



Cholesterol is NOT the Cause of Heart Disease

By Ron Rosedale, MD

Cholesterol is not the major culprit in heart disease or any disease. If it becomes oxidized it can irritate/inflame tissues in which it is lodged in, such as the endothelium (lining of the arteries). This would be one of numerous causes of chronic inflammation that can injure the lining of arteries. However, many good fats are easily oxidized such as omega-3 fatty acids, but it does not mean that you should avoid it at all costs.

Common sense would indicate that we should avoid the oxidation (rancidity) of cholesterol and fatty acids and not get rid of important life-giving molecules. Using the same conventional medical thinking that is being used for cholesterol would lead one to believe that doctors should reduce the risk of Alzheimer's disease by taking out everybody's brain.

In fact, cholesterol is being transported to tissues as part of an inflammatory response that is there to repair damage.

The fixation on cholesterol as a major cause of heart disease defies the last 15 years of science and deflects from real causes such as the damage (via glycation) that sugars such as glucose and fructose inflict on tissues, including the lining of arteries, causing chronic inflammation and resultant plaque.

Insulin & Leptin Resistance

Hundreds of excellent scientific articles have linked insulin resistance and more recently leptin resistance to cardiovascular disease much more strongly than cholesterol, and they are in fact at least partially responsible for cholesterol abnormalities. For instance, insulin and leptin resistance result in "small dense" LDL particles and a greater number of particles.

This is much more important than the total cholesterol number. Because of particle size shift to small and dense, the total LDL cholesterol could still be low even though the number of particles and the density of the particles is greater. Small, dense LDL particles can squeeze between the cells lining the inside of the arteries, the "gap junction" of the endothelium, where they can get stuck and potentially oxidize, turn rancid, and cause inflammation of the lining of the arteries and plaque formation.



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Importantly, many solid scientific studies have shown a mechanistic, causal effect of elevated insulin and leptin on heart and vascular disease, whereas almost all studies with cholesterol misleadingly only show an association. Association does not imply cause. For instance, something else may be causing lipid abnormalities such as elevated cholesterol and triglycerides, and also causing heart disease.

This "something else" is improper insulin and leptin signaling. Similarly, sugar does not cause diabetes; sugar is just listening to orders. Improper insulin and leptin signaling is the cause of diabetes. Likewise, cholesterol does not cause heart disease, but improper metabolic signals including improper signals to cholesterol (causing it to oxidize) and perhaps to the liver that manufactures the cholesterol, will cause heart and vascular disease and hypertension.

Removing cholesterol will do nothing to improve the underlying problems, the real roots of chronic disease, which will always have to do with improper communication, and the generals of metabolic communication are insulin and leptin. They are really what must be treated to reverse heart disease, diabetes, osteoporosis, obesity, and to some extent aging itself.

Cholesterol; Wrongly Accused?

Before we can begin to talk about the real cause and effective treatment for heart and blood vessel disease, we must first look at what is known, or I should say what we think we know. The first thing that comes to mind when one hears about heart disease is almost always cholesterol. Cholesterol and heart disease has been almost synonymous for the last half-century. Cholesterol has been portrayed as the Darth Vader to our arteries and our heart.

The latest recommendation given by a so-called panel of "experts" recommends that a person's cholesterol be as low as possible, in fact to a level so low they say it cannot be achieved by diet, exercise, or any known lifestyle modification. Therefore, they say cholesterol-lowering drugs; particularly the so-called "statins" need to be given to anyone at high risk of heart disease. Since heart disease is the number one killer in this country that would include most adults and even many children. The fact that this might add to the \$26 billion in sales of statin drugs last year I'm sure played no role in their recommendations.

Or did it?

Expert Conflict of Interests

Major consumer groups think so. They found out that eight of the nine "experts" that made the recommendations were on the payroll of pharmaceutical companies that manufacture those drugs. Major scientific organizations have chastised medical journals for allowing the pharmaceutical industry to publish misleading results and half-truths. There is a major push under way to force the pharmaceutical industry (and others) to publish results of all of their



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studies, and not just the ones that appear positive. The studies that showed negative results would be forced to be published also.

