Daily doses of a new probiotic reduces 'bad' and total cholesterol

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Two daily doses of a probiotic lowered key cholesterol-bearing molecules in the blood as well as "bad" and total cholesterol, in a study presented at the American Heart Association's Scientific Sessions 2012.

Probiotics are live microorganisms (naturally occurring bacteria in the gut) thought to have beneficial effects; common sources are yogurt or dietary supplements. In previous studies, a formulation of the bacteria, known as *Lactobacillus reuteri* NCIMB 30242, has lowered blood levels of LDL or "bad" cholesterol.

Such treatments are drawing increasing medical attention as researchers unravel how supplementing gut bacteria (microbiome) with probiotics can play a role in health and certain chronic diseases such as heart disease, said Mitchell L. Jones, M.D., Ph.D., lead author of the study and a research assistant in the Faculty of Medicine at McGill University in Montreal.

Researchers investigated whether the same probiotic could lower LDL and reduce blood levels of cholesterol esters—molecules of cholesterol attached to fatty acids, a combination that accounts for most total blood cholesterol and has been tied to cardiovascular disease risk.

Researchers tracked cholesterol esters bound to saturated fat, which have been linked to dangerous arterial plaque buildup and occur at higher levels in coronary artery disease patients.

The study involved 127 adult patients with high cholesterol. About half the participants took *L. reuteri* NCIMB 30242 twice a day, while the rest were given placebo capsules.

Those taking the probiotic had LDL levels 11.6 percent lower than those on placebo after nine weeks. Furthermore, cholesterol esters were reduced by 6.3 percent and cholesterol ester saturated fatty acids by 8.8 percent, compared with the placebo group.

For the first time, research shows that the probiotic formulation can reduce cholesterol esters "and in particular reduce the cholesterol esters associated with 'bad' saturated fatty acids in the blood," said Jones, co-founder and chief science officer of Micropharma, the company that formulated the probiotic.

Furthermore, people taking the probiotic had total cholesterol reduced by 9.1 percent. HDL "good" cholesterol and blood triglycerides, a dangerous form of fat in the blood, were unchanged.

Scientists have proposed that *Lactobacillus* bacteria alone may impact cholesterol levels in several ways, including breaking apart molecules known as bile salts. *L. reuteri* NCIMB 30242 was fermented and formulated to optimize its effect on cholesterol and bile salts.

Based on correlations between LDL reduction and bile measurements in the gut, the study results suggest the probiotic broke up bile salts, leading to reduced cholesterol absorption in the gut and less LDL.

The probiotic worked at doses of just 200 milligrams a day, far lower than those for soluble fiber or other natural products used to reduce cholesterol.

"Most dietary cholesterol management products require consumption between 2 to 25 grams a day," Jones said. Patients appear to tolerate the probiotic well and the probiotic strain *L. reuteri* has a long history of safe use, he said.

Because of the small number of patients involved in the study, researchers aren't sure if the impact of the probiotic differs between men and women or among ethnic groups.

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