-3 instead of the real causal factors, parent omega-6 and the omega-6 derivatives. It is delightful to see an article acknowledge this important fact.

8. “Effects of omega-3 fatty acids on cancer risk: a systematic review,” MacLean, C.H., et al., *NCI Cancer Bulletin*, vol. 3/no. 5, Jan. 31, 2006.

9. “A defect in the activity of D6 and D5 desaturases may be a factor in the initiation and progression of atherosclerosis,” by U.N. Das, *Prostaglandins, Leukotrienes and Essential Fatty Acids*, 76 (2007) 251–268.

— 2008 MAJOR NEWSFLASH: CONFIRMED — EFA Derivatives Made “As Needed”

I thank Soram Khalsa, MD, an extraordinary board-certified internist utilizing complementary medicine for sending me this article showing how PEOs do indeed allow creation of plenty of EFA derivatives in the body, exactly like this book has stated. “Flaxseed oil and fish-oil capsule consumption alters human red blood cell n-3 fatty acid composition: a multiple-dosing trial comparing 2 sources of n-3 fatty acid,” *American Journal of Clinical Nutrition*, Vol. 88, No. 3, 801-809, September 2008, reports the following:

“Background: An increase in plasma n-3 fatty acid content, particularly eicosapentaenoic acid (20:5n-3; EPA) and docosahexaenoic acid (22:6n-3; DHA), is observed after consumption of fish oil-enriched supplements. Because alpha-linolenic acid (18:3n-3; ALA) [parent omega-3] is the direct precursor of EPA and DHA, ALA-enriched supplements such as flax may have a similar effect, *although this hypothesis has been challenged because of reported low conversion of ALA into DHA*

“Conclusions: The consumption of ALA-enriched supplements for 12 wk was sufficient to elevate erythrocyte EPA and docosapentaenoic acid content, *which shows the effectiveness of ALA conversion* and accretion into erythrocytes. *The amounts of ALA required to obtain these effects are amounts that are easily achieved in the general population* by dietary modification. (Emphasis added.)

Is there more confirmation of the fact that PEO derivative amounts in the body converted from ALA and LA are normally extremely low? YES. The medical journal *Lipids Research* published, “Long-chain conversion of linoleic acid and alpha-linolenic acid in response to marked changes in their dietary intake in men,”¹⁰ with the very same type of result back in 2005, if anyone would care to look:

“Although an increased intake of dietary ALA might be expected to upregulate ALA conversion, this has . . . not been found...”

“Overall conversion rates of LA and ALA, calculated from peak [¹³C] LCP concentrations adjusted for dietary influences on pool sizes of LA and ALA, were low and of similar magnitude overall

10. Hussein, Nahed, et al., *Journal of Lipid Research*, Volume 46, 2005, pages 269-280.

for AA and EPA (**0.18% and 0.26%**; Table 2). LA→DGLA and AA formation was significantly lower on the FXO diet in each case, with ALA→EPA and DPA formation on average higher on the FXO diet, although the differences were not significant. Conversion of tracers to DHA was much less. [Note: **We see PEO conversion rates of less than a mere 1%**. The same less than 1% conversion rates held for DGLA, DHA, and DPA.]

“Few studies have attempted more than **relatively crude estimates of isotope transfer** from tracer into the various tracee pools, and it is recognized that AUC *values will overestimate true conversion rates* and provide only approximate relative rates of transfer.” [Note: This is why so many health professionals have been misled into thinking the PEO-to-derivative conversion rates are much higher than they actually are.] (Emphasis added.)

There were other published warnings about the overestimate of parent-to-derivative amounts. The article, “Comparison of bolus versus fractionated oral applications of [¹³C]-linoleic acid in humans,” *European Journal of Clinical Investigation*, Volume 29 Issue 7, Pages 603 - 609, had this to say regarding over-estimations of derivatives:

“Conclusions: Using areas under the curve [the simple, standard method of analysis] overestimates the conversion, because different residence times are *not considered*.” (Emphasis added.)

