

Lowering Cholesterol – A Complimentary Approach

Cholesterol is a vital substance that is synthesized by the liver and other bodily tissues. The body uses cholesterol as a building block for essential organic molecules such as steroid hormones, cell membranes, and bile acids. Our bodies produce between 500 to 1000 mg total serum cholesterol each day, and this amount is added to the typical American's diet, which may contain an additional 500 to 1000 mg a day of additional cholesterol-half of which is absorbed into the body. Therefore, the total elimination of all cholesterol from dietary sources may not be enough for some people, and over time they may face elevated cholesterol levels and require additional measures to control or reduce cholesterol.

Elevated cholesterol is associated with a greater-than-normal risk of atherosclerosis and cardiovascular disease. Knowing and controlling your cholesterol levels is still an important step in preventing cardiovascular disease.

Estimates are that 52% of the total population have cholesterol levels over 200 mg/dL, and about 21% have levels of 240 or above. Keeping cholesterol levels in the safest range (between 180 and 200 mg/dL) is one way of statistically reducing your risk of suffering a heart attack or stroke.

Types of Cholesterol, and the Impact on Your Health

Low Density Lipoprotein (LDLc)

Low-density lipoprotein (LDL) is called the "bad" form of cholesterol. LDL carries most of the cholesterol in the blood, and the cholesterol from LDL is the main source of damaging accumulation and blockage in the arteries. Thus, the more LDL cholesterol you have in your blood, the greater your risk of disease. If you have coronary heart disease (CHD) and your LDL is higher than 100 mg/dL, your cholesterol may well be too high for you.

High Density Lipoprotein (HDLc)

High-density lipoprotein (HDL) is called the "good" form of cholesterol. HDL picks up and transports cholesterol in the blood back to the liver, which leads to its elimination from the body. HDL can help keep LDL cholesterol from building up in the walls of the arteries. If your level of HDL cholesterol is below 35 mg/dL, you are at substantially higher risk for CHD. The higher your HDL cholesterol level, the better. The good HDL-cholesterol level for men is above 40 mg/dL, and for women it is above 50 mg/dL.

Exercise is the best initial step in raising HDLc.

Triglycerides

Triglycerides are a form of fat carried through the bloodstream. Most of your body's fat is in the form of triglycerides stored in fat tissue. The ratio of Triglycerides-to-HDL cholesterol is a strong predictor of risk. Ratios less than 4.0 are ideal. High refined carbohydrate intake significantly raises serum triglycerides, while a diet high in complex carbohydrates and fiber will lower it.

The Benefits of Lowering Cholesterol

A 5-year clinical trial with over 4400 patients with heart disease found that lowering cholesterol can prevent heart attacks and reduce death in men and women who already have heart disease and high cholesterol. Researchers say that the following benefits could be expected if physicians were to treat their heart disease patients for the same 5-year period and lower cholesterol to the same extent.

For every 1000 patients,

- * Forty people would be saved out of the 90 who would otherwise die from heart disease.
- * Seventy of the expected 210 nonfatal heart attacks would be avoided.
- * Heart procedures such as bypass surgery would be avoided in 60 of the 210 patients who would be expected to need these procedures.

Complimentary Therapies

Benefits of Policosanol

Policosanol is a natural supplement derived from sugar cane. The main ingredient is octacosanol. Octacosanol is an alcohol found in the waxy film that plants have over their leaves and fruit. The leaves and rinds of citrus fruits contain octacosanol, as does wheat germ oil.

Policosanol has been shown to normalize cholesterol as well or better than cholesterol-lowering drugs, without side effects such as liver dysfunction and muscle atrophy (Mas et al. 1999). Efficacy and safety have been proven in numerous clinical trials, and it has been used by millions of people in other countries. Policosanol lowers harmful LDL-cholesterol and raises protective HDL-cholesterol. HDL-cholesterol removes plaque from arterial walls. Policosanol helps stop the formation of artery lesions (Noa et al. 1995), an effect similar to that of statin drugs.

Policosanol also inhibits the oxidation of dangerous LDL-cholesterol (Menendez et al. 1999), which promotes the destruction of blood vessels by creating a chronic inflammatory response. Healthy arteries are lined with a smooth layer of cells so that blood can race through with no resistance. This layer becomes thick and overgrown with cells as a consequence of diseased arteries. As the artery narrows, blood flow slows down or is blocked completely. Policosanol can stop the proliferation of these cells in much the same way as lipid-lowering drugs (Noa et al. 1998; Negre-Aminou et al. 1996).