It could be that lowering cholesterol might not be as healthy as we are being told. More and more studies are coming out showing just how unhealthy lowering cholesterol might be, particularly by the use of statin drugs. In particular, statin drugs have been shown to be harmful to muscles causing considerable damage. A common symptom of this damage is muscular aches and pains that many patients experience on cholesterol-lowering drugs, however most do not realize that these drugs are to blame.

Hmm...isn't the heart a muscle?

Statin Drugs Actually Increase Heart Disease

Indeed, low cholesterol levels have been shown to worsen patients with congestive heart failure, a life-threatening condition where the heart becomes too weak to effectively pump blood. Statin drugs have been shown to also cause nerve damage and to greatly impair memory. One reason that statin drugs have these various serious side effects is that they work by inhibiting a vital enzyme that manufactures cholesterol in the liver. However, the same enzyme is used to manufacture coenzyme Q10, which is a biochemical needed to transfer energy from food to our cells to be used for the work of staying alive and healthy.

Statin drugs are known to inhibit our very important production of coenzyme Q10. Importantly, while many cardiologists insist that lowering cholesterol is correlated with a reduction in the risk of heart attacks; few can say that there is a reduction in the risk of mortality (death). That has been much harder to show. In other words it has never been conclusively shown that lowering cholesterol saves lives. In fact, several large studies have shown that lowering cholesterol into the range currently recommended is correlated with an increased risk of dying, especially of cancer.

No Such Thing as Good and Bad Cholesterol

Because the correlation of total cholesterol with heart disease is so weak, many years ago a stronger correlation was sought. It was found that there is so-called "good cholesterol" called HDL, and that the so-called "bad cholesterol" was LDL. HDL stands for high-density lipoprotein, and LDL stands for low-density lipoprotein. Notice please that LDL and HDL are lipoproteins -- fats combined with proteins. There is only one cholesterol. There is no such thing as a good or a bad cholesterol. Cholesterol is just cholesterol. It combines with other fats and proteins to be carried through the bloodstream, since fat and our watery blood do not mix very well.

Fatty substances therefore must be shuttled to and from our tissues and cells using proteins. LDL and HDL are forms of proteins and are far from being just cholesterol. In fact we now know there are many types of these fat and protein particles. LDL particles come in many sizes and large LDL particles are not a problem. Only the so-called small dense LDL



particles can potentially be a problem, because they can squeeze through the lining of the arteries and if they oxidize, otherwise known as turning rancid, they can cause damage and inflammation. Thus, you might say that there is "good LDL" and "bad LDL." Also, some HDL particles are better than others. Knowing just your total cholesterol tells you very little. Even knowing your LDL and HDL levels do not tell you very much.

A mistake that is rarely made in the hard-core sciences such as physics seems to be frequently made in medicine. This is confusing correlation with cause. There may be a weak correlation of elevated cholesterol with heart attacks, however this does not mean it is the cholesterol that caused the heart attack. Certainly gray hair is correlated with getting older; however one could hardly say that the gray hair caused one to get old. Using hair dye to reduce the gray hair would not really make you any younger. Neither it appears would just lowering your cholesterol.

Perhaps something else is causing both the gray hair and aging. Even if elevated cholesterol were significant and heart disease (which I question) perhaps something else is causing the elevated cholesterol and also causing the heart disease.

Let's look little more at cholesterol or, as Paul Harvey was fond of saying, "the rest of the story." First and foremost, cholesterol is a vital component of every cell membrane on Earth. In other words, there is no life on Earth they can live without cholesterol. That will automatically tell you that, in of itself, it cannot be evil. In fact it is one of our best friends. We would not be here without it. No wonder lowering cholesterol too much increases one's risk of dying. Cholesterol also is a precursor to all of the steroid hormones. You cannot make estrogen, testosterone, cortisone, and a host of other vital hormones without cholesterol.

Cholesterol Is The Hero, Not The Villain.

It was determined many years ago that the majority of cholesterol in your bloodstream comes from what your liver is manufacturing and distributing. The amount of cholesterol that one eats plays little role in determining your cholesterol levels. It is also known that HDL shuttles cholesterol away from tissues, and away from your arteries, back to your liver. That is why HDL is called the "good cholesterol;" because it is supposedly taking cholesterol away from your arteries. But let's think about that.

