

How diet quality affects the gut microbiota to promote health

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(L to R) University of Illinois researchers Hannah Holscher and Alexis Baldeon found that a healthy diet promotes a diverse gastrointestinal microbiome. Credit: Marianne Stein

We know that eating a healthy diet affects body weight, cholesterol levels, and heart health. A new study from the University of Illinois focuses on another component: the role of diet in supporting a healthy gastrointestinal microbiota. The researchers conclude that following the Dietary Guidelines for Americans (DGA) promotes a gut microbiota composition that may support overall health.

"Currently, there is no definition of a 'healthy' microbiome. Understanding how diet may influence the structure of the gut microbiota is important so we can make recommendations on dietary approaches," says Alexis Baldeon, doctoral student in the Division of Nutritional Sciences (DNS), part of College of Agricultural, Consumer and Environmental Sciences at U of I. Baldeon is lead author of the paper, published in *The Journal of Nutrition*.

The microbiota consists of trillions of microorganisms that live in the gastrointestinal tract. They contribute to many [physiological processes](#), and a diverse gut microbiota may promote resilience to disruptions that could contribute to disease.

The researchers analyzed data from the [American Gut Project](#), a large, crowdsourced database that includes fecal samples from thousands of individuals across the U.S. Their study focused on data from a subset of 432 healthy individuals divided into three groups according to how closely they followed the [Healthy Eating Index](#) (HEI), which is based on the DGA.

The group with the highest total HEI score, indicating the strongest compliance with the DGA, had the highest gut microbiota diversity, as well as a larger presence of bacteria that contribute beneficial functions like fiber fermentation, Baldeon says.

"The [gut microbiota](#) is really good at breaking down fiber, which is

important because humans cannot digest fiber. Study participants with a higher diet quality had a greater abundance of bacteria involved in fiber metabolism," he notes.

Dietary guidelines and nutrient recommendations historically haven't included considerations for the microbiota. But that could change in the future, says Hannah Holscher, associate professor in the Department of Food Science and Human Nutrition at U of I and co-author of the study.

"Our work provides clues for specific microbes that may be relevant for monitoring the health of the microbiota and overall health," Holscher says. "Having your microbiome composition tested is currently not part of a standard physical examination. Even if you went out and got your microbiome sequenced today, your doctor or dietitian would not be able to give you strong, evidence-based recommendations from your results. But as we understand more about the interaction of diet, microbiota, and health, some gut microbes may become targets of our dietary recommendations. Just like we currently make recommendations to reduce sodium to lower your [blood pressure](#) or reduce saturated fat to lower your LDL cholesterol, our goal is to make dietary recommendations to nourish beneficial gut microbes."

Health policy is also starting to recognize the importance of the gut microbiome, the researchers say. Indeed, the scientific report for the latest DGA acknowledges that evidence from diet-[microbiota](#) studies should be considered in future dietary recommendations.

Holscher and Baldeon note their study supports the current DGA recommendations for a diet rich in fruits, vegetables and fiber. Following those guidelines, outlined in [MyPlate](#), is still the best strategy for your overall health, including nourishing your gut microbes.

The [paper](#), "Diet Quality and the Fecal Microbiota in Adults in the

American Gut Project," is published in *The Journal of Nutrition*. In addition to Baldeon and Holscher, authors include Daniel McDonald, Antonio Gonzalez, and Rob Knight.

More information: Alexis D. Baldeon et al, Diet Quality and the Fecal Microbiota in Adults in the American Gut Project, *The Journal of Nutrition* (2023). [DOI: 10.1016/j.tjn.2023.02.018](https://doi.org/10.1016/j.tjn.2023.02.018)

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