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## THE PHYSICIAN'S CONCISE GUIDE TO:

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# The Essential Cardiologist: A New Look at Cholesterol, Cancer, Clogged Arteries & EFAs

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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.

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# The Easy Solution: The Peskin Protocol PEOs

## 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-food-store “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.**

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**From this point forward it is Parent Essential Oils (PEOs)  
that get center stage.**

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# The Failure of Vytorin and Statins to Improve Cardiovascular Health: Bad Cholesterol or Bad Theory?

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## Abstract

The clinical failure of Vytorin in the ENHANCE trial is further confirmation that the medical community needs to re-evaluate the efficacy of using statin drugs for the widespread treatment and prevention of CAD (coronary artery disease). Statins were marketed on the precept that lowering so-called “bad” cholesterol while raising “good” cholesterol significantly improves cardiovascular outcomes. The NNT (number needed to treat); however, is often over 100 (99% failure rate) with the use of statins, so the benefit regarding cardiovascular outcomes is only positive for a very small minority of males, and one can argue that a suitable course of aspirin would accomplish the same result. These failures can be explained through an evidentiary examination of the biochemical and physiological analysis of plaques, leading to the deduction that rupture of atherosclerotic plaques is due to oxidized linoleic acid (the parent omega-6 essential fatty acid), and that while statins hinder the transport of nonfunctional LA (trans and oxidized) entities to the intima, they also lower the bioavailability of fully functional LA. This lower bioavailability promotes platelet adhesion, lowers the anti-inflammatory levels of key prostaglandins, and interferes with cell membrane fluidity and oxygen transmission, all of which thwart positive cardiovascular outcomes. Finally, since HDL (high density lipoprotein) cholesterol plasma levels do not control net cholesterol transport from the periphery to the liver, attempting to raise HDL cholesterol levels is not helpful, either. On the contrary, pharmacologically raising HDL levels is strongly associated with adverse cardiovascular events. A bold new approach and treatment paradigm is required. We propose a new paradigm utilizing functional parent omega-6/3; and also advocate the importance of mediating and controlling diets and lifestyles in line with these conclusions be more forcefully propounded.

## Introduction

The clinical failure of the drug Vytorin—the ENHANCE Trial—is prompting a re-examination of the basis for using cholesterol-lowering drugs, the statins.<sup>1</sup> Statins are sold by Merck (Mevacor and Zocor), AstraZeneca (Crestor), Bristol-Meyers Squibb (Pravachol), Novartis (Lescol), and Pfizer (Lipitor), the latter being the world’s best-selling drug. Vytorin is a formulation that combines the statin Zocor (generic name simvastatin) with Zetia (a non-statin cholesterol absorption blocker with the generic name ezetimibe), co-marketed by Schering-Plough and Merck. While there were significant decreases in LDL cholesterol levels over the two years of the ENHANCE trial, the mean increase in the intima-media thickness (IMT) between the effect of simvastatin alone and the combination of simvastatin and ezetimibe in their respective groups was 0.006 versus 0.011 mm—not statistically significantly different. Surprisingly, atherosclerosis progression nearly doubled with the ezetimibe/simvastatin combination. Considering that IMT is considered to be a marker of atherosclerosis,<sup>2</sup> as well as a strong predictor of future myocardial infarction, the change in cholesterol levels did not make a difference in preventing atherosclerosis.

After learning of Vytorin’s failure, it took Merck and Schering-Plough an inexplicable 20 months to release the news to the medical community. This communication took the form of a press release<sup>3</sup> rather than a peer-reviewed article in a medical journal. (The trial was eventually published in the *New England Journal of Medicine* in April 2008.<sup>4</sup>) Members of the medical community, including clinical cardiologists, were predictably upset, but the evidence that statins are not effective in reducing adverse cardiovascular events or mortality had already been accumulating prior to this news. For example, in 2007, as reported in *The Lancet*, Abramson and Wright conducted a meta-analysis of eight RCTs (randomized clinical trials) of statins and found a number of disquieting results.<sup>5</sup> First, in analyzing total mortality, they determined that mortality was not reduced. Second, in the two RCTs that reported serious adverse events, analysis showed that such events were not reduced either. Third, in investigating the frequency of cardiovascular events, the absolute risk reduction was 1.5%, which in NNT (number need to treat) terminology means that at least 67 people would need to be treated with statins over a *five-year period* in order for one patient to benefit. Finally, such benefit was limited to high-risk men aged 30-69 years. Although there are no universally accepted benchmarks regarding the NNT for an effective treatment, for the sake of comparison, antibiotics have NNTs of 1.1, meaning 10 out of 11 patients are cured. Therefore, Bandolier suggests an effective NNT should be no greater than 2-4.<sup>6</sup> Using this criterion, statin treatment is clearly

not effective – it is a dismal failure. Clearly, a new level of understanding and synthesis of well-understood physiologic principles is required.

Actually, the high NNT (low effectiveness) of statins is even worse than reported, because of a particularly egregious practice of many publications when describing statin trials is to exaggerate benefit or leave out vital information. Such misstatements include promulgating misleading mortality statistics, misstated risk factors, hidden bias, disingenuous figures, and omitting significant differences.<sup>7,8</sup> For example, the limited statin benefit obtained for high risk men, as described by Abramson and Wright, could likely be obtained just as easily from a 5-week course of aspirin.<sup>9</sup>

Given clinical failure with statins in the treatment of cardiovascular outcomes, how has application of the cholesterol theory gained such prominence?

## The Cholesterol Theory and its Incorrect Assumptions

By the 1960s, cholesterol had become firmly entrenched in the medical community as the culprit in the development of atherosclerosis.<sup>10</sup> Total blood cholesterol was also the first blood test or marker utilized as an endpoint in the initial HMG-CoA reductase inhibitor trials in Japan,<sup>11</sup> but as the biochemistry of cholesterol particles was being elucidated at that time, it was not long before the convenient results of these studies were harnessed in the development of statins. The theory behind the development of statins became a simple one. With no biochemical or physiological basis, it was *assumed* that plaque build-up in atherosclerosis is due to the presence of the “wrong” kind of cholesterol (“bad” cholesterol – aka LDL cholesterol). Lowering “bad” cholesterol levels and boosting “good” cholesterol levels (high density lipoprotein [HDL]) is then supposed to lower plaque buildup and prevent cardiovascular disease. Although this assumption is categorically false, it did not stop the pharmaceutical community from misleading the medical and research community that it was true. The entire health care profession; in particular, cardiologists is currently in a quandary of what to do next.

Recommendations lacking firm biochemical basis are problematic. For example, for decades, saturated fat was incorrectly believed to be the cause of arterial plaque. This is clearly not the case, as identified in a landmark article published in 1994.<sup>12</sup> Investigators found that plaque contained more than 10 different compounds, none of which was related to saturated fat. Other independent investigations confirmed this finding.<sup>13,14</sup> Not surprisingly, cholesterol was found in the plaque, but a key study in 1997 demonstrated that cholesterol esterified with nonfunctional linoleic acid (LA), the parent essential unsaturated omega-6 fatty acid (PEFA), was by

far the most abundant component in plaque causing arterial stenosis. It was also found that cholesterol *esters* (chemically attached fatty acid structures) are the predominant lipid fraction in all plaque types, and that both PUFAs (polyunsaturated fatty acids; in particular, abundant parent omega-6) and cholesterol may form oxidized derivatives that are toxic to most types of arterial cells.<sup>15</sup> Most interesting is the conclusion that arterial plaque rupture, which can cause thrombosis and vessel occlusion and increase the potential for myocardial infarction and stroke, was due to oxidation of the LA.

These pathophysiologic findings have been largely ignored because of the misguided popularity of the “bad saturated fat/cholesterol” theory,<sup>16</sup> in which both saturated fat and cholesterol are portrayed as the “bad” actors. But, by itself, cholesterol is not bad; in fact, it is essential to life. Consider just a few of its functions: bones would be hollow without cholesterol; it has a major structural role in the brain where it is needed in high concentrations; it is required for nerve transmission; it helps maintain the properties of the cell membrane’s lipid bilayers; cholesterol also plays a role in glutamate transport and lipid rafts essential to glutamate receptor function; it protects the skin against absorption of water-soluble toxins and holds moisture to prevent desiccation, and it is present in all cells. In addition to being the precursor to many steroids, such as testosterone, progesterone, and estrogen, cholesterol is a precursor to Vitamin D and bile salts.

If cholesterol alone were the culprit, we should see reductions in IMT (intima media thickness) in parallel with reductions in cholesterol levels when statins are administered. However, we do not see this result. Moreover, patients with low cholesterol levels ought to have much lower event rates of cardiovascular disease, which of course they do not. Indeed, Krumholz et al.<sup>17</sup> concluded back in 1994 that low cholesterol, by itself, does not significantly prevent heart disease in persons older than 70 years, a population that ought to quickly experience a benefit if lowering cholesterol was beneficial. A British study published in 1993 also determined that blood cholesterol was a poor predictor of coronary heart disease (CAD) and that few people identified on the basis of cholesterol levels would benefit from statins.<sup>18</sup> Even in 1964, the noted heart surgeon Michael DeBakey and his group analyzed the cholesterol levels in 1700 atherosclerotic surgical patients and found no relationship between the level of cholesterol in the blood and the incidence and extent of atherosclerosis, firmly showing that cholesterol numbers in and of themselves were meaningless.<sup>19</sup> In fact, the patients with the highest LDL cholesterol levels had the least atherosclerosis (an inverse correlation).

As it turns out, it appears that apo-lipoprotein B is both a better

predictor of adverse cardiovascular events and a more accurate index of residual CAD risk.<sup>20</sup>

Ask yourself why all household cats (true carnivores), eating almost 100% meat containing lots of cholesterol and saturated fat, do not quickly and routinely die of CAD. We maintain there is no significant physiological mechanism a carnivore possesses compared to a human omnivore in lipid physiology. Furthermore, there is no physiological blood cholesterol sensor, unlike physiological sensors that maintain strict control of glucose, calcium, and sodium levels in the bloodstream. Therefore, based on physiology, the entire LDL/HDL/saturated fat theory is wrong.

