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REPORT

Broad-spectrum Cardiac Protection with Fish Oil

Lower Triglycerides, Reduce Arrhythmia, and Slow Plaque Growth with Omega-3s

By William Davis, MD

In this article, I will share with you the extraordinary success story of Stacy—a patient who came to me with a cholesterol level at a whopping 594 mg/dL and triglycerides that were off the chart at 2,893 mg/dL—and her amazing turnaround in blood test results achieved through the use of fish oil.

A PATIENT AT RISK: STACY'S FRIGHTENING BLOOD TEST RESULTS

Stacy, a 40-year-old physical therapist, was terrified to learn the results of her most recent cholesterol tests: dangerously elevated total cholesterol of 594 mg/dL and sky-high triglycerides of 2,893 mg/dL. Because these values were so high, her levels of dangerous low-density lipoprotein (LDL) and beneficial high-density lipoprotein (HDL) could not be determined.

When I met with Stacy, she was in a panic. In tears, she declared, "I don't understand it. I take good care of myself. I don't eat fatty foods, I exercise, I don't do anything wrong!"

She was correct. Her frightening lipid levels were not due to anything "bad" she had done, but instead were a combination of genetics ("familial hypertriglyceridemia") and modest dietary excesses. However, these levels of triglycerides and cholesterol posed risks for liver disease and pancreatic disease (pancreatitis), as well as heightened long-term risk for heart disease and stroke. Stacy also showed some features of the metabolic syndrome: her blood sugar was slightly elevated at 114 mg/dL, her blood pressure was high at 140/88 mmHg, and she showed an excess of abdominal fat, standing 5 feet, 5 inches tall and weighing 160 pounds.

FISH OIL LOWERS TRIGLYCERIDES

Dangerously high levels of triglycerides have become more common as Americans develop metabolic syndrome. Elevated triglycerides greatly increase risk for heart disease. Omega-3s can significantly reduce triglyceride levels and help correct other cardiac risk factors that accompany metabolic syndrome.[1-3] In fact, omega-3 fatty acids derived from fish oils are now available in the form of a prescription drug called Omacor®, which has been approved specifically for the treatment of elevated triglycerides.[4] (For more on this subject, see this month's "As We See It.")

Omega-3s Inhibit Inflammatory Compounds

Hidden, imperceptible inflammation is now recognized for its role in triggering a chain of events leading to heart disease and other illnesses. Omega-3 fatty acids suppress multiple steps in this inflammatory process, inhibiting the production of inflammatory cytokines and prostaglandins. Furthermore, omega-3 fats boost production of anti-inflammatory compounds. These anti-inflammatory effects may have important implications for fighting heart disease and numerous other disease processes associated with excessive inflammation.[10-16]

An important marker of inflammation in the body known as C-reactive protein (CRP) is associated with an increased risk of cardiovascular disease. Measuring high-sensitivity CRP is an emerging method of detecting hidden inflammation and its associated cardiovascular disease risk.[17] Some scientists have observed that people who consume a greater amount of omega-3 fatty acids demonstrate lower levels of this cardiovascular risk factor, suggesting that omega-3 supplementation might help prevent cardiovascular disease by fighting inflammation.[18]

FISH OILS RICH IN OMEGA-3S FIGHT AFTER-MEAL SURGES IN BLOOD FATS

An exciting area of research focuses on post-meal elevated blood fat (lipid) levels, known as post-prandial hyperlipidemia. This is essentially the flood of fat in the blood that occurs following a meal, which scientists suspect may be a potent contributor to atherosclerosis (and acute heart attack).[5] A unique effect of omega-3 fatty acids (found in cold-water fish oil) is to accelerate the clearance of fat-containing particles from the blood following meals. Fish oil's profound fat-clearing ability has important implications for cardiovascular disease prevention.[6]

OMEGA-3S SLOW PLAQUE GROWTH AND PREVENT BLOOD CLOTS

Heart attacks can result from unstable atherosclerotic plaque. The rupturing of unstable plaque inside a coronary artery has been compared to a kernel of popcorn bursting open and occluding (blocking) the flow of blood through the vessel. These kinds of heart attacks can occur suddenly, without typical symptoms such as angina and shortness of breath. Omega-3s from fish oil may help to modify the structure of atherosclerotic plaque in ways that make it less dangerous. In fact, studies show that omega-3s can slow the rate of atherosclerotic plaque growth.[7,8]

Fish Oils Help Improve Endothelial Function

Cutting-edge scientists know that one of the instigating factors in cardiovascular disease is endothelial dysfunction, in which the delicate cells lining the blood vessels cannot dilate in response to increased demand for blood flow.

