

# More bad news for red meat eaters

By Elizabeth Lopatto, Bloomberg News

The fat and cholesterol found in steak may not be the only components bad for the heart, according to researchers who have found another substance in red meat that can clog the arteries.

The substance is called carnitine, and as bacteria in the gut breaks it down, it turns into a compound known to harden arteries, according to a study published Sunday in Nature Medicine.

What's more, people who eat a lot of meat allow more of the bacteria that convert carnitine to the harmful compound to grow, increasing its effect.

Previous research has shown that high levels of meat-eating are linked to cardiovascular risk, partly because of the saturated fats and cholesterol in meat. However, the higher levels of these ingredients aren't enough to explain the difference in heart disease between meat eaters and vegans or vegetarians. The study, which takes into account the differences in the stomach's inhabitants, may begin to explain the difference.

"The bacteria living in our digestive tracts are dictated by our long-term dietary patterns," study author Stanley Hazen, the section head of Preventive Cardiology and Rehabilitation at the Cleveland Clinic, said in a statement. "A diet high in carnitine actually shifts our gut microbe composition to those that like carnitine, making meat eaters even more susceptible."

The study followed 2,595 people and measured carnitine levels,

as well as those of its byproduct, TMAO. Omnivores produced more TMAO than vegetarians and vegans after eating carnitine, the researchers found.

Although carnitine is also found in fish, poultry, wheat and some vegetables, its main food source is red meat, especially lamb, according to the University of Maryland. Because vegetarians and vegans eat fewer foods that contain it, their gut bacteria doesn't process it as easily, which may explain some of the health benefits of meatless diets.

After feeding mice diets that would produce high levels of TMAO, researchers found that the animals had higher levels of hardened arteries. However, if the researchers suppressed the bacteria living in the mouse's guts, the effects dissipated.

"The role of gut microbiota in this pathway suggests new potential therapeutic targets for preventing cardiovascular disease," the authors wrote in the paper.

Some people use carnitine as a dietary supplement. Sunday's research suggests that the safety of that supplementation should be studied more closely to make sure it's not fostering bacteria that might promote heart disease, researchers said.