MedicalXpress

Targeting the gut microbiome to fight heart disease

April 5 2016

A compound found in red wine, resveratrol, reduces the risk of heart disease by changing the gut microbiome, according to a new study by researchers from China. The study is published in *mBio*, an open-access journal published by the American Society for Microbiology.

"Our results offer new insights into the mechanisms responsible for resveratrol's anti-atherosclerosis effects and indicate that gut microbiota may become an interesting target for pharmacological or dietary interventions to decrease the risk of developing cardiovascular diseases," said Man-tian Mi, PhD, principal investigator of the study and a researcher at the Research Center for Nutrition and Food Safety, Institute of Military Preventive Medicine, Third Military Medical University, Chongqing, China.

Cardiovascular disease remains the leading cause of death in industrialized societies including the United States, and the incidence is growing in developing countries. In recent years, researchers have learned that the gut microbiome plays a role in the build up of plaque inside arteries, otherwise known as atherosclerosis. Resveratrol, a polyphenol found in red wine, is thought to have antioxidant properties that protect against conditions such as heart disease. Just how resveratrol, a plant compound, does this, however, is unclear.

In the new study, researchers conducted a number of experiments in mice to determine whether the protective effect of resveratrol against atherosclerosis was related to changes in the gut microbiome. They

found that resveratrol reduces levels of trimethylamine-N-oxide (TMAO), a known contributor to the development of atherosclerosis. They also found that resveratrol inhibits TMA production by gut bacteria ; TMA is necessary for the production of TMAO.

"In our current study, we found that resveratrol can remodel the gut microbiota including increasing the Bacteroidetes-to-Firmicutes ratios, significantly inhibiting the growth of Prevotella, and increasing the relative abundance of Bacteroides, Lactobacillus, Bifidobacterium, and Akkermansia in mice," said Dr. Mi. "Resveratrol reduces TMAO levels by inhibiting the gut microbial TMA formation via remodeling gut microbiota."

According to Dr. Mi, the results suggest that a natural polyphenol without any side effects could be used as a treatment for cardiovascular disease. The researchers next steps are to further define the role of resveratrol in cardiovascular disease and replicate their findings in humans.

Provided by American Society for Microbiology