Fish oils are rich in omega-3 fatty acids. A recent study found that greater intake of omega-3s was clearly correlated with lower levels of blood markers associated with dangerous endothelial dysfunction.18 A past study showed that fish oil rich in omega-3 fatty acids contributes to healthy vascular function by increasing the production of an important blood vessel-dilating substance in the endothelial cells.[7]

A fascinating study showed that omega-3 supplementation actually changed the composition of unstable atherosclerotic plaque, making it less likely to rupture and thus less dangerous. Subjects who had severe carotid plaque and were scheduled to have it surgically removed received either fish oil or sunflower oil prior to surgery. When the plaque was removed at surgery and examined, researchers found that those who took fish oil had less plaque inflammation as well as more stable plaque. By contrast, those who took sunflower oil had more unstable, rupture-prone plaque.[9]

The omega-3 fatty acids found in fish oil also help reduce certain proteins that promote abnormal blood clotting and inhibit platelet aggregation, two effects that reduce the likelihood of clot formation on active, ruptured coronary plaque that could result in a heart attack.[19]

Although the blood-thinning effect of fish oil is modest, people who suffer from an abnormal bleeding tendency or use blood-thinning drugs such as Coumadin® should consult a physician before taking fish oil. The best way of determining if one is taking the optimal dose of Coumadin® and fish oil is to have a doctor perform a template bleeding time test. (Details about this test can be found in the Thrombosis Prevention chapter of the Disease Prevention and Treatment book.)

OMEGA-3S NORMALIZE HEART RHYTHM, PREVENT SUDDEN CARDIAC DEATH

One of the most dramatic benefits of fish oil is its ability to prevent sudden death, particularly sudden cardiac death. Scientists believe that omega-3 fatty acids from cold-water fish may help prevent these sudden deaths by reducing potentially fatal abnormal heart rhythms, or arrhythmias.

To investigate the life-saving benefits of fish oil, scientists studied more than 2,000 men who had previously suffered a heart attack. Some of the men were advised to regularly consume cold-water fish, while others did not receive this dietary advice. After two years, the difference in mortality between the two groups was dramatic: men who ate fish twice a week had a 29% lower rate of death than those who did not. Scientists believe that fish oil helped prevent death by suppressing dangerous, abnormal heart rhythms in these men with a history of heart muscle damage.[20]

Fish Oils and Omega-3s Counter Dangerous Metabolic Syndrome

Fish oils rich in omega-3 fatty acids provide special benefits for people with metabolic syndrome, an increasingly prevalent condition associated with a greatly elevated risk for heart disease and diabetes. Approximately 47 million US adults are affected by this condition, which is characterized by low levels of beneficial high-density lipoprotein (HDL), increased

Another important study showed that people dying from sudden cardiac death had lower blood levels of omega-3 fatty acids than those who did not. Eating one or more servings of fish each week produced important heart-protective benefits, reducing the risk of sudden cardiac death by a stunning 52%.[21]

A major clinical study provides more good news about fish oil. In this large study of more than 11,000 adults, those who consumed 1000 mg of EPA and DHA daily had a 30% reduced rate of cardiovascular death and a 20% lower rate of sudden death. Moreover, the protective benefits of fish oil were apparent after only a few months of supplementation.[22]

triglycerides, high blood pressure, insulin resistance, and elevated C-reactive protein. Omega-3 supplementation provides important cardiovascular benefits in people with metabolic syndrome by improving both blood pressure and insulin sensitivity.[1,2]

Fish oil's ability to promote healthy heart rhythms is so impressive that some cardiologists now recommend it for their patients who have the implanted devices known as defibrillators to prevent life-threatening heart arrythmias.[23,24] In this patient population, the goal of supplementation with omega-3 fatty acids is to reduce rhythm instability.