Policosanol has also been shown to inhibit thromboxane, a blood vessel-constricting agent that contributes to abnormal platelet aggregation that can lead to heart attack or stroke.

Benefits of Fiber

High intake of soluble fiber is a very effective way of lowering serum cholesterol. Most people, however, find that high amounts of fiber produce gastrointestinal upset, and therefore do not consistently take enough fiber to lower cholesterol levels. A 2004 study by researchers from the Robert Wood Johnson Medical School showed that by adding psyllium, a commonly available fiber to statin drugs, you can lower the dose of the drug by 50% and still maintain the same efficacy.

Caution: DO NOT take psyllium if you are presently taking the prescription drugs digitalis or nitrofurantoin.

Benefits of Artichoke

The discovery that artichoke leaf extract reduces elevated cholesterol levels opens up exciting perspectives in the prevention and treatment of arteriosclerosis and coronary heart disease.

It was as early as the 1930s that scientists first discovered that artichoke extract had a favorable effect on atherosclerotic plaques in the arteries (Tixier, 1939). In addition, a study by Fintelmann in 1996 of 553 outpatients demonstrated a significant effect of the extract on fat (lipid) metabolism. The researchers found a significant decline in both the cholesterol and triglyceride levels in the blood, which confirmed the discovery made in the 1930s.

Fascinating results came out of an excellent double-blind clinical trial conducted by Petrowicz in 1996. He studied the cholesterol-lowering effect of artichoke leaf extract on 44 healthy individuals under strictly controlled conditions over a 12-week period. There was a significant decrease of cholesterol levels in the volunteers who had high initial levels (greater than 220 mg/dL). In fact, the higher the initial cholesterol value, the more significant was the reduction in cholesterol levels. It was moreover observed that the protective HDL cholesterol levels showed a tendency to increase.

The study further indicates that artichoke extract may work through **indirect** inhibition of the enzyme HMGCoA-reductase, which might avoid problems known to occur with strong direct inhibitors of HMGCoA-reductase such as the statin drugs like Liptor and Zocor .

Benefits of Green Tea

Green tea has been shown to lower "bad" LDL cholesterol and serum triglyceride levels. Further, green tea's potent antioxidant effects inhibit the oxidation of LDL cholesterol in the arteries, which plays a major contributory role in the formation of atherosclerosis. "There is considerable epidemiological evidence that tea drinking lowers the risk of heart disease" (FEBS Lett., Aug. 1998, 433(1-2):44-46).

Green tea also has been shown to elevate levels of HDL, the good cholesterol that helps remove atherosclerotic plaque from arterial walls. Green tea is a natural ACE inhibitor. This is an extra benefit for those with high cholesterol and blood pressure, as published studies show lowered blood pressure in animals and humans given green tea extracts.

Benefits of Garlic

A study published in the Journal of Nutrition Research (1987, 7:139-49) showed that a liquid garlic extract made by Kyolic caused a 12 to 31% reduction in cholesterol levels in the majority of test subjects after 6 months. The study showed that 73% of the subjects given the Kyolic garlic experienced a greater than 10% reduction in cholesterol, compared with only 17% of the subjects in the placebo group showing the same improvement.

If you have high LDL cholesterol levels, garlic supplementation is especially important because LDL cholesterol oxidation causes atherosclerosis, and garlic specifically inhibits LDL oxidation. And garlic helps protect the arterial lining against oxidation. Most importantly, garlic prevents abnormal platelet aggregation (thrombosis) via several different mechanisms. The formation of arterial blood clots is the primary cause of most heart attacks and strokes.

In summary, the mechanisms by which garlic have shown to protect against cardiovascular disease include the following: cholesterol reduction, preventing abnormal blood clot formation inside of blood vessels; protecting against LDL cholesterol oxidation; and protecting the endothelial lining of the arterial system against oxidation. A review of all the studies on garlic indicates that high doses are required for effective cholesterol reduction. If you were to use garlic alone to lower serum cholesterol, you should take 6000 to 8000 mg a day. When used in combination with other cholesterol-lowering nutrients, lower doses of garlic may be effective.

Benefits of Curcumin

Curcumin, also known as turmeric root, an ancient spice in the ginger family, is gaining attention for its positive impact on a number of diseases, including cholesterol reduction. Scientific evidence has been building since the mid-1980s of curcumin's potential cholesterol-lowering capabilities.