### What Is the “Bad” Actor?

If saturated fat and cholesterol are not the real culprits, and have been misleading the medical community, then what is? Is the cholesterol molecule attached to anything that could be the real culprit? Yes. It was reported in *New England Journal of Medicine* that “Diets high in polyunsaturated fat have been more effective than low-fat, high-carbohydrate diets in lowering cholesterol as well as the incidence of heart disease.”<sup>21</sup> (The term polyunsaturated fat as quoted here is vague; we prefer the term essential fatty acids [EFAs]. Essential fatty acids are made up of two families, omega-3 and omega-6, both of which are polyunsaturated.)

A high carbohydrate diet is known to be pathogenic. A 60% carbohydrate/25% fat diet versus a 40% carbohydrate/40% fat diet resulted in significant increases in both fasting and postprandial triglyceride concentrations, and substituting carbohydrates for saturated fat also led to higher LDL cholesterol in the blood.<sup>22</sup> It is appropriate to question the wisdom of replacing dietary fat with carbohydrates. Researchers can easily confuse pathogenic blood chemistry caused by oxidized, nonfunctional, polyunsaturated fats and those caused by carbohydrate consumption.

Although other studies may furnish contradictory results, we suggest that these studies often unknowingly use nonfunctional, oxidized EFAs (in particular, oxidized parent omega-6), extremely high ratios of omega 6:3 parental oils, and excessive supraphysiological amounts of polyunsaturated fatty acids. Furthermore, approximately 70% of the cholesterol in the lipoproteins of the plasma is in the form of *cholesterol esters* attached to apolipoprotein B (Guyton A, Hall J. *Textbook of Medical Physiology*. 9th ed. Philadelphia, PA: W.B. Saunders; 1996:872-873). Therefore, we will fully explore this path to intervening in the atherosclerotic process.

First, let's explore cholesterol's connection with parent LA; i.e.,



esterified cholesterol. Of dietary cholesterol absorbed, 80-90% is esterified with long-chain fatty acids in the intestinal mucosa,<sup>23</sup> these being the fatty acids in LDL/HDL cholesterol esters. The majority (about 55%) of the cholesteryl ester component is LA.<sup>24</sup>

Second, it is necessary to know the PEFA (parent essential fatty acids) content of plasma lipids (lipoproteins, triglycerides, and esterified cholesterol) to determine the specific “bad actor.” 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 and just 1% ALA (alpha linolenic acid, parent omega-3) with just 2% DHA (docosahexaenoic acid).<sup>25</sup>

It will be noted in Table 1 that the significant fatty acid throughout is LA, with ALA being significantly less. Derivatives such as DHA are even less significant so they are not listed.

From a detailed analysis of EFA-derivatives, such as arachidonic acid (AA), eicosapentaenoic acid (EPA), and DHA, it is calculated that the plasma LA content in esterified cholesterol is approximately 50%, with ALA comprising a mere 0.5%, and the ratio of esterified LA/ALA about 100:1 (Table 1 on page 17). 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 LA being a factor 10 times greater.<sup>25</sup> In sharp contrast to the high amounts of n-6 series PUFAs, n-3 series PUFA account for only 1.8% of the fatty acids in triglycerides, 3.5% in the phospholipids, and only 1.7% in cholesterol esters. This high preponderance of 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.<sup>25</sup> Even in the brain, LA/ALA uptake is 100 times greater.<sup>26</sup> 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.<sup>26</sup>

The LA path is an important one to answering why statins have an NNT of 100—a 99% failure rate. What if the cholesterol structure in the arterial intima contained significant amounts of oxidized or nonfunctional parent omega-6 that is attributable largely to ingestion of foods containing LA oxidized or otherwise damaged in the course of routine food processing, before any *in vivo* oxidation? We know that the intima consists of a single layer of endothelial cells containing significant LA, but no alpha-linolenic acid (ALA).<sup>27,28</sup> Consumed, processed LA deposited in arterial intimal cell membranes leads to abnormal oxidation at the vascular injury site, thus causing injurious inflammation. In this case, *abnormal oxidation* involves formation of a hydroperoxide from LA by abstraction of a hydrogen atom as a radical from the doubly allylic methylene group between the two

double bonds, followed by the addition of oxygen, a diradical, to make a hydroperoxide radical, which can then pick up another reactive hydrogen atom, perhaps from another LA molecule, to form the hydroperoxide. This, in turn, may break the O-O bond to form an alkoxide and a hydroxyl radical, which can continue on to make more undesirable oxidized products.<sup>29</sup> What else could cause LA in the endothelial cells to become oxidized? Could significant amounts of LA already defective from routine food processing transported by LDL cholesterol be the real culprit?

Accumulating evidence suggests that the initiation of atherosclerosis is mediated by free radicals, although demonstrating unequivocally that changes in atherosclerosis status are associated with low levels of specific antioxidants or the addition of antioxidants, either through supplementation or increased consumption of fruits and vegetables, has been difficult because of the many variables involved.<sup>30-35</sup> Nevertheless, the hundreds of studies on this subject do indicate that there is a balance between the levels of antioxidants in the body and the necessary presence of free radicals for various cellular functions. In particular, there is an increased risk of atherosclerosis at the sites of greatest atherosclerotic change – that is, at sites of vessel bifurcation, where intrinsic antioxidant enzyme levels are lowest. However, there appears much more to this intriguing story.

Miettinen et al.<sup>36</sup> discovered that LA and most polyunsaturated fatty acids, specifically AA (a derivative of LA) and EPA, a derivative of the parent omega-3 unsaturated fatty acid ALA, were depleted in patients who had experienced heart attacks. Gerhard Spiteller, who has investigated EFAs and their degradation products – specifically, the influence of these substances in the physiology of mammals – concluded that *consumption of oxidized PUFA-cholesterol esters* is responsible for the initial damage to endothelial cells and that cholesterol oxidation products are incorporated into LDL cholesterol in the liver.<sup>37</sup> LDL carries these toxic compounds into the endothelial walls where they cause cell damage, and thus injury is not caused by an increase in free cholesterol *but by an increase in oxidized cholesterol esters*.<sup>38</sup>

Spiteller clearly connects CAD with cholesterol esters: In atherosclerotic patients LDL cholesterol is altered by oxidation, and this altered LDL is taken up in unlimited amounts by macrophages. Dead macrophages filled with cholesterol esters are finally deposited in arteries.<sup>37</sup> The fact that LDL is rendered toxic by oxidation raises the question, *which constituents of LDL cholesterol are most prone to oxidation?* While cholesterol itself can be oxidized, its rate of oxidation is usually less and is dependent on the presence of other PUFAs and the level of antioxidants.<sup>39,40</sup> Therefore, we stress analysis of cholesterol's esterified component instead; in particular, LA, focusing

on the LA that has already become oxidized prior to ingestion through processing of foods or overheating, since peroxidation of PUFA glycerol esters is enhanced by heating in the presence of air.<sup>38</sup> These insights strongly suggest that looking in a new, non-statin-based direction for the prevention of heart disease is warranted.

Humans obtain AA either from food, such as meat, or AA that is derived from LA, if it is not processed and fully intact (biologically functional). Contrary to the incorrect belief of many investigators and physicians, AA is not harmful: AA is the precursor to prostacyclin, the most potent anti-aggregatory agent and inhibitor of platelet adhesion.<sup>41</sup> Thus, lowering esterified LA through the lowering of LDL cholesterol by statins (or via any other mechanism) automatically will decrease the body's natural anti-aggregatory AA. Patient platelet adhesion increases while natural antiplatelet activity decreases, which in turn raises the risk of thrombosis.

Furthermore – again contrary to widespread belief – the body's most powerful natural anti-inflammatory, prostaglandin PGE<sub>1</sub> is a parent omega-6 derivative, unlike PGE<sub>3</sub> from omega-3, which is much weaker. If functional LA bioavailability is lowered, the potential for inflammation rises, which leads to atherosclerosis. Weiss, for example, has noted that PGE<sub>1</sub> reduces the fibrin deposition associated with the pathogenesis of atherosclerosis.<sup>42</sup>

Since LA is an essential fatty acid, the form in which it is ingested is critical. In the past several decades, processed foods – in particular, frozen foods and restaurant cooking oils – have increasingly incorporated *trans* fats and other unhealthy fats and oils. Moreover, when heated in air, the LA in these oils changes to hydroperoxides, which are biochemically damaging to the body. This results in less functional LA for incorporation into cell membranes<sup>43,44</sup> and subsequent conversion into important arachidonic acid. (Omega-3-containing oils, such as flax seed oil and fish oil, are not routinely used by food processors as they are far too unstable.)

One critical feature of functional cell membranes is their fluidity, which is a consequence of local disordering of the bilayer induced by the *cis* double bonds of PEFAs.<sup>45</sup> Membrane fluidity increases when more functional (undamaged) polyunsaturated fatty acids, in particular linoleic acid, are available to incorporate into the membrane lipid bilayer. When natural PEFAs are replaced by nonfunctional omega-6-based *trans* fats, the fluidity diminishes, and that leads to a substantial reduction in cellular oxygen transfer, with adverse physiological effects including atherosclerotic cardiovascular disease. If there is a deficiency of fully functional LA in the diet, the body will substitute into cell membranes a nonessential fatty acid, such as oleic acid (omega-9) found in olive oil.<sup>46</sup> This forced substitution

results in a marked decrease of cellular oxygen transport with adverse effects on cellular metabolism, and function,<sup>46</sup> including possible chronic hypoxia to the heart leading to potential myocardial dysfunction.

Because LDL cholesterol is the transport vehicle for PEFA delivery into the cell, LDL cholesterol will transport any kind of LA into cells – defective or not – such as oxidized or *trans* entities. So, while statins do reduce the amount of LDL cholesterol, thereby automatically reducing the amount of nonfunctional parent omega-6 from processed food that reaches cell membranes, they simultaneously lower the transport of vital oxygenating functional PEFAs into cells.<sup>47</sup> In fact, over a 24-week timeframe, when patients were given 40 mg daily of simvastatin, mean serum omega-3 levels dropped a whopping 34% and omega-6 levels dropped 28%.

In addition, because statins also significantly lower coenzyme Q<sub>10</sub> (CoQ<sub>10</sub>)<sup>48</sup> (known as ubiquinone), this decrease also causes endothelial dysfunction, a precursor of atherosclerosis.<sup>49</sup> Therefore, artificially decreasing LDL-C is harmful for a number of reasons.

