

Two studies discuss how to get benefits of fiber without side effects

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Dietary fiber promotes digestive health but can also cause side effects. University of Illinois researchers evaluate fiber tolerance in two new papers. Credit: Pixabay.com

Fiber-rich food is important for gastrointestinal health, but most

Americans don't get enough in their typical diet. While fiber supplements can help, they can also cause unpleasant side effects such as excessive bloating and gas.

Two new papers from the University of Illinois make it easier for [food manufacturers](#) to amplify fiber in foods and beverages for health benefit without digestive discomfort. Both are published in the journal *Advances in Nutrition*.

The first paper focuses on tolerance and side effects of non-digestible carbohydrates (NDC), an umbrella term for food components the body can't break down.

"The FDA determines if NDCs qualify as dietary fibers. To be a fiber, they must provide a [health benefit](#). These benefits include things like helping with regularity and aiding in the absorption of calcium," explains Annemarie Mysonhimer, doctoral student in Food Science and Human Nutrition at the U of I and lead author on the paper.

The recommended amount of dietary fiber is 14 grams per 1,000 kilocalories, or 28 grams for a typical 2,000 kilocalorie daily diet. But only about 10% of [adult women](#) and 3% of men in the U.S. meet that daily recommendation.

"For most Americans it makes sense to seek out more fiber-rich foods consistent with dietary guidance. Daily fiber supplementation may be recommended by a health professional for some individuals," Mysonhimer says. "You can add fiber-rich food ingredients or a fiber supplement to your morning smoothie, mix it in something you're baking, or sprinkle it on your cereals."

Mysonhimer and co-author Hannah Holscher, associate professor of nutrition at U of I, reviewed findings from more than 100 [clinical trials](#)

that evaluated [dietary fiber intake](#) and included reports of side effects such as gas and bloating, as well as effects on regularity. These trials tested a wide range of intakes, many of which were quite high, to determine how much of a certain fiber would be well tolerated. Few foods or diets currently contain these levels, the researchers note.

Overall, the authors conclude that daily tolerance levels differ widely depending on the type of fiber and how it is consumed. Tolerance can be as low as 4 grams for alginate (derived from brown algae) to 25 grams for soy fiber. Mysonhimer explains there are also individual differences depending on the [gut microbiota](#) (the microbes within our intestinal tract), so each person needs to find their own comfort level.

While mild side effects may be acceptable, more severe abdominal discomfort can interfere with daily life.

"You may need to slowly increase your fiber intake to get the health benefits without excessive discomfort," Mysonhimer says. Because it can take time for the body to adapt to higher fiber intake, she recommends starting with a lower dose and gradually increasing the amount over a few weeks. It is also a good idea to split the dose into smaller portions throughout the day.

In research testing health effects of fiber, study designs vary widely, including doses tested, types of foods, and population segments, making it difficult for food manufacturers to compare fiber ingredient options and select ones that provide health benefits within acceptable consumer tolerance.

To address this challenge, the Institute for the Advancement of Food and Nutrition Sciences (IAFNS), Carbohydrate Committee organized a scientific session at the 12th Vahouny Fiber Symposium. Subsequently, Holscher; George Fahey, professor emeritus of animal sciences at the U

of I; and five other fiber experts published a perspective paper recommending study designs and methods to measure human tolerance to NDCs.

The paper comprises a comprehensive tool for planning future human fiber feeding studies. The scientists included examples of daily and weekly subjective questionnaires in the online supplemental materials so others can easily access them for future studies. The methods outlined in the paper will aid the formulation of fiber-rich foods by enabling relevant comparisons of different fiber types.

"Enriching or fortifying foods with fiber can help narrow the substantial gap between actual and recommended fiber intakes. We hope these two new papers will help scientists design more robust studies on the health effects of dietary fibers while also documenting tolerance symptoms. Our work may also help food makers formulate foods in ways that provide enough fiber to benefit health but limit unpleasant gastrointestinal effects," Holscher says.

More information: Annemarie R Mysonhimer et al, Gastrointestinal Effects and Tolerance of Nondigestible Carbohydrate Consumption, *Advances in Nutrition* (2022). [DOI: 10.1093/advances/nmac094](https://doi.org/10.1093/advances/nmac094)

Hannah D Holscher et al, Perspective: Assessing Tolerance to Nondigestible Carbohydrate Consumption, *Advances in Nutrition* (2022). [DOI: 10.1093/advances/nmac091](https://doi.org/10.1093/advances/nmac091)

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