****SUPER NEWSFLASH!!!****

**FALLACY DESTROYED in 1996— Babies DO PRODUCE
AA / DHA (omega-6 derivative and omega-3 derivative)¹¹**

For decades, we have been told that infants cannot produce longer chain EFA derivatives. This is incorrect, and the truth was known back in 1996, if anyone cared to look. Researchers relying on this misinformation were all misled, too. Isotope marking was utilized to see if infants at 1 month of age could produce long-chain derivatives. They certainly can and do. Here’s what the article has to say:

11. Carnielli, V.P., et al., “The very low birth weight premature infant is capable of synthesizing arachidonic and docosahexaenoic acids from linoleic and linolenic acids,” *Pediatric Research*, Vol. 40, No. 1, 1996, pages 169-174.

- “...[T]his clearly shows that **all infants were capable of actively synthesizing the long chain polyunsaturated FA** from their dietary precursors.
- “We report a **newly developed approach** which enabled us to measure *in vivo* [in the body] the biosynthesis of LCP with stable isotopes. The study shows that **small preterm infants are capable of converting both LA and LNA into LCP [long-chain polyunsaturated fatty acid]**. We were also able to measure the ¹³C enrichment of all major metabolites of the essential FA including CI8:3n-6, which is the delta-6 desaturase product of LA and thought to be the limiting step in EFA metabolism.

“**The major finding of this study is that the healthy preterm infant at approximately 1 mo of age can desaturate and elongate LA and LNA into n-6 and n-3 LCP, respectively.**

- “This observation suggests that the **D6 desaturation may not be a rate-limiting step in our patients.**
- “We chose to study **preterm infants receiving a formula with a 10: 1 ratio of LA and LNA** because this ratio is often found in human milk lipids.
- “**The duration of our studies was far longer than any other published work**, and we show that at 168 h the **plasma phospholipid LCP were still highly enriched.**” (Emphasis added.)

Once again, we see superb science overlooked. When I came across this paper in 2010, I intuitively knew the argument had to be incorrect; otherwise, a non-breast-fed baby would be both visually, neurologically, and mentally impaired. Because of extensive non-breast milk feeding we already know this is not the case. Hence, the supposition had to be wrong and it is. Researchers not knowing of this finding continue to wrongly believe that most PEOs become derivatives and that babies can't produce them. This was an excellent long-term experiment, and now it's “case closed.”

► Life-Systems Engineering Science Commentary

There you have it. The conversion from “parents” into “derivatives” has been overestimated by most researchers; yet occurs naturally. Pharmacological overloads of derivatives, *particularly from fish oil* (or evening primrose oil alone and borage oil alone), are not required and can be extremely harmful.

Three Fish Oil Experiments: Increased Platelet Aggregation, Decreased Glucose Tolerance, No Improvement

****WARNING: Fish Oil Increases Platelet Aggregation!¹²**

“...In patients with atherosclerosis, **prostacyclin** biosynthesis **fell** by a mean [average] of 42% during the fish-oil period.”

► *Life-Systems Engineering Science Commentary*

You recall prostacyclin (PGI₂) is the body's natural blood thinner and keeps platelets apart naturally. The last thing a CVD patient needs is a reduction in this critical substance. CVD patients require more, NOT less PGI₂. Decreased PGI₂ significantly increases, not decreases, the severity of heart attack — the opposite effect.

2010 Newsflash: Fish Found Worthless in Decreasing Abnormal Heart Rhythm (AF—atrial fibrillation)¹³

Contrary to many report claims, the *American Journal of Cardiology* reported in 2010 that eating lots of fish did nothing to help an abnormal heartbeat. However, in contrast to omega-3's failure, parent omega-6 is effective. Riemersma, RA, et al., state in the **medical journal article**, “**Dietary fatty acids and ischemic arrhythmias**,” *Lancet*, 1988;i:285-6, **that parent omega-6 did help reverse AF.**

And if you'd like even more confirmation of fish oil's negative effect on blood glucose impairment, here it is. In a 1988 experiment reported in the *Annals of Internal Medicine*, it was clearly shown that fish oil is awful for a diabetic and for anyone not wishing to become diabetic.¹⁴

12. Knapp, H, et al., “In vivo indexes of platelet and vascular function during fish-oil administration in patients with atherosclerosis,” *The New England Journal of Medicine*, Vol. 314, April 10, 1986, No. 15, pages 937-942.