## High Density Lipoprotein Cholesterol

Another part of the “cholesterol is bad” theory says that while high levels of LDL cholesterol are “bad,” high levels of HDL cholesterol are “good.” This is incorrect and has no biochemical, physiological, or clinical basis.<sup>50</sup> Attempts to raise HDL levels using the drug torcetrapib with or without the presence of atorvastatin were very successful: 120 mg of torcetrapib daily increased plasma concentrations of HDL cholesterol by 61% and 46% in the atorvastatin and non-atorvastatin cohorts, respectively. Torcetrapib also reduced LDL cholesterol levels by 17% percent in the atorvastatin cohort.<sup>51</sup> Unfortunately, this trial, which began in 2004 and was scheduled to run until 2009 with 15,000 patients, was prematurely terminated since excess mortality started to appear (82 deaths in the torcetrapib group versus 51 deaths in the control group). Patients taking torcetrapib also were more likely to experience heart failure.

The failure of torcetrapib should not have been a surprise. Years prior to the start of this trial, researchers studied the HDL transport mechanism in mice through gene knock-out studies. With no HDL transport, many physicians thought that atherosclerosis would substantially increase, because the concepts current at the time supported a key role for reverse cholesterol transport (from the periphery to the liver) with defects in the HDL-mediated process contributing to the development of atherosclerotic plaques. This was not the case. Indeed, investigators found that mice lacking HDL did not show impaired hepatobiliary transport; concluding that HDL plays little or no role in that process.<sup>52</sup> In commenting upon the work of Haghpassand et al.<sup>53</sup>

published in 2001, Tall et al.<sup>54</sup> noted that these findings support the authors' conclusions that HDL plasma levels do not control net cholesterol transport from the periphery, and therefore also call into question the accepted view of reverse cholesterol transport.

Another investigation of the data contained in two previous studies (the IDEAL<sup>55</sup> and EPIC<sup>56</sup> studies) to assess the relationship between HDL cholesterol, HDL particle size, apo-lipoprotein A-1 (ApoA-1, the principal protein in HDL particles), and CAD found that high levels of plasma HDL cholesterol and large HDL particles were associated with an increased risk of coronary artery disease when ApoA-1 and ApoB were kept constant in regression analyses<sup>57</sup> – the opposite of what was predicted. In an accompanying editorial, Genest<sup>58</sup> noted that as a therapeutic goal, raising HDL may be fraught with dangers, and that no data existed that unequivocally showed that raising HDL cholesterol by pharmacological means reduces cardiovascular risk.

Finally, it is important to understand that the “bad” cholesterol theory and the proliferation of statin use are rarely examined in the context of the vast increase in metabolic diseases we have today. These have been termed “metabolic syndrome,” characterized by type II diabetes, obesity, and dyslipidemia. In healthy individuals, there is a balance of both pro- and anti-inflammatory cytokines that maintain homeostasis. However, in individuals with such metabolic disorders this balance is upset, resulting in increases in the COX (cyclo-oxygenase) and LOX (lipoxygenase) enzymes, excessive pro-inflammatory cytokine production and systemic inflammation leading to CHD (coronary heart disease) and atherosclerosis.<sup>59-62</sup> There is no doubt that Western diets, which feature physiologically improper protein:fat:carbohydrate ratios skewed toward high (unnecessary), pathogenic carbohydrate intake,<sup>22</sup> and supraphysiological omega-6:3 ratios (10:1 to 15:1),<sup>63-66</sup> with significant nonfunctional LA from processed food, are responsible for this pathological situation.

## Conclusions

Except for a very small and insignificant minority of patients, simultaneously lowering LDL-C and raising HDL-C does not endow any benefit. Statins do possess some anti-inflammatory activity, which is most likely associated with COX suppression. However, this effect is marginal given the adverse side effects of statin therapy. This is likely why statin treatment can cause patients to die more often and experience more adverse cardiovascular events. In addition, serious side effects are seen in 15-20% of patients, which include peripheral neuropathies, myopathies, and muscle

pain. Tragic side effects are nothing new with statin use. Clinical cardiologists were stunned in August 2001 when Bayer pulled Baycol (cerivastatin) because of fatal rhabdomyolysis (a condition that results in muscle cell breakdown and release of the contents of muscle cells into the bloodstream). All statins carry this potential and genuine risk. Furthermore, a recent study showed a significantly increased risk of cancer with statins.<sup>67</sup> This we have previously shown is the result of lower bioavailability of fully functional LA induced by statins.<sup>68</sup> Finally, studies of lower doses of statins (10 to 20 mg), have demonstrated that the incidence of peripheral neuropathy can increase by as much as 14-fold. In addition, the neurological effects of statins, because of the alterations of lipid rafts, can significantly alter brain physiology.<sup>69-71</sup>

In summary, while it is important to elucidate the mechanisms involved in atherosclerosis, especially in regard to the many metabolic diseases extant today, this should not be undertaken with the idea that developing different statins or endless, expensive, and novel inhibitors of key enzymes is the answer. In the authors' opinion, the new path to CAD prevention lies first in solving the defective esterified LA issue via effective supplementation. Next, changes to diet and nutritional lifestyle must be implemented so that a better balance of protein and natural unprocessed fats can be achieved and a much lower intake of carbohydrates<sup>22</sup> along with a lesser consumption of processed foods that contain trans fats and oxidized fats.

To what end does the foregoing discussion have relevance to the present role of statin drugs in the treatment and prevention of atherosclerotic cardiovascular disease? Most caring and conscientious physicians do have a strong desire to practice "evidence-based" medicine. At the present time, the strong economic-driven pressures of the pharmaceutical community have caused physicians to abandon such true and valid evidence-based principles and to prescribe statins because it "seems" like the correct course of action to follow. The prudent and informed physician will, however, after examining the evidence, make a careful assessment of the "risk-benefit ratio" for the patient and in that light make the best recommendation for that patient.

In light of the present evidence, a physician can now feel well-justified and scientifically secure in not prescribing statin treatment. Going back to the initial FDA approval of statin therapy it should be recalled that statin drugs were only to be prescribed when other "lifestyle (diet and exercise) modifications" had failed to demonstrate benefit. Indeed, FDA approval of statin therapy was then, and is now, predicated on the failure of such implemented nutrition and lifestyle changes to provide benefit, especially, the low-fat, high-carbohydrate diets invariably recommended. We also now know that the term "benefit" must be more strictly and precisely defined. In

truth, one must demonstrate a meaningful reduction in cardiovascular events and all-cause mortality rather than presuming benefit in simply lowering the surrogate “numbers” in an artificially constructed model of the LDL/HDL cholesterol scheme – all of which appears to have very little relevance to the physiologic cardiovascular problems at hand.

With the latest well-documented studies, physicians are forced to emphasize the importance of nutrition and lifestyle modifications to their patients. No longer can physicians conclude that their patients will thrive using statins. The overwhelming evidence demonstrates the best medical advice is to caution patients on the tremendous limitations of statins; specifically, that when 67 patients are treated with a statin protocol over five years, 66 patients will have a negative outcome – a 98% failure rate. As dismal as this number is, it does not take into account the substantial additional risks associated with prolonged statin usage.

It also must be noted that with its 25 member organizations, the current National Heart, Lung, and Blood Institute’s (NHLBI) National Cholesterol Education Project (NCEP)<sup>72</sup> Guidelines For Physicians make it untenable for physicians not to use statins because of the NHLBI’s mandate that lowering LDL cholesterol is “the primary target of therapy,” as well as recommending the ubiquitous so-called heart-healthy diet, focusing on dietary carbohydrates (“50-60% by calories”). Their misguided dietary recommendations actually raise LDL cholesterol.<sup>22</sup> Also, the NCEP executive summary ([http://www.nhlbi.nih.gov/about/ncep/ncep\\_pd.htm](http://www.nhlbi.nih.gov/about/ncep/ncep_pd.htm)) states, “From its inception, the NCEP has based its recommendations and messages firmly on sound scientific evidence,” and “A series of recent clinical trials that used cholesterol-lowering drugs called ‘statins’ has provided conclusive evidence that lowering the level of low density lipoprotein (LDL) cholesterol, the ‘bad’ cholesterol, dramatically reduces heart attacks and CHD deaths as well as overall death rates in patients with or without existing CHD.” These statements are not true because the “sound scientific evidence,” is far from “conclusive” (as this paper details) and are diametrically opposed to physiological mechanisms. Lowering LDL-C does not “drastically reduce” heart attacks, CHD deaths, or overall death rates. If these incorrect, outdated recommendations are not remedied, modifying wrong surrogates through statins will continue to produce deplorable outcomes, i.e., an NNT of 67—at best – a 98% clinical failure rate. However, the executive committee gave physicians the last word in patient therapy with the page 1 executive summary statement: “It should be noted that these guidelines are intended to inform, *not replace, the physician’s critical judgment, which most ultimately determine the appropriate treatment for each individual.*” This allows the physician

an alternate, science-based protocol of at the very least, supplementing statins with a physiological, fully functional LA/ALA supplement.

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Table 1. Percentages of linoleic acid (LA) and alpha linoleic acid (ALA) in plasma and classes of lipids.

<b>Ratio of Tissue Composition</b>		
Tissue	Omega-6 PEO	Omega-3 PEO
Brain/Nervous System	100	1
Skin	1000	1
Organs and Other Tissues	4	1
<b>Adipose Tissue (bodyfat)</b>	<b>22</b>	<b>1</b>
<b>Muscles</b>	<b>6.5</b>	<b>1</b>

## **A New Look at LDL Cholesterol, Clogged Arteries and PEOs**

Cholesterol-lowering drugs are among the pharmaceutical industry's top money makers. Billions and billions of dollars are spent each year in the hopes of "lowering the 'bad' cholesterol." You will soon discover how wrong this method is, why heart disease or cancer can't be helped sufficiently by these drugs or this approach, and which substance transported by LDL cholesterol is *really* the villain for which cholesterol mistakenly gets a bad rap.

I owe tremendous thanks to Dr. David Sim, a leading interventional cardiologist, for his significant assistance in developing this section. I also thank Dr. Stephen Cavallino, a leading emergency physician practicing in Italy, who was desperately looking for the reason why the majority of his emergency room heart patients **suffered heart attacks in spite of normal cholesterol levels**. The following section represents a collaborative effort. After reading this section you will discover more about the function of cholesterol than likely many physicians understand.