Fish oil is particularly effective in fighting the common but worrisome heart arrhythmia known as atrial fibrillation. This is especially important, as atrial fibrillation increases the risk of stroke. One study showed that fish oil effectively reduced the incidence of atrial fibrillation by a remarkable 54% in people recovering from bypass surgery.[25]

Scientists have observed that people who suffer heart arrhythmias often demonstrate low levels of omega-3 fatty acids in their blood, further suggesting that omega-3 supplementation is clinically useful for promoting healthy heart rhythm.[24]

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FISH OIL: BEST SOURCE OF OMEGA-3S

Fish oil and cold-water fish are the most concentrated sources of EPA and DHA. A secondary, much less concentrated source is alpha-linolenic acid from flaxseed, flaxseed oil, walnuts, and canola oil. However, only a small portion of ingested alpha-linolenic acid is converted into active EPA or DHA.[26] Although linolenic acid may provide unique health benefits of its own, fish oil remains by far the most abundant source of heart-healthy omega-3s.

Omega-3 Dosing Strategies

In order to help my patients reduce their cardiovascular disease risk factors, I suggest 1200 mg per day of omega-3 fatty acids (EPA + DHA). In my clinical practice, I have noted that this dose yields measurable improvements in cardiovascular risk factors. Omega-3 doses of 1800 mg per day may provide even greater benefits, and this is the dose we commonly use in our program to help reverse heart disease. To address elevated triglyceride levels, my clinic often recommends 1200-3000 mg per day of omega-3 fatty acids.

SUCCESS STORY: REMARKABLE CHANGES IN STACY'S BLOOD TEST RESULTS

I advised Stacy to take 2700 mg of omega-3 fatty acids every day. She chose a low-potency, low-cost fish oil that required nine capsules to be consumed each day. She accomplished this by taking three capsules three times per day with meals. Stacy required more than most people, due to her unusually high triglycerides. Within several weeks, however, she was out of immediate danger: the omega-3s caused her triglycerides to plummet to 344 mg/dL.

Over the next few months, we counseled Stacy on reducing her intake of processed carbohydrates like crackers, pretzels, breakfast cereals, and other wheat-containing products. We also advised her to avoid high-fructose corn syrup, a common food additive that contributes to elevated triglyceride levels, and to reduce her weight by about 20 pounds. Stacy accomplished all this. Her most recent blood panel showed total cholesterol of 165 mg/dL, triglycerides of 144 mg/dL, HDL of 70 mg/dL, and LDL of 66 mg/dL.

Although an extreme case, Stacy's experience demonstrates that omega-3 fatty acids such as EPA and DHA can form the foundation of a powerful strategy to dramatically reduce dangerously high blood lipid levels without the use of prescription drugs.

No prescription medication can provide the profound results that Stacy obtained from the omega-3 fatty acids in fish oil. If we did not have fish oil at our disposal, she would have required at least three additional prescription medications and yet would have achieved less than 50% of the benefit.

If I were forced to choose one supplement to prevent heart disease, I would choose omega-3 fatty acids from fish oil without hesitation. When you witness the hidden genetic and acquired causes of heart disease that we identify in our heart disease-reversal program, you develop new respect for the power of fish oil. In many instances, fish oil not only corrects but eliminates these patterns. It has been responsible for much of our success.

CONCLUSION

Omega-3 polyunsaturated fatty acids such as EPA and DHA protect cardiovascular health in myriad ways, combating several critically important cardiovascular risk factors.

Research clearly demonstrates that these crucial fats help prevent deadly heart arrhythmias and sudden cardiac death. Omega-3s show efficacy in fighting disease-provoking inflammatory processes and averting the insidious phenomenon of endothelial dysfunction. Omega-3 fatty acids have potent triglyceride-reducing effects and provide the additional benefit of reducing the after-meal flood of fat in the bloodstream, an emerging risk factor for cardiovascular disease. Furthermore, omega-3 fatty acids help stabilize

"In terms of its potential impact on health in the Western world, the 'omega-3' story may some day be viewed as one of the most important in the history of modern nutritional science."

dangerous atherosclerotic plaque and prevent dangerous blood clots.

These multifaceted heart-protective effects of omega-3 fatty acids make fish oil part of the foundation of a nutritional strategy to guard against cardiovascular disease and stroke.

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