Why Statins Do More Harm Than Good
by Stephanie Seneff
Senior Research Scientist at MIT (Massachusetts Institute of Technology)

Americans have been well trained over the past few decades to avoid dietary fat and cholesterol and to stay out of the sun. Their conscientious implementation of this misguided advice has led to an epidemic in obesity and heart disease, along with a host of other debilitating conditions like arthritis and Alzheimer's disease.

Cholesterol is to animals as chlorophyll is to plants. Cholesterol, absent from plants, is what gives animals mobility and a nervous system. It is therefore not surprising that statin drug side effects mainly impact muscles and the nervous system.

The heart, as a muscle, is not exempt from statin toxicity. This is why the incidence of heart failure has steadily risen in step with the widespread adoption of statin therapy, now displacing cardiovascular disease as the number one killer. In this article I am going to take you on a whirlwind tour of the 60,000 foot view of my understanding of the principle causes of the current health crisis in America.

My extensive research has caused me to hypothesize a remarkable feat that the human body can perform in the presence of sunlight, which is to extract sulfur from hydrogen sulfide in the air and convert it to sulfate, taking advantage of the sun's energy to catalyze the reaction.

This process takes place in the skin upon sun exposure, and also in the endothelial cells lining blood vessels, and in the red blood cells, platelets, and mast cells in the blood. This feat is performed by a very interesting molecule called "endothelial nitric oxide synthase," a misnomer, since its main responsibility is to synthesize sulfate rather than nitric oxide.

The sulfate so produced plays a huge role in cardiovascular health, both by preventing blood clots and by keeping pathogenic microbes (bacteria and viruses) at bay. But it also plays another role that is just as important, which is to give cholesterol (as well as vitamin D and other sterols) a free ride through the blood stream.

Vitamin D3 (a highly touted nutrient) is synthesized in the skin from cholesterol (a highly demonized nutrient) and its chemical structure is almost identical to that of cholesterol. By attaching to cholesterol or vitamin D3, sulfate makes the molecule water soluble, and this means that it no longer has to travel packaged up inside an LDL particle. LDL, as you probably know, is the so-called "bad" cholesterol, which will cause doctors to prescribe statins if the level is too high.

A great way to lower LDL levels is to get adequate sun exposure. It's not going to work to take a vitamin D supplement: you have to go outside and soak up the sun, because supplements are never sulfated and vitamin D is not cholesterol. Raw cow's milk is the only dietary source I know of that actually supplies sulfated vitamin D3, but even that is still not cholesterol sulfate.

Because most Americans have inadequate cholesterol in their skin and grossly inadequate amounts of sun exposure, they suffer from a huge deficiency in cholesterol and sulfate supply to the tissues. Not surprisingly, most impacted are the muscles and nervous system.

Because the heart muscle is indispensible, the body has developed a back-up strategy to give it special treatment, which is to synthesize cholesterol sulfate from LDL and homocysteine in the fatty deposits (plaque) that build up in arteries supplying the heart. The macrophages in the plaque extract cholesterol from damaged small dense LDL particles, and export it to HDL-A1. The platelets in the plaque will only accept cholesterol from HDL-A1, which they then convert to cholesterol sulfate.

They obtain the sulfate through yet another process which requires energy and oxidizing agents, extracting the sulfur from homocysteine. With insufficient homocysteine, the sulfur will most likely be extracted from cartilage, which gets its strength from extensive disulfide bonds. This, in my view, is the main cause of arthritis -- depletion of sulfur from the cartilage in the joints. So now you have both cardiovascular disease and arthritis as a consequence of a low-fat diet and aggressive sun avoidance.

Statin drugs dramatically lower LDL levels by interfering with cholesterol synthesis, and this wreaks havoc on the liver, the main back-up supplier of cholesterol to the tissues when cholesterol intake and cholesterol sulfate production are down. With the American diet, the liver has another huge task, which is to convert fructose to fat.

The fat cannot be stored or shipped (via LDL) if there is insufficient cholesterol. As a consequence, the liver abandons this task, and the fructose builds up in the blood, causing extensive glycation damage to blood proteins. One of the impacted proteins is the apoB in LDL, which interferes with LDL's ability to deliver its goods to the tissues, including cholesterol, fats, vitamins A, D, E, and K, and antioxidants. So LDL levels fall sharply with statins, and so does the bioavailability of all these nutrients.

Muscle cells come to the rescue, heroically, by extracting excess fructose from the blood and converting it to lactate, using anaerobic metabolism. They have to switch over to anaerobic metabolism anyway, because coenzyme Q10, another casualty of statin therapy, is in low supply. Coenzyme Q10 is crucial for aerobic metabolism.

Lactate is a great fuel for the heart and liver, but the problem is that the muscle cells get wrecked in the process, due to massive overdoses of fructose, in the context of inadequate cholesterol, which would have offered some protection. This is a principle contributor to the excessive muscle pain and weakness associated with statins. Eventually, the muscles can't do it any more, and you're now on the verge towards heart failure.

People on long-term statin therapy start to notice that their hair is receding faster, they're developing cataracts, they can't hear as well as they used to, they keep forgetting things, they can't open the pickle jar any more, and perhaps they'll need

rotator cuff surgery soon, as their shoulders are so sore. They think it's just because they're growing old, but these are all side effects that my research, together with my students at MIT, has uncovered, by comparing statin drug side effects with side effects associated with other drugs in age-matched reviews.

Even more alarming are the rare but debilitating and even life-threatening side effects we've detected, such as ALS and Parkinson's disease, heart and liver failure, neuropathy and severe muscle damage. A 17-year study on the elderly confirmed what I already suspected: low serum cholesterol is associated with increased frailty, accelerated mental decline, and early death. (Ref 1.)

Statins are not the answer for anyone seeking to avoid cardiovascular disease. The answer, instead, is to modify the diet to include foods that are rich in cholesterol and saturated fat, to avoid empty carbohydrates, especially high fructose corn syrup, to eat foods that are good sources of sulfur, and, most especially, to spend plenty of time outdoors in the sun.

Stephanie Seneff is a Senior Research Scientist at MIT's Computer Science and Artificial Intelligence Laboratory.
She has a Batchelor's degree from MIT in biology with a minor in food and nutrition, and a PhD in Electrical Engineering and Computer Science, also from MIT.
Her website at MIT: people.csail.mit.edu/seneff
Her blog: stephanie-on-health.blogspot.com

Ref 1. http://www.ncbi.nlm.nih.gov/pubmed/21254906

September 2011