For example, animals fed small doses of curcumin had their cholesterol levels drop by one half (50%) over those that did not receive curcumin. Curcumin reduces cholesterol by interfering with intestinal cholesterol uptake, increasing the conversion of cholesterol into bile acids, and increasing the excretion of bile acids, according to the International Journal of Vitamin Nutritional Research (1991, 61:364-69).

The 1992 Indian Journal of Physiology reported that ten human volunteers taking curcumin showed a 29% increase in beneficial HDL cholesterol in only 7 days. Total cholesterol also fell 11.6% and lipid peroxidation was reduced by 33%.

Benefits of Gugulipid (Commiphora mukul)

This powerful ancient remedy has been re-discovered by Western culture. Gugulipid is made from the resin of the commiphora mukul tree of north central India. Gugulipid (gugulesterones) has been used for thousands of years to alleviate problems associated with obesity, acne, viral infections, and other ailments.

In a study published in 1989 by the Journal of Associated Physicians-India, 125 patients receiving gugulipid showed an 11% decrease in total serum cholesterol, a drop of

16.8% in triglycerides, and a 60% increase in HDL cholesterol within 3 to 4 weeks. Patients with elevated cholesterol levels showed much greater improvement than normal patients.

The study quoted a second trial (included in the article noted above) where 205 patients receiving gugulipid at a dose rate of 25 mg administered 3 times daily showed a 70% to 80% reduction of serum cholesterol, whereas no response was found in the placebo group (Journal of Associated Physicians-India, 1989, 37[5]:328).

A placebo-controlled trial of 40 patients with high blood-fat levels showed a serum cholesterol reduction of 21.75%, with triglycerides being reduced by 27.1% in only 3 weeks, and after continuing the study for 16 weeks it was learned that HDL cholesterol was increased by 35.8% (Journal of Associated Physicians-India, 1989, 37[5]:328).

Benefits of Fish Oil (omega-3-fatty acids)

Fish oil has been shown to reduce high levels of triglycerides by an average of 35%. Fish oil does not appear to reduce cholesterol to that extent, but does offer benefits when consumed as part of an integrated therapy. In fact, fish oil or Omega-3-fatty acids may be the most beneficial substance known to lower cardiovascular death. A recent study in The Archives of Internal Medicine, in a review of over 270,000 patients showed that omega-3-fatty acids lower overall death rates by 23% while statin drugs lowered death rates by only 13%. Further omega-3-fatty acids lowered death from heart attacks by 32% while statin drugs lowered heart attack deaths by only 22% (*Arch Intern Med.* 2005;165:725-730).

Benefits of Soy

The FDA has approved soy as a method of lowering the risk of coronary heart disease. For this dietary supplement, one research abstract says it all:

Soy has been a staple part of the Southeastern diet for nearly 5,000 years and is associated with a reduction in the rates of cardiovascular disease, and certain types of cancer. The research is now showing that phyto-chemicals in soy are the mechanism of action responsible (Society for Experimental Biology and Medicine [United States], 1998, 217[3]:386-92).

Diets rich in soy protein can protect against the development of atherosclerosis. The mechanisms of action of soy protein include cholesterol lowering, inhibition of LDL oxidation, protection against the development of atherosclerosis, and reduction in risk of thrombosis. The active constituents in soy responsible for these benefits are the isoflavones genistein, daidzein, and glycitein

Summary

Diseases associated with high cholesterol (and fats) are the number one killers. Fats also play a key role in the incidence of cancers and many other degenerative diseases. Cholesterol exists only in animal tissues, therefore, one's diet is an important first step in its control. For some people, however, limiting fat and cholesterol intake alone is not enough to reduce serum cholesterol to safe levels because of their own liver's production of excess cholesterol. The use of supplements to augment dietary modification can help reduce cholesterol without the side effects of many drugs.

The effectiveness of any cholesterol-reduction therapy varies considerably between individuals. The nutrients include in this paper have not only been shown to lower cholesterol, but also protect against cardiovascular disease by other mechanisms such as inhibition of cholesterol-oxidizing free radicals and abnormal blood clots inside arteries (thrombosis).

This information is not intended to replace the attention or advice of a physician or other health care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health care professional.

Prepared by Edward Pazuchowski, M.D.

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