More New Ways to Lower Cholesterol

The best way to combat high cholesterol levels in the blood is to get educated on some of the latest research in the field of clinical nutrition. Last month in New Living, I briefly described the roles cholesterol play in the body. I mentioned that it is an important molecule that plays a major role in all of the bodies processes, like hormone production, digestion, cellular structure and brain function. However, I also pointed out that cholesterol levels that are too high are directly related to the number one killer in the United States, heart disease. Since only 20 percent of the cholesterol in the blood come from dietary cholesterol, the key factor in controlling blood cholesterol levels is not in the regulation of dietary cholesterol, but in the manipulation of the bodies own cholesterol production.

In order to understand how to regulate the cellular production of cholesterol in the body, you first must understand the differences between the "good" and "bad" cholesterol. High-density lipoproteins (HDL) and low-density lipoproteins (LDL) are terms that most people are familiar with, but not many really know what they actually are. All they know is that HDL is good for you and LDL is bad. The actual names of these lipoproteins actually tell us nothing more than the relative weights of the molecules, with LDL being lighter than HDL. The lightest of all the blood fats are the triglycerides. The lipoproteins are actually transports with the LDL carrying cholesterol to the tissues of the body and the HDL cleaning cholesterol from the tissues and transporting it back to the liver. It makes sense that it is important to maintain a balance between these two lipoproteins since both are important players in cholesterol regulation. The problem starts when you have too much LDL floating around in the blood stream depositing cholesterol to all the tissues of the body including the lining of the arterial walls, and not enough HDL to clean up the mess.

The secret of cholesterol control is in knowing how your body deals with LDL and how you can influence the cells to remove as much of the LDL as possible. Last month, I mentioned that blood cholesterol levels are dictated by the amount of cholesterol production inside the cells of the body. If the internal cellular production of cholesterol were high, then the cell would not need any more cholesterol from the blood and would leave it alone. If however the internal cellular cholesterol production were low, the cell would release cholesterol receptors to travel to the outside of the cell and harvest cholesterol from the blood and bring it inside the cell for use. These receptors go after LDL primarily. Therefore, to lower the amount of LDL in the blood, you have to stimulate the production of LDL receptors by the cell so they can effectively remove LDL cholesterol from the blood. The more LDL receptors the cell produces, the more cholesterol we can remove from our bloodstream.

As mentioned, the best way to increase the amount of LDL receptors is to decrease the amount of intracellular cholesterol production. The cholesterol production pathway within the cell is controlled by a series of steps and reactions regulated by specific enzymes. One enzyme called, *3-hydroxy-3-methylglutaryl-coenzyme A (HMG-Co-A)* is responsible for the rate and amount of cholesterol that is produced. This enzyme is called the rate limiting step, and it is this enzyme that some of the most popular cholesterol lowering drugs act upon. By interfering with the actions of this enzyme, cholesterol-lowering drugs can reduce the amount of intracellular cholesterol production thereby

increasing the amount of LDL receptors to scavenge the bloodstream for the needed cholesterol. Unfortunately, these same cholesterol-lowering drugs are riddled with side effects such as liver problems, muscular disorders, gallbladder disorders, rashes and psychiatric disorders. The good news is that there is a natural way of inhibiting the function of *HMG-Co-A.* It is well known through biochemical journals that the hormone insulin increases HMG-Co-A activity, while Glucagon inhibits it. The pancreas produces insulin whenever a high carbohydrate meal is eaten. Insulin stimulates the body's cells to make cholesterol there by lowering LDL receptor production and increasing blood cholesterol levels. Glucagon, which is a hormone that is produced after high protein meals, will actually inhibit enzyme function so that the intracellular cholesterol is decreased there by increasing LDL receptor production and lowering blood cholesterol levels.

I know this sounds a little complex, but read it over a few times until it makes sense. Basically, high carbohydrate diets increase blood cholesterol and high protein diets decrease it. The optimal range for cholesterol should be somewhere between 180-200. If your cholesterol level drops to low, that can also pose great health dangers. More important than total cholesterol is the ration between total cholesterol and HDL and the ratio between LDL and HDL. In short, total cholesterol divided by HDL should be below 4, and the LDL divided by HDL should be below 3.

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