Drug company advertisements on television seem calculated to "scare us to death" when they contain statements like these:

**"When diet and exercise don't lower cholesterol enough...."**

**"Cholesterol comes from the foods you eat and your grandparents ...."**

**"The 'bad' cholesterol ...."**

The advertisement may even make this amazing statement: **"Not shown to prevent heart attack or heart disease...."**

Scary, isn't it? We are told that "bad" cholesterol (LDL) isn't low enough, your **likelihood of a heart attack isn't even lowered by the drug**, yet we **never question the reasoning** behind statements that cholesterol should **be made *artificially* lower than its natural levels**. It's called the power of advertising. Cholesterol advertisements are on television constantly. Soon after seeing them, we automatically think that lowering cholesterol is "the answer" to decreased heart disease when nothing could be further from the scientific truth.

The same method was used in the early 1980s to sell quartz heaters. The ads appeared to be based on science. They became a fad because these heaters promised to be "much more efficient" and energy-saving, too. Both facts are wrong. There is no difference in quartz vs. any other space-heaters being sold. Nonetheless, even some scientists got fooled into buying them. As physicist extraordinaire Dr. Lewis Epstein states:

“Have you ever noticed that if you don’t really understand something, but you know the ‘right words,’ people who also do not understand will often think that you do?”<sup>1</sup> This is why we can be misled by “official-sounding” sources. Don’t forget Nicolas Tesla’s warning to always think clearly, not just deeply. *Life-Systems Engineering Science* always predicates any conclusion on this insight.

You need to know that *heart disease was nearly nonexistent in 1920 when the American diet was based on meat and potatoes*. In fact, the inventor of the EKG was told his invention wasn’t needed because heart disease (myocardial infarction) didn’t significantly exist. There were few cereal or milk advertisements back then, so milk and cereal weren’t heavily consumed.

\* \* \*

Compare this with the situation today. Pharmaceutical companies never let up on television and print advertising in an attempt to get us to lower our cholesterol. This section will answer why you are told to lower LDL cholesterol and will give you the medical facts about cholesterol that big pharmaceutical companies hide from physicians. When a pharmaceutical company’s drug test fails, they may try to stop the study before the negative results are published. They may even attempt to discredit any negative information about the drug. The physician may never know of the negative effects of a drug that he so glowingly recommends; the drug rep only gave the positives to him, so both he and the public is misled.

Statin drugs are those used to control cholesterol levels in the body. A 2001 study found:

“Statins and polyunsaturated fatty acids have similar actions.... In view of the similarity of their actions and that statins influence essential fatty acid metabolism, it is suggested that EFAs and their metabolites may serve as secondary messengers of the action of statins....”<sup>2</sup>

These statements mean that **EFAs (PEOs) naturally accomplish what statin drugs try to do by decreasing cholesterol levels**. While this by itself can help speed blood flow, this is not the most important thing to know about PEOs in relation to cholesterol and clogged arteries.

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1 *Thinking Physics: Practical Lessons in Critical Thinking*, Lewis Carroll Epstein, Ph.D., Insight Press, San Francisco, CA, 1987. All of the heater’s energy goes into heat because there is nowhere else for a heater’s energy go. Fans and reflectors disperse the heat but they have been used for decades and are nothing new.

2 “Essential Fatty Acids as Possible Mediators of the Action of Statins,” *Prostaglandins, Leukotrienes and Essential Fatty Acids*, Vol. 65, No. 1, July 2001.

## **Arterial Plaques—It’s Not the Saturated Fat— It’s the Adulterated Parent Omega-6 that Clogs Arteries and Impedes Blood Flow!**

Contrary to what we have heard for decades, it is **not** the saturated fat you eat that clogs your arteries! How do we know this? A 1994 *Lancet* article reported investigating the components of arterial plaques. In an aortic artery clog, they found that **there are over ten different compounds in arterial plaque, but NO saturated fat.**<sup>3</sup>

There *was* some cholesterol in the clog. This is explained by the fact that cholesterol acts as a protective healer for arterial cuts and bruises. So what is the predominant component of a clog? You probably guessed it – the *adulterated* omega-6 polyunsaturated oils we have spoken about so extensively – those that start out containing good PEOs but are ruined during commercial food processing and sold at the supermarket in thousands of products.

Many analyses have been carried out regarding arterial clogs and published in the medical journals, but few physicians have seen them. The average person has little, if any, chance of ever seeing the truth. Two of these publications are listed below.<sup>4</sup>

Contrary to what we have heard for decades it is **not the cholesterol itself that is clogging your arteries.** Something to think about is the fact that a cat, a true carnivore, lives on a diet of 100% meat. They consume lots of cholesterol, saturated fat, and “red” meat. By “popular wisdom” cats should be suffering massive heart attacks on a regular basis, but they don’t. Contrary to popular belief, humans are much closer to a wolf with a 4-pint stomach that can eat once every few days than to a cow or sheep with an 8 ½ gallon stomach that has to eat constantly.<sup>5</sup>

As the medical textbook, *Molecular Biology of the Cell* on page 481 makes clear, **cholesterol is necessary** for the structural integrity of the lipid bi-layer (the structure **in each of our 100 trillion cell membranes**).

This is precisely why the *Journal of the American Medical Association*, No. 272, pgs 1335-1340, 1994, published an article stating that **cholesterol-lowering drugs do not work significantly to prevent heart disease.** In 1993,

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3 “Dietary polyunsaturated fatty acids and compositions of human aortic plaque,” Felton, CV, et al., *Lancet*; 344:1195-1196, 1994.

4 Waddington, E., et al., “Identification and quantification of unique fatty acid and oxidative products in human atherosclerotic plaque using high-performance lipid chromatography,” *Annals of Biochemistry*; 292:234-244, 2001; Kuhn, H., et al., “Structure elucidation of oxygenated lipids in human atherosclerotic lesions,” *Eicosanoids*; 5:17-22, 1992.

5 [http://www.second-opinions.co.uk/carn\\_herb\\_comparison.html](http://www.second-opinions.co.uk/carn_herb_comparison.html)

a report titled “Cholesterol Screening and Treatment” was released by the University of Leeds in England. Drugs for lowering high cholesterol levels were given to a study’s participants. *The patients whose cholesterol was artificially lowered with drugs developed heart disease just as frequently as the drug-free cholesterol group.* There were more health problems among the group taking the drugs! The authors stated that few people identified purely on the basis of cholesterol levels will benefit from drug treatment. The study *discourages general cholesterol screening.* Despite these findings, England’s estimated number of prescriptions for cholesterol-lowering drugs is increasing by 20% per year.

An explosive article published in the 2007 issue of *Journal of the American College of Cardiology*<sup>6</sup> revealed that statins, previously reported to have relatively few serious side effects, can *significantly increase the risk of cancer.* Specifically, the increased risk of cancer has been significantly correlated with the lowering of LDL (low density lipoprotein) cholesterol – an unforeseen negative outcome. With statin use, the increase in cancer deaths counteracts the supposed lower cardiac mortality associated with lower cholesterol, resulting in a neutral effect or increased overall mortality.

TRANSLATION: With statin use, *even if you don’t die of a heart attack – you will likely die of cancer.* Wouldn’t it be more desirable to lead a full life while also avoiding both cancer and heart disease?

## **Statins’ Effectiveness Called Into Question**

Prepare to be shocked. Statins, which represent huge profits to the pharmaceutical industry, have been the preferred drug of most cardiologists. However, *statins are now being shown to NOT PREVENT or reduce heart disease.* The inability of statins to have a positive impact on heart disease *was predicted* in the *Journal of the American Medical Association (JAMA)* over ten years ago when they concluded that low cholesterol, by itself, did not significantly prevent heart disease<sup>7</sup>:

*“Our findings do not support the hypothesis that hypercholesterolemia [high LDL cholesterol levels] or low HDL-C [high density lipoprotein cholesterol – aka “good” cholesterol] are important risk factors for all-cause mortality, coronary heart disease mortality, or hospitalization*

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6 Alsheikh-Ali A, et al., “Effect of the magnitude of lipid lowering on risk of elevated enzymes, rhabdomyolysis, and cancer,” *J Am Coll Cardiol.* 2007;50:409-418.

7 Krumholz HM, et al., “Lack of association between cholesterol and coronary heart disease mortality and morbidity and all-cause mortality in persons older than 70 years,” *JAMA.* 1994;272:1335-1340.



for *myocardial infarction* or *unstable angina* in this cohort of persons older than 70 years.” (Emphasis added.)

These (and other) poor outcomes prompted the recent medical journal article entitled “LDL Cholesterol: “Bad Cholesterol or Bad Science,” published in the *Journal of American Physicians and Surgeons*<sup>8</sup>:

- “No tightly controlled clinical trial has ever conclusively demonstrated that LDL cholesterol *reductions can prevent cardiovascular disease or increase longevity*.
- “The concept that LDL is bad cholesterol is a *simplistic and scientifically untenable hypothesis*.” (Emphasis added.)

The *Journal of American College of Cardiology* published “Beyond Low-Density Lipoprotein Cholesterol: Defining the Role of Low-Density Lipoprotein Heterogeneity in Coronary Artery Disease,” reporting more discouraging findings (Mudd et al, 2007; 50:1735-1741):

- “[D]espite more aggressive interventions by lowering LDL-C levels, the majority of CAD (coronary artery disease) events go undeterred [not prevented]...
- “Measurement of apolipoprotein (apo)B has been shown in nearly all studies to outperform LDL-C and non-HDL-C as a predictor of CAD events and as an index of residual CAD risk.” (Emphasis added.)

This recent finding and its implications will be the key to explaining the statin/cancer connection.

The popular belief, even among physicians, is that the evidence like the 2007 METEOR trial (“Effect of Rosuvastatin on Progression of Carotid Intima-Media Thickness in Low-Risk Individuals With Subclinical Atherosclerosis: The METEOR Trial,” Crouse III, J, et al., *JAMA*. 2007;297:1344-1353), for example, shows there is a decrease in heart attacks in patients taking statins. The facts are that *although cholesterol was lowered and halted progression of atherosclerosis, in the placebo group no patient suffered a serious cardiovascular event whereas in the treatment group (rosuvastatin) there were 8 serious cardiovascular events including heart attack and angina, a bad outcome*.<sup>9</sup> In addition, this randomized controlled trial had a number of serious flaws that were pointed out in an editorial in *JAMA*, which accompanied the article (Lauer MS, *JAMA*, 2007;297:1376-8).

