New Target to Reduce 'Bad' Cholesterol

By Lila Abassi — January 11, 2016

Heart disease is a major cause of death and disability worldwide and it remains the cause of death about one-third of the time, if not more, for those over age 35. As of 2010, there are 17.6 million Americans living with coronary heart disease, as estimated by the American Heart Association.

Statins have been the mainstay for the treatment of elevated cholesterol for almost 30 years, with proven benefit of reducing death related to cardiovascular disease and also preventing heart disease and stroke. LDL- or "bad-" cholesterol is responsible for the development of atherosclerosis (hardening of the blood vessels), which is the precursor to developing cardiovascular disease leading to heart attacks and strokes.

There is a new study published in the journal Cell Reports, where scientists have identified a protein that could potentially clear 80 percent of LDL-cholesterol from the blood stream without any apparent side effects.

The liver is responsible for clearing cholesterol from the circulation. Liver cells have receptors, LDL-R, that bind cholesterol and metabolize it. PCSK9 is a protein that is also produced by the liver that degrades those receptors. Under normal circumstances the concentration of PCSK9 is inversely related to LDL cholesterol in plasma.

A research team led by Dr. Gaetan Mayer, director of the molecular cell biology laboratory at the Montreal Heart Institute and professor of medicine at the Universite de Montreal, identified a protein they named GRP94, that blocks the actions of PCSK9.

Dr. Gaetan in collaboration with the University of Southern California, realized that PCSK9 is a new therapeutic target in the treatment of high cholesterol. According to a press release, the authors feel that, it is now undeniable that PCSK9 is a prime therapeutic target to reduce LDL-cholesterol, a major risk factor for heart attacks and stroke.

The scientists discovered that mutations in PCSK9, rendering it inactive, can potentially provide almost complete protection against cardiovascular disease. They feel it is important to identify all the different mechanisms by which this protein functions in order to aid drug development.

PCSK9 is offering significant hope as a new therapeutic treatment option. Currently, the FDA has
approved two medications that work by blocking the actions of PCSK9 for a limited number of indications such as the treatment of familial hypercholesterolemia [5] (inherited disorder of cholesterol metabolism), but these medications tend to be very expensive. There are ongoing trials to assess how effective adding a PCSK9 inhibitor to statin therapy will be.

Given the statistics on heart disease, it is great news that new treatment options will become available. However, it goes without saying that we advocate for lifestyle modifications such as increasing physical activity, a sensible diet, weight loss and quitting smoking.