13. Berry, J, et al., “Dietary Fish Intake and Incident Atrial Fibrillation (from the Women's Health Initiative),” *The American Journal of Cardiology*, Vol. 105, Issue 6, Pages 844-848 (15 March 2010).

14. “Adverse Metabolic Effect of Omega-3 Fatty Acids in Non-Insulin Dependent Diabetes Mel-

- “A significant deterioration of these patients’ diabetic state (a 19% rise in the fasting glucose level and a rise in 24% mean glucose levels during a mixed meal occurred within one month of omega-3 fatty acid [fish oil] supplementation....
- “**Glucose tolerance** during the mixed meal profile also **deteriorated significantly**.
-
- “...Thus, there is a hypothetical mechanism whereby omega-3 fatty acid [overdoses of derivatives] **incorporated into** plasma and **[cellular] membrane** lipids might impair the regulation of insulin secretion.” (Emphasis added.)

► **Life-Systems Engineering Science Commentary**

The body cannot deal with harmful, pharmacological overloads of omega-3 derivatives from fish oil supplements, and is forced to “shove them” into the cell abnormally or alter normal physiologic processes. One must ask what besides insulin is negatively impacted, too. Fortunately, this deterioration REVERSED when the fish oil supplements were STOPPED.

PEO and PEO Derivatives Physiologically in the Body

In the field of EFA research, misinformation is rampant. Nearly a day goes by without a request for me to refute published information that is counter to my recommendations. Therefore, I am providing this chart showing the enormous significance of parent omega-6 compared to parent omega-3 both in tissue and in the bloodstream. I always have recommendations based on state-of-the-art physiology and biochemistry. *Real-life* results MUST BE consistent with these and that is why other recommendations are so very, very wrong. I guarantee that you will be amazed at this information.

Surprising Tissue Requirements of Parent Omega-6 Versus Parent Omega-3

Many physicians and health care professionals and advisors are unknowingly overdosing their patients on parent omega-3 from flax oil or omega-3 derivatives

litus,” Gluaber, H. et al., *Annals of Internal Medicine*, 1988; 108:663.

from fish oil. Tissue analysis clearly shows how much more parent omega-6 the body contains than parent omega-3.^{15,16,17,18,19}

Ratio of Tissue Composition			
Tissue	Percentage of Total Body Weight	Omega-6 PEO	Omega-3 PEO
Brain/Nervous System	3	100	1
Skin*	4	1000	1
Organs and Other Tissues	9	4	1
Adipose Tissue (body fat)	15-35	22	1
Muscles	50	6.5	1

* There is virtually NO omega-3 in skin tissue.

We see significantly more parent omega-6 than parent omega-3 in tissue, especially in the brain and nervous system, adipose tissue, skin, and muscle.

Next, we will review parent omega-6 (LA) and parent omega-3 (ALA) in the blood, phospholipids (the method of lipid transport tied to a protein), and cholesterol esters (the method that lipids tie to cholesterol for transport by the protein).

It is necessary to know the PEFA (parent essential fatty acids) content of plasma lipids (lipoproteins, triglycerides, and esterified cholesterol) to determine how much parent omega-6, parent omega-3, and omega derivatives we should be taking.

With all the focus on omega-3 series fatty acids today, it is significant to note that the free fatty acids in human plasma ordinarily are composed of about 15% LA (linoleic acid, parent omega-6) and **just 1%** ALA (alpha linolenic acid, **parent omega-3**) with **just 2%** DHA (docosahexaenoic acid).²⁰

15. Spector AA. Plasma free fatty acid and lipoproteins as sources of polyunsaturated fatty acid for the brain. *J Mol Neurosci* 2001;16:159-65; discussion 215-221.

16. Chapkin RS, Ziboh VA, Marcelo CL, Voorhees JJ. Metabolism of essential fatty acids by human epidermal enzyme preparations: evidence of chain elongation. *J Lipid Res* 1986;27:945-954.