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8 Colpo A., “LDL Cholesterol: ‘Bad’ cholesterol or bad science,” *J Am Phys Surg*. 2005;10:83-89.

9 <http://www.drbriffa.com/blog/2007/03/30/hailed-meteor-trial-results-not-as-stellar-as-we-are-led-to-believe/>.

Another negative, unexplainable and baffling result of statins was published on Reuters, 3 December 2007<sup>10</sup>:

- "...[B]affled by findings indicating *lower cholesterol levels were not linked* to reduced stroke deaths.

- "I think all we can say is that *we don't really understand what's going on here....*

- "Because most of the benefit of statins in preventing cardiovascular events can be ascribed to the LDL reduction, it is *puzzling that LDL cholesterol is not associated with stroke risk.*"

For the first time, this baffling outcome is now both predictable and explained.

"LDL [cholesterol] contains up to 80% lipid [fats and oils], including polyunsaturated fatty acids and cholesterol, mainly esters. **Linoleic acid (LA), one of the most abundant fatty acids in LDL...**"<sup>11</sup>  
(Emphasis added)

It's what the cholesterol is transporting, **the adulterated fats**, that is the problem. An article in *Human Nutrition: Clinical Nutrition* explains that it is *parent omega-6* that makes up most of the fatty acids in LDL and HDL cholesterol:

"Linoleic acid [parent omega-6] comprises about 55 per cent [the majority] of the fatty acids in cholesterol esters of LDL and HDL, AND about 20% of the free fatty acids in the phospholipids in each class..."

"...It must also be remembered that all tissues need EFA which must come from the diet and for most tissues *through the plasma* [blood] where they are almost entirely transported in lipoproteins, mainly in their cholesterol esters and phospholipids."<sup>12</sup> (Emphasis added.)

## ► **Life-Systems Engineering Science Commentary**

We clearly see that **parent omega-6, linoleic acid, comprises a significant amount of the plasma cholesterol-related structure.** Virtually every cell

10 <http://www.reuters.com/article/healthNews/idUSN2922862020071129>.

11 *Atherosclerosis Reports*; 6:477-484, 2004.

12 "Essential Fatty Acids in Perspective," Sinclair, H.M., *Human Nutrition: Clinical Nutrition*, (1984) 38C, pages 245-260.

membrane in your body is composed of a phospholipid bilayer—with a FLUID CONSISTENCY comparable to light oil<sup>13</sup>—and plenty of cholesterol-related compounds are in each cell membrane, too. Don't let anyone ever tell you that natural fats are "bad." One hundred trillion cells need lots of EFA-containing natural fats; in particular parent omega-6. If just a little of this parent omega-6 is defective, reducing its ability to absorb oxygen and perform other cellular functions, it acts as a direct cause of both heart disease and cancer.

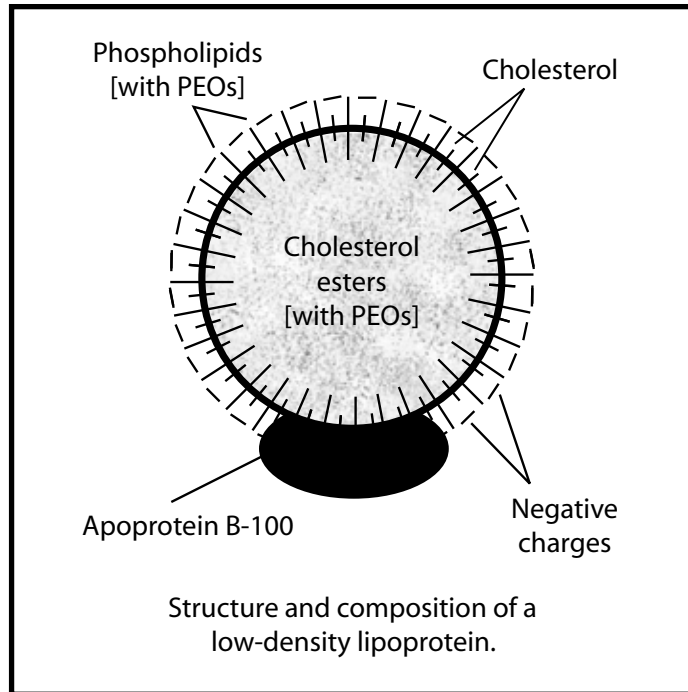
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The **oxidized** parent omega 6 **in the phospholipids** found in the lipoproteins—fats surrounded by protein in the bloodstream for easy transportation—AND defective parent omega 6 in the cholesterol esters are the main causes of heart disease—**not the cholesterol itself**. Any condition leading to decreased blood flow, with its consequent increased likelihood of forming clots, helps a localized cancer to spread (metastasize)! We need to avoid slow blood flow.

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13 [http://www.abbyseior.com/biology/transport\\_across\\_membranes.htm](http://www.abbyseior.com/biology/transport_across_membranes.htm). "The phospholipid bilayer is the structural element that forms the physical boundary of the cell membrane. Materials which can dissolve in fat, like alcohol, can move across phospholipid bilayer with ease. Water **soluble** substances are unable to cross through the bilayer and must enter the cell through channel proteins. The cell membrane is made up a phospholipid bilayer [double layer] with proteins embedded in it. **The phospholipid bilayer has a fluid consistency, comparable to light oil [because it is oil-based].**" (Emphasis added.)



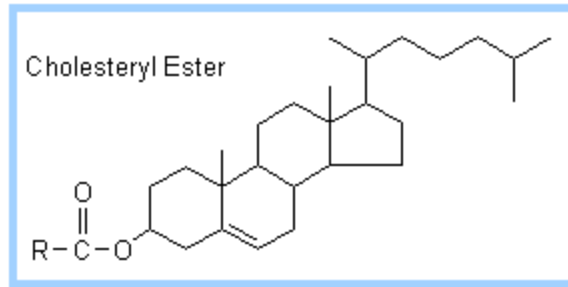
Textbook of Medical Physiology, pg 874

*Esterified* cholesterol comprises the **majority** of LDL. LDL is the acronym for **Low Density Lipoprotein**. LDL is more than “cholesterol” although many people, including nutritionists and physicians, don’t understand this. It is essential to understand the term cholesterol “esters” if you hope to understand the vital role of LDL in your body. *Harper’s Illustrated Biochemistry* (26th edition) on page 219 addresses this important issue in their description:

“Cholesterol is present in tissues and in plasma either as free-cholesterol or **in a storage form, combined** with a long-chain fatty acid [**containing PEOs**] as a **cholesterol ester**. In plasma, both forms are transported in **lipoproteins**.” (Emphasis added.)

And from *Harper’s Illustrated Biochemistry*, pg 224, we discover that dietary cholesterol is tied to PEOs, too:

“Of the **cholesterol absorbed, 80 - 90% is esterified [with PEOs]** with long-chain fatty acids in the intestinal musoca.” (Emphasis added.)



**Note:** Some of the fatty acids in the body are esterified with cholesterol (see drawing above). **The structure of cholesterol itself never changes, merely the esterified moiety – the acyl side chain.** That's a **big** difference that most physicians and nutritionist may not understand. This is a simple condensation reaction, removing the water, catalyzed by the enzyme ACAT (Acyl CoA: Cholesterol Acyl Transferase) between a fatty acid and cholesterol. R symbolizes the hydrocarbon portion of the fatty acid. For example, if oleic acid were esterified with cholesterol, then R would be  $-C_7H_{14}CH=CH-C_8H_{17}$  with the double bond in cis configuration. (Thanks to Dr. Marissa Carter, Ph.D. in biochemistry, for the clarification.)

## **Functional Parent Omega 6 Deficiency = Defective Cholesterol Structure**

It is necessary to know the PEO content of plasma lipids (lipoproteins, triglycerides, and esterified cholesterol) to determine the specific "bad actor." 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) (Spector A., "Plasma free fatty acid and lipoproteins as sources of polyunsaturated fatty acid for the brain," *J Mol Neurosci* 2001;16:159-165). It will be noted in the following table that the significant fatty acid throughout is LA, with ALA being significantly less. Derivatives such as DHA are even less significant so they are not listed. Therefore, many fish oil and flax oil supplementation recommendations are dangerous as they are opposed to our physiology and biochemistry.

<b>Ratio of Tissue Composition</b>		
Tissue	Omega-6 PEO	Omega-3 PEO
Brain/Nervous System	100	1
Skin	1000	1
Organs and Other Tissues	4	1
<b>Adipose Tissue (bodyfat)</b>	<b>22</b>	<b>1</b>
<b>Muscles</b>	<b>6.5</b>	<b>1</b>

From a detailed analysis of EFA-derivatives, such as arachidonic acid (AA), eicosapentaenoic acid (EPA), and DHA, it is calculated that the LA content in esterified cholesterol is 60%, with ALA comprising a mere 1.7%, and the ratio of esterified LA/ALA about 100:1 (Table 1 above). 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 LA being a factor 10 times greater (*Ibid.*, Dr. Spector reference above). In sharp contrast to the high amounts of n-6 series PUFAs, n-3 series PUFA 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 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 (*Ibid.*, above). Even in the brain, LA/ALA uptake is 100 times greater.<sup>14</sup>

There is not a significant bodily storage mechanism for ALA. Even significantly raising ALA intake would not cause a significant change in adipose tissue LA/ALA storage ratios (*Ibid.*, above).

The LA path is an important one to answering why statins have an NNT of 100—a 99% failure rate. What if the cholesterol structure in the arterial intima contained significant amounts of oxidized or nonfunctional parent omega-6 that is attributable largely to ingestion of foods containing LA oxidized or otherwise damaged in the course of routine food processing, before any *in vivo* oxidation? We know that the intima consists of a single layer of endothelial cells containing significant LA, but no alpha-linolenic acid (ALA) (Chapkin RS, Ziboh VA, Marcelo CL, Voorhees JJ, “Metabolism

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14 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.

of essential fatty acids by human epidermal enzyme preparations: evidence of chain elongation," *J Lipid Res* 1986;27:945-954 and 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* 2000;279:E744-E751).

Consumed, processed LA deposited in arterial intimal cell membranes leads to abnormal oxidation at the vascular injury site, thus causing injurious inflammation.

What could cause LA in the endothelial cells to become oxidized? Could LA already defective from routine food processing transported by LDL cholesterol be the real culprit? YES!

