# Test improves detection of proteins in starch; aids in 'gluten-free' labeling

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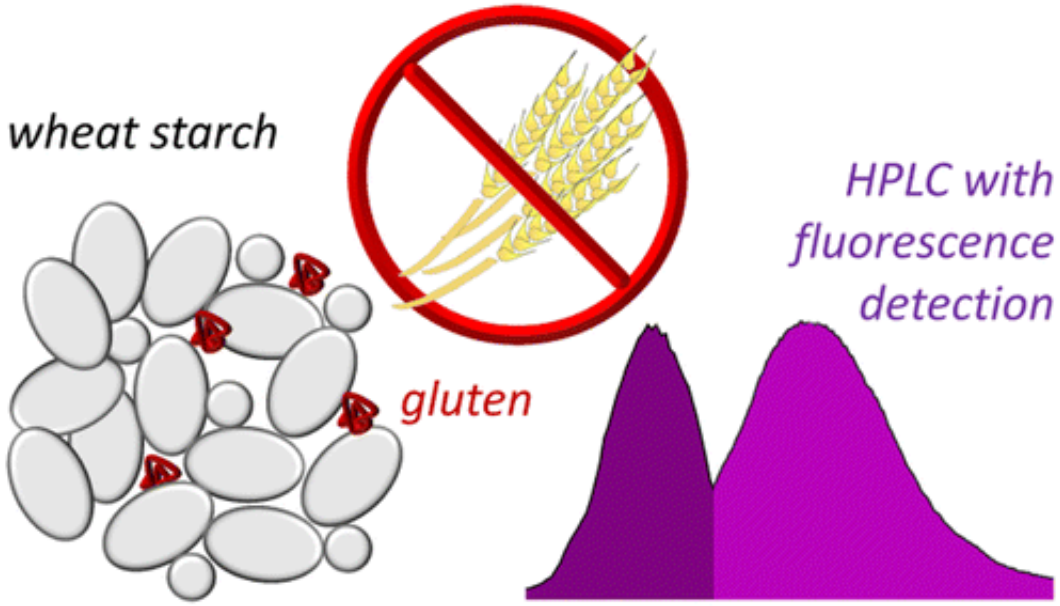


Credit: American Chemical Society

For people with celiac disease, wheat allergies or gluten sensitivity, the options for gluten-free foods are growing. But knowing for sure whether products marketed as such are truly safe to eat can be more complicated than just reading a label. Now scientists, reporting in ACS' *Journal of Agricultural and Food Chemistry*, have developed a more reliable way for manufacturers to detect gluten in purified wheat starch, a common ingredient in foods labeled gluten-free.

Gluten is a mixture of proteins in the starch of wheat, rye and barley grains that can be broken down into two subgroups: prolamins (wheat gliadins) and glutelins (wheat glutenins). When people with celiac disease, wheat allergies or gluten sensitivity consume these proteins, they can experience a range of symptoms from diarrhea and vomiting to fatigue and migraines. Current testing for gluten in foods involves running an enzyme-linked immunosorbent assay, or ELISA. Although the method determines gliadin levels accurately, its measurements of glutenins are less reliable. Katharina Anne Scherf and colleagues wanted to find a more comprehensive approach.

The researchers combined gel-permeation high-performance liquid chromatography with fluorescence detection to develop a sensitive technique that can detect both gliadins and glutenins in purified wheat starch. The new method identified higher amounts of gluten in 19 out of 26 starch samples than the ELISA analyses did. And, according to the new test, 12 samples that had been labeled gluten-free contained between 25.6 and 69 milligrams of gluten per kilogram of starch. The U.S. Food and Drug Administration and the United Nations' Food and Agriculture Organization have set the maximum limit for gluten in products labeled gluten-free at 20 mg/kg.

**More information:** Katharina Anne Scherf et al. Improved Quantitation of Gluten in Wheat Starch for Celiac Disease Patients by Gel-Permeation High-Performance Liquid Chromatography with Fluorescence Detection (GP-HPLC-FLD), *Journal of Agricultural and Food Chemistry* (2016). DOI: 10.1021/acs.jafc.6b02512

Provided by American Chemical Society

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