- Why does your liver make sure that you have plenty of cholesterol?
- Why is HDL taking cholesterol back to your liver?
- Why not take it right to your kidneys, or your intestines to get rid of it?

It is taking it back to your liver so that your liver can recycle it; put it back into other particles to be taken to tissues and cells that need it. Your body is trying to make and conserve the cholesterol for the precise reason that it is so important, indeed vital, for health.



One function of cholesterol is to keep your cell membranes from falling apart. As such, you might consider cholesterol your cells "superglue." It is a necessary ingredient in any sort of cellular repair. The coronary disease associated with heart attacks is now known to be caused from damage to the lining of those arteries. That damage causes inflammation. The coronary disease that causes heart attacks is now considered to be caused mostly from chronic inflammation.

What Is Inflammation?

Think of what happens if you were to cut your hand. Within a fraction of a second, chemicals are released by the damaged tissue to initiate the process known as inflammation. Inflammation will allow that little cut to heal, and indeed to keep you from dying. The cut blood vessels constrict to keep you from bleeding too much. Blood becomes "thicker" so that it can clot. Cells and chemicals from the immune system are alerted to come to the area to keep intruders such as viruses and bacteria from invading the cut. Other cells are told to multiply to repair the damage so that you can heal. When the repair is completed, you have lived to be careless another day, though you may have a small scar to show for your troubles.

We now know that similar events take place within the lining of our arteries. When damage occurs to the lining of our arteries (or even elsewhere) chemicals are released to initiate the process of inflammation. Arteries constrict, blood becomes more prone to clot, white blood cells are called to the area to gobble up damaged debris, and cells adjacent to those damaged are told to multiply. Ultimately, scars form, however inside our arteries we call it plaque. And the constriction of our arteries and the "thickening" of our blood further predisposes us to high blood pressure and heart attacks.

So Where Might Cholesterol Fit Into All Of This?

When damage is occurring and inflammation is being initiated, chemicals are being released so that that damage can be repaired. One could speculate that to replace damaged, old and worn-out cells the liver needs to be notified to either recycle or manufacture cholesterol since no cell, human or otherwise, can be made without it. In this case, cholesterol is being manufactured and distributed in your bloodstream to help you repair damaged tissue and in fact to keep you alive.

If excessive damage is occurring such that it is necessary to distribute extra cholesterol through the bloodstream, it would not seem very wise to merely lower the cholesterol and forget about why it is there in the first place. It would seem much smarter to reduce the extra need for the cholesterol -- the excessive damage that is occurring, the reason for the chronic inflammation.

So Why Take Cholesterol-Lowering Drugs?



The pharmaceutical companies thought that you might think that. They went back to the drawing board. They did more "research" and found (coincidentally) that statin drugs had anti-inflammatory effects. Therefore we're currently being told to stay on our cholesterol-lowering drugs because now they work by reducing inflammation and perhaps not even by reducing cholesterol, and in fact perhaps in spite of it. Aspirin reduces inflammation for a lot less money. So does vitamin E, and fish oil, and dietary changes without the dangers of drugs and having many other benefits instead.

What About Triglycerides?

Triglycerides are just medical terminology for fat. A person with high triglycerides has a lot of fat in the bloodstream. Triglycerides are generally measured when a person has fasted overnight. High fasting triglycerides are either from manufacturing too much, or using (burning) too little. In other words, what high triglycerides are telling you is that you are making too much fat and you are unable to burn it. This indeed is a major problem. The inability to burn fat underlies virtually all of the chronic diseases of aging, and in fact may contribute to the rate of aging itself.

As such, one might think that the control all fat burning and storage might be very important in heart disease, and the other diseases of aging such as diabetes, obesity, osteoporosis, and even cancer. Indeed, this appears to very much be the case. The two hormones that to a major extent control our ability to burn and store fat, insulin and leptin, appear to play a major role in all of the chronic diseases of aging. I would call them the most important hormones, indeed chemicals in the entire body. But that is a story for next time.

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