Gerhard Spiteller, who has investigated EFAs and their degradation products – specifically, the influence of these substances in the physiology of mammals – concluded that *consumption of oxidized PUFA-cholesterol esters* is responsible for the initial damage to endothelial cells and that cholesterol oxidation products are incorporated into LDL cholesterol in the liver (Spiteller G., "Is atherosclerosis a multifactorial disease or is it induced by a sequence of lipid peroxidation reactions?," *Ann NY Acad Sci* 2005;1043:355-366). LDL carries these toxic compounds into the endothelial walls where they cause cell damage, and thus injury is not caused by an increase in free cholesterol *but by an increase in cholesterol esters* (Spiteller G., "Peroxy radicals: Inductors of neurodegenerative and other inflammatory diseases. Their origin and how they transform, cholesterol, phospholipids, plasmalogens, polyunsaturated fatty acids, sugars, and proteins into deleterious products," *Free Radical Biol Med* 2006;41:362-387).

Dr. Spiteller clearly connects CAD with cholesterol esters: In atherosclerotic patients LDL cholesterol is altered by oxidation, and this altered LDL is taken up in unlimited amounts by macrophages. **Dead macrophages filled with cholesterol esters are finally deposited in arteries.** The fact that LDL is rendered toxic by oxidation raises the question, *which constituents of LDL cholesterol are most prone to oxidation?* Our answer to this question is focusing on the LA that has already become oxidized prior to ingestion through processing of foods or overheating, since peroxidation of PUFA glycerol esters is enhanced by heating in the presence of air. Cholesterol itself is hard to oxidize, whereas LA is easily oxidized.

These insights strongly suggest that looking in a new direction for the prevention of heart disease is warranted.

If functional LA bioavailability is lowered, the potential for inflammation will rise, which leads to atherosclerosis. Weiss, for example, has noted that PGE<sub>1</sub> (produced from functional parent omega-6) reduces the fibrin deposition associated with the pathogenesis of atherosclerosis (Weiss C, Regele S, Velich T, Bartsch P, Weiss T., "Hemostasis and fibrinolysis in patients with intermittent claudication: effects of prostaglandin E1," *Prostaglandins Leukot Essent Fatty Acids* 2000;63:271-277).

Membrane fluidity increases when more functional (undamaged) polyunsaturated fatty acids, in particular linoleic acid, are available to incorporate into the membrane lipid bilayer. When natural PEOs are replaced by nonfunctional omega-6-based *trans* fats, the fluidity diminishes, and that leads to a substantial reduction in cellular oxygen transfer, with adverse physiological effects including atherosclerotic cardiovascular disease. If there is a deficiency of fully functional LA in the diet, the body will substitute into cell membranes a nonessential fatty acid, such as oleic acid (omega-9) found in olive oil. This forced substitution results in a marked decrease of cellular oxygen transport with adverse effects on cellular metabolism, and function (Campbell IM, Crozier DN, Caton RB., "Abnormal fatty acid composition and impaired oxygen supply in cystic fibrosis patients," *Pediatrics* 1976;57:480-486).

Because LDL cholesterol is the transport vehicle for PEO delivery into the cell, LDL cholesterol will transport any kind of LA into cells – defective or not – such as oxidized or *trans* entities. So, while statins do reduce the amount of LDL cholesterol, thereby automatically reducing the amount of nonfunctional parent omega-6 from processed food that reaches cell membranes, they simultaneously lower the transport of vital oxygenating functional PEFAs into cells (*Ibid.*, above).

In addition, because statins also significantly lower coenzyme Q10 (CoQ10) (known as ubiquinone) (Kuettner A, Pieper A, Koch J, Enzmann F, Schroeder S., "Influence of coenzyme Q(10) and cerivastatin on the flow-mediated vasodilation of the brachial artery: results of the ENDOTACT study," *Int J Cardiol* 2005;98:413-419). This decrease also causes endothelial dysfunction, a precursor of atherosclerosis (Bargossi AM, Grossi G, Fiorella PL, Gaddi A, Di Giulio R, Battino M., "Exogenous CoQ10 supplementation prevents plasma ubiquinone reduction induced by HMG-CoA reductase inhibitors," *Mol Aspects Med* 1994;15 Suppl:S187-S193). Therefore, artificially decreasing LDL-C is harmful for a number of reasons



It was known in 1941 that EFA deficiency caused a defective cholesterol structure and in 1956 that **carbohydrates are also a culprit in causing defective cholesterol structure**, but the popular press rarely mentions these facts:

“Cholesterol is normally esterified with unsaturated fatty acid [PEOs] and when—as in our experiments—these are extremely deficient in the body it is esterified **with much more saturated fatty acids** synthesized in the body **from carbohydrate**.”<sup>15</sup> (Emphasis added.)

## **1965: An Important Experiment Furnishing WRONG RESULTS**

An important experiment was performed in 1965, long before the pharmaceutical companies created what I term the “bad cholesterol annuity.” This experiment was performed at the Karolinska Institute in Sweden. (Note: a committee from this Institute appoints the laureates for the Nobel Prize in Physiology or Medicine.) In their experiment, the researchers fed patients different oils to determine fat absorption parameters; the outcome was amazing:

- “...[T]here is also a **preferential incorporation of oleic acid** [a monounsaturated, omega-9 such as that found in olive oil] into the cholesterol esters, relative to other fatty acids tested [including parent omega-6].
- “It is clear from these results [in humans] that the process of lymph cholesterol ester formation during fat absorption **showed far greater affinity for dietary oleic acid** than for the other fatty acids studied.
- “During fatty acid absorption lymph cholesterol ester formation showed **marked specificity for oleic acid** relative to other fatty acids tested [including parent omega-6].<sup>16</sup> (Emphasis added.)

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15 H.M. Sinclair, “Deficiency of Essential Fatty Acids and Atherosclerosis, Etcetera,” *Lancet*, April 7, 1956.

16 “Intestinal Absorption and Esterification of C-Labeled Fatty Acids in Man,” *Journal of Clinical Investigation*, Blomstrand, Rolf, et al., Vol. 44, No. 11, 1965.

## ► *Life-Systems Engineering Science Commentary*

These results were completely different from those reported in previously published articles. For example, it was known in **1941 that cholesterol prefers PEOs** in its structure over omega-9. (*The Journal of Biological Chemistry*, 1941, Vol. 139, page 727.) Also, an opposite finding was published again in 1956 in one of the world's top medical journals, *Lancet*, because Dr. Sinclair knew it that cholesterol prefers PEOs in its structure. (H.M. Sinclair, "Deficiency of Essential Fatty Acids and Atherosclerosis, Etcetera," *Lancet*, April 7, 1956.) Experiments in 1976 and 1990 got much different results than the researchers of 1965. As Dr. Carter, Ph.D. states, there are a myriad of technical reasons why the experimenters in 1965 could have made this error.

### **1976: An Important Experiment: Defective Cholesterol = Lack of Oxygen**

In 1976, the medical journal *Pediatrics* investigated abnormal fatty acid composition and impaired oxygen supply. They showed EFA (LA) deficiency leads to the exact conditions Dr. Warburg showed was always cancer-causing – lack of cellular oxygen.

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Proof: Insufficient Functional Parent Omega-6 is Cancer-Causing!

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You will be amazed by a discovery made more than 30 years ago and it is the **direct proof of how defective/insufficient functional parent omega-6 (LA) DE-OXYGENATES by 50% – well in EXCESS of the 35% deficiency that Dr. Warburg proved was cancer-causing.**

Here's what the investigators found:

- "...[W]e have proposed that the **cellular lipids** may be involved in the **facilitation and regulation** of the supply of **oxygen** to the cells...
- "We have already reported that, although the saturates, such as palmitates, have little or no affinity for oxygen, the unsaturates [including **PEOs**] are capable of undergoing reversible **oxygenation in response to changes in oxygen pressure**. Because

two unsaturated carbon-carbon bonds are required for the reaction, each linoleic [parent omega-6] molecule can bind with one molecule of oxygen with it, but **two oleic molecules must bind one oxygen** between them. (Note: Parent omega-6 is twice as effective in oxygen transfer.

- “Underwood’s group has shown that, in cystic fibrosis, the abnormality in fatty acid composition is not restricted to the erythrocytes and plasma. **Interference with the movement of oxygen could then occur at any cell membrane** so that there could be a **general reduction in the supply of cellular oxygen** throughout the body....
- “[S]uch a condition could **depress the rate of cellular respiration, phosphorylation,** and all energy-dependent processes.
- “...[I]t seems possible that that many of their symptoms may result from **essential fatty acid (linoleic) deficiency,** leading to the **decrease in the availability of cellular oxygen for respiration.**”<sup>17</sup> (Emphasis added.)

## ► Life-Systems Engineering Science Commentary

1. Physical-chemical experiments show that linoleic acid (parent omega-6) **can bind twice as much oxygen** and disassociates (releases its oxygen) at a much higher pressure (physiologically useful), much closer to hemoglobin, **than oleic acid** does.
2. **Oxygen disassociation curves for oleic acid compared with linoleic acid, parent omega-6, shows a 50% reduction in oxygen transfer.**

I discovered this article belatedly in 2006, after the first edition of *The Hidden Story of Cancer* had been printed. Dr. Campbell and his team should be congratulated for conclusively proving, on a biochemical basis, that an EFA deficiency of functional parent omega-6 sets up the exact conditions Dr. Warburg showed were cancer-causing: lack of cellular respiration. Dr. Campbell, et al., performed both brilliant theoretical and experimental work! It is tragic

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17 Campbell IM, Crozier DN, Caton RB: Abnormal fatty acid composition and impaired oxygen supply in cystic fibrosis patients. *Pediatrics* 57, 480-486, 1976.

they never met Dr. Warburg, since I believe together they might have solved the anticancer puzzle much sooner.

This experiment conclusively shows oxygenation decreased 50% when an EFA deficiency occurred. None of us can afford this consequence if we want to maintain our cancer-free health.

