

Trust your gut on plant-based diets for heart health

February 17 2020



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Reducing animal product intake and following a primarily plant-based diet can decrease your risk of heart disease by minimizing the adverse effects of a gut-microbiome associated with increased risk of coronary

heart disease, according to research published today in the *Journal of the American College of Cardiology*.

The body's [gut microbiota](#) is comprised of a series of microbes that play an important role in our metabolism, nutrient absorption, [energy levels](#) and immune response. A gut-microbiota related metabolite known as trimethylamine N-oxide (TMAO) is produced when gut bacteria digests nutrients commonly found in animal products such as red meat. It has been connected to increased heart attack and [coronary heart disease](#) (CHD) risk. Maintaining a vegan or [vegetarian diet](#) has been found to reduce the amount of TMAO produced in the body.

The study authors examined 760 women in the Nurses' Health Study, a prospective cohort study of 121,701 female registered nurses aged 30 to 55 years old. Women were asked to report data on dietary patterns, smoking habit and physical activity, plus other demographic data and provide two blood samples taken at Cleveland Clinic, 10 years apart. The researchers measured plasma concentrations of TMAO from the first collection to the second blood collection. After adjusting for participants with available plasma TMAO levels at both collections, there were 380 cases of CHD and 380 demographically matched-control participants without CHD chosen by the researchers included in the analysis.

The risk of CHD was calculated by changes in TMAO levels in the body throughout the follow-up period. Assessing TMAO levels relies on diet and nutrient intake; the researchers investigated how diet quality modifies the association between TMAO and CHD. Women who developed CHD had higher concentrations of TMAO levels, higher BMI, family history of [heart attack](#) and did not follow a healthy diet including higher intake of vegetables and lower intake of animal products. Women with the largest increases in TMAO levels across the study had a 67% higher risk of CHD.

"Diet is one of the most important modifiable risk factors to control TMAO levels in the body," said Lu Qi, MD, director of the Tulane University Obesity Research Center and the study's senior author. "No previous prospective cohort study has addressed whether long-term changes in TMAO are associated with CHD, and whether dietary intakes can modify these associations. Our findings show that decreasing TMAO levels may contribute to reducing the risk of CHD, and suggest that gut-microbiomes may be new areas to explore in heart disease prevention."

The study authors found no differences in TMAO levels between the CHD and control participants at the first blood sample collection. TMAO levels examined in the second blood sample collection taken 10 years later were significantly higher the participants with CHD. Every increase in TMAO was associated with a 23% increase in CHD risk. This association remained after controlling for demographic, diet and lifestyle factors, confirming the link between higher TMAO levels and CHD risk.

"The findings of the study provide further evidence for the role of TMAO as a predictive biomarker for heart disease and strengthens the case for TMAO as a potential intervention target in [heart](#) disease prevention," said Paul A. Heidenreich, MD, MS, professor of medicine at the Stanford University School of Medicine, in an accompanying editorial comment. "The results should encourage us to continue to advocate for a more widespread adoption of healthy eating patterns."

More information: *Journal of the American College of Cardiology* (2020). [DOI: 10.1016/j.jacc.2019.11.060](https://doi.org/10.1016/j.jacc.2019.11.060)

Provided by American College of Cardiology

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