17. Andersson A, Sjodin A, Hedman A, Olsson R, Vessby B. Fatty acid profile of skeletal muscle phospholipids in trained and untrained young men. *Am J Physiol Endocrinol Metab* Bunting S, Moncada S, Vane JR. The prostacyclin—thromboxane A2 Balance: Pathophysiological and therapeutic implications. *BMJ* 1983;39:271-276.

18. Markides, M., et al., "Fatty acid composition of brain, retina, and erythrocytes in breast- and formula-fed infants," *The American Journal of Clinical Nutrition*, 1994;60:189-94 and Agneta Anderson, et. al., *American Journal of Endocrinological Metabolism*, 279: E744-E751.

19. Bunting S, Moncada S, Vane JR. The prostacyclin—thromboxane A2 Balance: Pathophysiological and therapeutic implications. *BMJ* 1983;39:271-276.

20. Spector A. Plasma free fatty acid and lipoproteins as sources of polyunsaturated fatty acid for the brain. *J Mol Neurosci* 2001;16:159-165.

Percentages of Linoleic Acid (LA) and Alpha Linolenic Acid (ALA) in Plasma and Classes of Lipids				
Fatty Acid	Plasma % Unesterified	Plasma % Triglycerides	Plasma % Phospholipids	Plasma % Cholesterol Esters
LA (Parent Omega 6)	17	19.5	23	50
ALA (Parent Omega 3)	2	1.1	0.2	0.5
LA : ALA ratio	8.5:1	17.5:1	115:1	100:1

References: Sinclair HM. Essential fatty acids in perspective. Hum Nutrit 1984;38C:245-260; and Spector A. Plasma free fatty acid and lipoproteins as sources of polyunsaturated fatty acid for the brain. J Mol Neurosci 2001;16:159-165.

From a detailed analysis of EFA-derivatives, such as arachidonic acid (AA), eicosapentaenoic acid (EPA), and DHA, it is calculated that the plasma **parent omega-6** content in esterified cholesterol is approximately 50%, with **parent omega-3** comprising a mere 0.5%, and the ratio of **esterified parent omega-6/-3 is about 100:1!** It will be also noted that **DHA is the most abundant ALA-series derivative in the phospholipids**, but even in this class of lipids, **DHA comprises only 2.2%** of the fatty acids with **parent omega-6** being a factor 10 times greater.

In sharp contrast to the high amounts of n-6 series PUFAs (parent and derivative omega-6), n-3 series PUFA (parent and derivative omega-3) account for only 1.8% of the fatty acids in triglycerides, 3.5% in the phospholipids, and only 1.7% (ALA is 0.5%) in cholesterol esters. This high preponderance of parent omega-6 (LA) is pervasive throughout: the LA/ALA ratio in triglycerides is 23:1; n-3 PUFA makes up only 1-2% of fatty acids in plasma. **Even in the brain, LA/ALA uptake is 100 times greater.**

Furthermore, there is not a significant bodily storage mechanism for ALA. Even significantly raising ALA intake does not cause a significant change in adipose tissue LA/ALA storage ratios.²¹

Wrong About Heart Disease, Too

No one wants a heart attack. Unfortunately, there is little scientifically-based information on how to avoid it. You need to know that there is no parent or derivative omega-3 in your arterial wall where the blood flows. The whole problem is in processed oils:

21. Spector A. Plasma free fatty acid and lipoproteins as sources of polyunsaturated fatty acid for the brain. J Mol Neurosci 2001;16:159-165.

We know that the intima (**inner arterial wall**) consists of a single layer of endothelial cells containing **significant parent omega-6** (LA), but **no parent omega-3** (ALA).²² Consumed, processed LA deposited in arterial intimal cell membranes leads to abnormal oxidation at the vascular injury site, thus causing injurious inflammation, and ultimately leading to a thrombosis. (formation or presence of a blood clot in a blood vessel).

22. Watkins, PA, Hamilton JA, Leaf A, et al. Brain uptake and utilization of fatty acids: Applications to peroxisomal biogenesis diseases. *J Mol Neurosci* 2001;16:87-92.