

Dietary fiber alters gut bacteria, supports gastrointestinal health

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A University of Illinois study shows that dietary fiber promotes a shift in the gut toward different types of beneficial bacteria. And the microbes that live in the gut, scientists now believe, can support a healthy gastrointestinal tract as well as affect our susceptibility to conditions as varied as type 2 diabetes, obesity, inflammatory bowel disease, colon cancer, and autoimmune disorders such as rheumatoid arthritis.

As these microbes ferment fiber in the intestine, short-chain fatty acids and other metabolites are produced, resulting in many health benefits for the host, said Kelly Swanson, a U of I professor of animal sciences.

"When we understand what kinds of fiber best nurture these health-promoting bacteria, we should be able to modify imbalances to support and improve gastrointestinal health," he said.

This research suggests that fiber is good for more than laxation, which means helping food move through the intestines, he added.

"Unfortunately, people eat only about half of the 30 to 35 grams of daily fiber that is recommended. To achieve these health benefits, consumers should read [nutrition labels](#) and choose foods that have high fiber content," said Swanson.

In the placebo-controlled, double-blind intervention study, 20 healthy men with an average fiber intake of 14 grams a day were given [snack bars](#) to supplement their diet. The control group received bars that

contained no fiber; a second group ate bars that contained 21 grams of polydextrose, which is a common fiber food additive; and a third group received bars with 21 grams of soluble corn fiber.

On days 16-21, [fecal samples](#) were collected from the participants, and researchers used the [microbial DNA](#) they obtained to identify which bacteria were present. DNA was then subjected to 454 pyrosequencing, a "fingerprinting" technique that provides a snapshot of all the bacterial types present.

Both types of fiber affected the abundance of bacteria at the phyla, genus, and species level. When soluble corn fiber was consumed, *Lactobacillus*, often used as a probiotic for its beneficial effects on the gut, increased. *Faecalibacterium* populations rose in the groups consuming both types of fiber.

According to Swanson, the shifts in bacteria seen in this study—which occurred when more and differing types of fiber were consumed—were the opposite of what you would find in a person who has poor gastrointestinal health. That leads him to believe that there are new possibilities for using pre- and probiotics to promote intestinal health.

"For example, one type of bacteria that thrived as a result of the types of fiber fed in this study is inherently anti-inflammatory, and their growth could be stimulated by using prebiotics, foods that promote the bacteria's growth, or probiotics, foods that contain the live microorganism," he said.

More information: The study will appear in the July 2012 issue of the *Journal of Nutrition* and is available pre-publication online at www.ncbi.nlm.nih.gov/pubmed/22649263

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