Comparing heirloom and modern wheat effects on gut health

18 December 2019

Credit: CC0 Public Domain

Amid concerns about gluten sensitivity, increasing numbers of people are avoiding wheat. Most have not been diagnosed with a wheat-related medical condition, yet they seem to feel better when they don't eat gluten-containing foods. A possible explanation is that modern varieties of wheat are responsible. But now, researchers reporting in ACS' *Journal of Agricultural and Food Chemistry* have shown that a popular modern variety does not impair gastrointestinal health in mice compared with heirloom wheat.

When people with celiac disease or other forms of gluten sensitivity eat wheat, they experience gastrointestinal distress and inflammation. However, little is known about whether eating wheat could cause gastrointestinal problems in healthy people. Some have speculated that selective breeding of wheat might have altered the grain in a way that negatively affects gut health. From the late 1800s to 1940s, a variety known as "Turkey" was the major wheat grown in the U.S. Then, selective breading created new types with higher yields and resistance to pests and pathogens. The "Gallagher" variety, introduced in 2012, is now one of the most widely grown bread wheats in the U.S. Great Plains region. Brett Carver, Brenda Smith and colleagues wondered whether eating the modern Gallagher variety would increase gastrointestinal problems in healthy mice relative to a blend of two heirloom wheats, Turkey and "Kharkof."

To simulate a Western-type diet, which has itself been linked to chronic inflammation and disease, the researchers fed mice chow that was high in sugar and fat. Then, they added either heirloom or modern wheat to the food, at a level that resembled normal-to-high human consumption. Signs of gut inflammation were similar between mice fed the heirloom and modern varieties, although heirloom wheat slightly reduced levels of the pro-inflammatory cytokine interleukin-17. However, modern Gallagher wheat improved the structure of villi—fingerlike projections that absorb nutrients—in a specific region of the small intestine compared with heirloom wheat. These findings indicate that a modern wheat variety did not compromise gut barrier function or contribute to inflammation in healthy mice compared with its heirloom predecessors, the researchers say.

More information: Bryant H. Keirns et al, A Comparative Study of Modern and Heirloom Wheat on Indicators of Gastrointestinal Health, *Journal of Agricultural and Food Chemistry* (2019). DOI: 10.1021/acs.jafc.9b05851

Provided by American Chemical Society