## **1990: “Effects of Lipids on Cancer Therapy”: Cell Membrane Structure Modification**

The journal article in *Nutrition Reviews* confirmed the preferential use of parent omega-6 over omega-9 in cell membranes:

- “The structure of membrane proteins and the carbohydrate chains of membrane glycoproteins is genetically determined and does not change in response to differences in the type of amino acids or sugars available to the cell. By contrast, **the structure of the phospholipids that make up the lipid bilayer of the membrane depends to a considerable extent on the type of fatty acid available** in the extracellular fluid.
- “The plasma membrane of the L1210 murine leukemia cells from the animals **fed sunflower seed oil have a totally polyunsaturated fatty acid content 18% greater than** that of animals **fed coconut oil** [a highly saturated fat]. This increase is primarily due to an increase in linoleic acid [parent omega-6].
- “Conversely, tumor cells from **animals fed the saturated fat-rich coconut oil diet have a greater proportion of monounsaturated fatty acids**, particularly oleic acid (18:1).”<sup>18</sup> (Emphasis added.)

These animal experiments in 1990 showed that **in the presence of insufficient unprocessed parent omega-6**, the cell structure will **incorporate oleic acid** (non-essential omega-9 **such as that found in olive oil**) instead. So we have discovered that both the cell itself and the cholesterol-structure of the cell require plenty of functional parent omega-6.

Therefore, the researchers in 1965 must have made a mistake.

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18 Burns, C.P. and Spector, A.A., “Effects of Lipids on Cancer Therapy, *Nutrition Reviews* 48, No.6, 233-240, 1990 pages 381-383.

## 2001: Consequences of $\omega$ -6 Oleate Desaturase Deficiency on Lipid Dynamics and Functional Properties of the Mitochondrial Membrane:

An analysis of defective mitochondria in the *fad2* mutant of *Arabidopsis thaliana* from an article in *The Journal of Biological Chemistry* again confirms substitution of parent omega-6 with non-EFA oleic acid (omega-9):

- “Experiments were carried out with the *fad2* mutant of *Arabidopsis thaliana*, which belongs to a family of monogenetic mutants **deficient in fatty acid desaturase activities**.
- “**Oxidative phosphorylation parameters** such as oxidation rates and activation energy of electron transport **were analyzed**.
- “...A **drastic reduction in the amount** of PUFA, linoleic acid (18:2) [**parent omega-6**], and linolenic acid (18:3) [**parent omega-3**] [was] observed in *fad2* mitochondria.
- “**As a consequence, the amount of oleic acid** (18:1) [non-essential omega-9] was **considerably enhanced (~ 10 times)** since it represented about 75% of total fatty acids.
- “Functional parameters such as **oxygen consumption rate under phosphorylating and nonphosphorylating conditions and proton permeability of the inner mitochondrial membrane were significantly reduced...**”<sup>19</sup> (Emphasis added.)

### ► Life-Systems Engineering Science Commentary

This experiment made use of genetically defective mitochondria, once again showing that non-essential omega-9 was substituted for the essential parent omega-6. As the last point above shows, the *prime* cancer-causing condition appeared: the oxygen consumption was significantly reduced.

### Why the 1965 Experiment Went Wrong?

We can now return to the 1965 experiment furnishing wrong results. Their published results make no biochemical sense. That is, there would be no good biological reason to see such a result. In 1965 those medical researchers thought that a non-essential fat, oleic acid, was *supposed to be* preferentially

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19 Caiveau, O., et al., “Consequences of  $\omega$ -6 Oleate Desaturase Deficiency on Lipid Dynamics and Functional Properties of the Mitochondrial Membranes of *Arabidopsis thaliana*,” *The Journal of Biological Chemistry*, Vol. 276, No. 8, February, 23, 2001, pages 5788-5794.

incorporated into the cholesterol structure. In fact, this only occurs when there is not enough parent omega-6 or it is defective. They had no understanding that the cholesterol was a major transport mechanism of PEOs into the cell.

Could these scientists at one of the world's most prestigious institutes for higher education in medicine have made a fundamental mistake; one that today's cancer researchers continue to make: Unknowingly substituting a "purified" but non-functional omega-6 for functional parent omega-6?<sup>20</sup> (Dr. Carter offers insight on this point in the footnote below.) Regardless of the reasons their results were wrong, they were still published. Publishing of incorrect results by medical journals is another reason that medical researchers don't know what to believe and often don't believe what is published in their own medical journals.

## **Defective LDL Cholesterol Becomes a "Poison Delivery System"**

Huge numbers of molecules in the omega 6-based cooking oils are ruined by commercial food processing. The body then incorporates these adulterated oils **into** the LDL cholesterol. With the consumption and transport of **defective**, cancer-causing processed oils, LDL cholesterol acts like a "poison delivery system," bringing deadly trans fats and other ruined oils into the cells. It is primarily the oxidized (altered) parent omega-6 that clogs the arteries, **NOT** saturated fat! Renowned interventional cardiologist, Dr. David Sim, makes a great analogy that anyone can understand:

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20 Conducting fat metabolism studies in humans is fraught with complications, even today. In principle, Blomstrand, et al.'s experimental design was a reasonable one for its time, though there are a number of potential sources of error, which we can't quantify since the level of experimental detail in the paper is insufficient. (1) The experiments did not use healthy subjects (most had various stages of cancer); (2) We do not know their overall PUFA status before the experiment was started (this would have influenced how the fatty acids were ultimately used by the body); (3) The investigators used <sup>14</sup>C radiolabeled fatty acids to follow the fate of several types of fatty acid, including linoleic acid, but although the radiolabeled fatty acids were pure, because not all the radioactivity was recovered from the experiment, (> 50% unaccounted for), we do not know if the results they obtained are completely correct; (4) **We do not know the source of the non-radiolabeled fatty acids they used, nor their purities (the linoleic acid, parent omega-6, could have been substantially impure).** (5) The experimental work-up of body fluids and analytical analysis employed did not preclude the possibility that errors were made; (6) Finally, only 4 subjects were used in the experiment, which is a very small number. For these reasons, the results of the experiment cannot be generalized to all humans.

“It’s like building a wall without having enough bricks. You use another material and ‘fill the hole,’ but it doesn’t work correctly. The same thing happens when cholesterol doesn’t have enough parent omega-6 to incorporate.”

In nature, with the consumption of organic, unprocessed PEOs rather than adulterated oils and trans fats, LDL cholesterol should be made up of significant amounts of properly functioning “parent” omega-6, linoleic acid (LA), and as a result it will not be harmful. Furthermore, it is **the natural transporter of parent omega-6 and parent omega-3 into the cells**. That’s why it is not necessary to lower LDL cholesterol, nor is the absolute LDL number as important, when the diet contains sufficient unadulterated PEOs. Also note the body has no natural “cholesterol sensor” in the bloodstream. Unlike sodium, calcium, and glucose levels, your body does not need to maintain a strict cholesterol level. For example, glucose levels are maintained to an amazingly tight 0.1% (just 1 teaspoon of sugar per every thousand teaspoons of blood) in each of us! So Nature implemented biological sensor mechanisms only if required. **There is no need for a cholesterol sensor because the absolute number is irrelevant.**

This is THE REASON the medical profession has offered us no insight into why our cholesterol numbers keep plummeting, yet heart attacks continue to increase. **LDL cholesterol is improperly blamed** for a myriad of health problems when the real culprit is defective EFAs. LDL cholesterol has no alternative but to transport these killers throughout our body since we have inadequate amounts of properly functioning LA in our diets. The “experts” never make this critical connection and pinpoint the **real “problem”** with LDL. The cholesterol-lowering drugs simply can’t lower the defective omega-6 enough.

The daily television and print advertisements bombard us with doomsday comments about “bad cholesterol” coming from your genetics and the food you eat. LDL cholesterol isn’t bad in and of itself. If it was, we’d all be dead and the human species would have ceased eons ago. An appropriate analogy is the situation of a drunk driver causing an accident—the drunk driver is like bad EFAs, and the automobile is like cholesterol. The cancer institutes and pharmaceutical companies would have you ban all automobiles (cholesterol) **INSTEAD** of addressing the problem by **eliminating** the drunk driver (**bad EFAs**).

Perhaps for the first time, utilizing the biochemical and physiological properties of EFAs, this explanation of cholesterol finally makes sense.

## The Failure of Cholesterol-Lowering Drugs: The Drugs Can't Lower Enough the Defective Parent Omega-6

Hence the reason for the ineffectiveness of cholesterol-lowering drugs above—they simply can't eliminate enough of the defective EFAs being transported to work well. This is why the medical journal article titled "LDL Cholesterol: 'Bad' cholesterol or Bad Science," published in *Journal of American Physicians and Surgeons*, Vol 10, No. 3, Fall 2005, by Anthony Colpo, stated:

"Among elderly Belgians, higher levels of *oxidized* LDL were accompanied by a significantly increased risk of heart attack *regardless of* total LDL levels.

"...However, there was *no association between oxidized LDL concentrations and total LDL* levels [in Japanese patients undergoing surgery to remove plaque].

"No tightly controlled clinical trial has ever conclusively demonstrated that LDL cholesterol reductions can prevent cardiovascular disease or increase longevity." (Emphasis added.)

You can see why the absolute LDL number is not very important *if the diet contains sufficient unadulterated PEOs*. (Also take note that the body has no natural "cholesterol sensor" in the bloodstream—but it *would* if its levels had to be maintained within exact limits.)<sup>21</sup>

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LDL cholesterol transports PEOs *into* your cells. Any drug that **artificially** lowers cholesterol ALSO **lowers transport of cancer-fighting PEOs!**

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21 *Life-Systems* Engineering Science terms cholesterol a *dependent* variable. Recall from high school algebra that if you have three variables in an equation, you can select or change two of them, but the third variable is entirely determined by the other two. Cholesterol acts in exactly the same fashion. Cholesterol varies so that other more important factors can be rigidly maintained.



Triglycerides are transported by LDL, too. You need to know that the medical journal *Circulation*<sup>22</sup> reported in 2000 that SUBSTANTIAL increased risk of heart disease results from increased triglycerides **independent of cholesterol levels**. Why would we expect this result? Because LDL transports cholesterol AND triglycerides.<sup>23</sup> Triglycerides can be formed from adulterated fats and oils, too. Fix the problem – too many bad fats and oils – instead of blaming the messenger LDL.

## Do Cholesterol-Lowering Drugs Cause Cancer?

A dire warning was published in a 1995 study by two physicians, Thomas B. Newman and Stephen B. Hulley, at the University of California in San Francisco. They said widespread cholesterol testing for people under twenty years old should be abandoned. They were concerned that popular cholesterol-lowering drugs were being prescribed far too frequently – and often unnecessarily – for people who were at little risk of developing heart-related problems.

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“Drugs to lower cholesterol may **cause** cancer ...”<sup>24</sup>

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Both the early drugs known as fibrates (glofibrate, gemfibrozil) and the newer drugs known as statins (Lipitor, Pravachol, Zocor), cause cancer in rodents at doses equivalent for mice to the doses used by man.

Cholesterol-lowering drugs are now prescribed at least ten times more often than just ten years ago, when Newman and Hulley first issued their warning. These physicians were concerned about the routine prescriptions for young people who had no serious risk factors. Yet young patients are now being given these drugs with the expectation they will be staying on them for twenty to thirty years, when **the long-term negative effects aren't known. Do you want to be one of the guinea pigs?** Here's what Drs. Newman and Hulley revealed:

- “...We tabulated rodent carcinogenicity [cancer-causing] data from the 1994 PDR [*Physician's Desk Reference*] for all drugs listed as

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22 *Circulation* 2000;101:2777-2782.

23 (Voet) *Biochemistry*, page 317.

24 “Drugs to Lower Cholesterol May Cause Cancer, Study Says,” David Perlman, *San Francisco Chronicle*, 1995; pre-pub. Ref., *JAMA*, vol. 275, pages 55-60, 1996.

hypolipidemics [cholesterol lowering]. For comparison, we selected a stratified random sample of hypertensive drugs. We also reviewed methods and interpretation of carcinogenicity studies in rodents and results of clinical trials in humans.

- **“DATA SYNTHESIS – All members of the two most popular classes of lipid-lowering drugs (the fibrates and the statins) cause cancer in rodents, in some cases at levels of animal exposure close to those prescribed in humans.**
- “In contrast, few of the hypertensive drugs have been found to be carcinogenic in rodents.
- “...[T]he **fibrates and statins should be avoided except in patients at high short-term risk** of coronary heart disease.” (Emphasis added.)

Has this information been published in the cancer journals? **Yes, it has.** One example appeared in *Cancer Research* 64, 6831-6832, September 15, 2004, in the “Letter to the Editor” section, and was called, “Lipid-Altering Drugs: Decreasing Cardiovascular Disease at the Expense of Increasing Colon Cancer?” by Mark R. Goldstein, M.D. The article states:

- “Several trials of cholesterol lowering with drugs to prevent cardiovascular disease events have **demonstrated an increase in cancer incidents in the subjects treated with lipid-altering drugs** (10, 11, 12, 13). **The trials were randomized, double-blinded, and lasted an average of 5 years.** The lipid-altering drugs were **statins or fibrates**, and the HDL cholesterol levels of the subjects randomized to the drug were raised by 5% or more for the duration of the trial period. A **statistically significant excess of malignancy** was seen in **elderly** subjects (12, 13) and **women** (11) randomized to the drug groups.
- “**Alarmingly, breast cancer** was diagnosed in **1** of 290 women in the **placebo** group and **12** of 286 women in the **pravastatin group** during a 5-year trial ( $P = 0.002$ ; ref. 11). In another randomized study, involving elderly subjects with a mean age of 75 years at entry (13), the significant decrease in coronary death in subjects randomized to pravastatin equaled the **significant increase in cancer death** in the same subjects, leaving total mortality unchanged.” (Emphasis added.)

Most people have likely heard *nothing* about the increased cancer risk incurred by taking cholesterol-lowering drugs. This reminds us of the Phen-Fen disaster. This combination drug was dispensed to virtually anyone who asked for it. It produced life-threatening disorders, and now millions of people may suffer its long-term health consequences.

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These results must be taken seriously. Caution in conclusions from animal studies is a necessity. However, if drug manufacturers aren't monitoring or publicizing the drug's effect on cancer in humans, then we must take the responsibility ourselves.

As you will learn below, PEOs can be of significant help in reducing and preventing cardiovascular disorders, even as they protect the cells against cancer.

### **Lower Your Cholesterol With PEOs**

It is known that **polyunsaturated fats** (PEOs) naturally **support healthy cholesterol levels** (*Textbook of Medical Physiology*, page 873). It was reported in *New England Journal of Medicine*, 337:1491-1499, that "Diets high in polyunsaturated fat (**PEOs**) have been **more effective** than low-fat, high-carbohydrate diets in **lowering cholesterol** as well as the **incidence of heart disease.**" (Emphasis added.) Have you been told these facts by your cardiologist? Probably not.

Huge numbers of molecules of the omega-6-based cooking oils are ruined by commercial food processing. (See "*The Scientific Calculation of the Optimum Omega-6/3 Ratio*" medical report for details.) In the body these are incorporated *into* the LDL cholesterol.

With the consumption and transport of **defective**, cancer-causing processed oils, LDL cholesterol acts like a "**poison delivery system,**" bringing deadly trans fats and other ruined oils into the cells. It is primarily the oxidized (adulterated) parent omega-6 that clogs the arteries, NOT the saturated fat; NOT the cholesterol.

This is THE REAL REASON that everyone keeps telling us to lower cholesterol at all costs – yet the medical profession has offered us no insight into the actual situation. So **LDL cholesterol is improperly blamed** for transporting defective PEOs when it has "no choice" other than to do so, because too few of us have enough properly functioning LA in our diets. The "experts" never make this critical connection and pinpoint the *real* "problem" with LDL.

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LDL cholesterol acts like a “poison delivery system,” bringing deadly trans fats and other ruined oils into the cells. **LDL cholesterol is improperly blamed.** An appropriate analogy would be the situation of a drunk driver causing an accident — the drunk driver is like the bad EFAs, and the automobile is like the cholesterol. The cancer institutes and pharmaceutical companies’ approach is to try to ban all automobiles (the cholesterol) **INSTEAD** of applying the correct solution: eliminating the problematic drunk driver (the bad EFAs).

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The authors of the following medical journal article understood the connection in 1982, but few of us heard the news. “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 (**PEOs**) including AA and EPA were **lower (depleted) in heart attack victims**. The fatty acid **patterns of the phospholipids** is an independent risk factor for heart disease.

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This British medical journal article “hits the nail on the head.” Deficiency of EFAs is associated with increased heart attack risk.

So don’t let them scare you into believing that you should therefore minimize parent omega-6 (along with parent omega-3), because of “oxidation” concerns. This will lead you astray. It is true that fats and oils oxidize — that’s partly how they do their job. This is like saying never burn any wood for heat because it is “oxidizing.” Oxidation occurs in the process of producing the energy. In wintry climates you would freeze to death. The proper answer is to keep adding *more* wood to the fire, not less, so that the fire doesn’t go out!

**The correct answer here is to take a daily supply of unprocessed, properly functioning PEOs, *not* cut them out.**<sup>25</sup>

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25 Further references: Waddington, E, et al., “Identification and quantification of unique fatty acid and oxidative products in human atherosclerotic plaque using high-performance lipid chromatography,” *Annals of Biochemistry*; 292:234-244, 2001; Kuhn, H., et al., “Structure elucidation of oxygenated lipids in human atherosclerotic lesions,” *Eicosanoids*; 5:17-22, 1992.

Furthermore, these consequences go beyond heart disease, because (1) ruined EFAs in arterial blockages cause decreased blood speed, and even worse, (2) it is clear that **because the analysis of aortic arterial plaque is so high in oxidized and ruined omega-6 polyunsaturated oils, consumption of defective polyunsaturated fats and oils is the most important reason your arteries become clogged.**

**Additionally, they are also the root cause of blood clots forming in the arteries and not being able to dissolve away naturally,** as they do on external cuts. Blood clots are a tremendous problem with cancer cases, estimated to be responsible for *over 80% of the cancer mortality rate* because they facilitate cancer transport throughout the body when it would not have spread without blood clots.

The pharmaceutical manufacturers continue with the absurd theory (guess) that your body's own cholesterol "causes" heart disease, so they continue to "discover" different types and sizes of cholesterol particles. Then they furnish this "new" information to the physicians. This level of cholesterol detail obscures the main issue of slowing the blood and clogging arteries—just like the cancer community's constant focusing on secondary causes of cancer obscures Dr. Warburg's prime cause of cancer. I want to make it categorically clear that once the EFA issue is solved the cholesterol issue fades away.

One last bit of information. The fact that *transfats* clog arteries was known and published back in 1956 in *Lancet*—the world's most prestigious medical journal. Articles warned about the massive heart disease epidemic that would come (and massive cancer rates along with it). Too few listened.

## **AA and Prostacyclin: From the Omega-6 Series PEOs**

Humans obtain AA either from food, such as meat, or AA that is derived from LA, if it is not processed and fully intact (biologically functional). Contrary to the incorrect belief of many investigators and physicians, **AA is not harmful: AA is the precursor to prostacyclin, the most potent anti-aggregatory agent and inhibitor of platelet adhesion.** (Bunting S, Moncada S, Vane JR., "The prostacyclin—thromboxane A<sub>2</sub> Balance: Pathophysiological and therapeutic implications," *BMJ* 1983;39:271-276).

Thus, lowering esterified LA through the lowering of LDL cholesterol by statins (or via any other mechanism) automatically will decrease the body's natural anti-aggregatory AA. Patient platelet adhesion increases while natural

antiplatelet activity decreases, which in turn raises the risk of thrombosis. Furthermore – again contrary to widespread belief – **the body’s most powerful natural anti-inflammatory, prostaglandin PGE<sub>1</sub>, is a parent omega-6 derivative** and not the same as PGE<sub>3</sub> from omega-3, which is much weaker. If functional LA bioavailability is lowered, the potential for inflammation will rise, which leads to atherosclerosis. Weiss, for example, has noted that PGE<sub>1</sub> reduces the fibrin deposition associated with the pathogenesis of atherosclerosis. (Weiss C, Regele S, Velich T, Bärtsch P, Weiss T., “Hemostasis and fibrinolysis in patients with intermittent claudication: effects of prostaglandin E<sub>1</sub>,” *Prostaglandins Leukot Essent Fatty Acids* 2000;63:271-277).

### **A Low-Fat Warning:**

A low-fat diet automatically minimizes consumption of harmful *transfats* and other processed oils. That is the reason a low-fat diet may *temporarily* result in a reduced disease state – just like in lowered cholesterol, the amount of a cancer-causing, heart disease-causing poison is reduced. However, long-term you have also **deprived yourself of the required parent omega-6 and parent omega-3 consumption leading to an increased risk of heart attack and increased risk of cancer.** A *Life-Systems Engineering Science* analysis furnishes this insight