

Could non-gluten proteins play a role in celiac disease?

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Although gluten-free foods are trendy among the health-conscious, they are necessary for those with celiac disease. But gluten, the primary trigger for health problems in these patients, may not be the only culprit. Scientists are reporting in *ACS' Journal of Proteome Research* that people with the disease also have reactions to non-gluten wheat proteins. The results could help scientists better understand how the disease works and could have implications for how to treat it.

Armin Alaedini, Susan B. Altenbach and colleagues point out that celiac disease symptoms are triggered when someone with the disease eats wheat, rye or barley. Research has shown that the group of proteins known as gluten, which in wheat make up about 75 percent of all proteins, causes an [immune reaction](#) in people with celiac disease. As a result, patients experience problems, such as diarrhea, abdominal pain, anemia and [nutritional deficiencies](#). Currently, the only recommended treatment is to avoid gluten-containing foods altogether. Scientists have largely ignored non-gluten proteins, and the few studies on their potential role in celiac disease produced conflicting results. Alaedini and Altenbach's teams wanted to further investigate the matter.

The researchers found that a substantial number of the subjects with celiac disease and dermatitis herpetiformis (a rash associated with the disease) had an immune reaction to five groups of non-gluten proteins. The scientists conclude that current and future research into clinical treatments for [celiac disease](#) should take non-gluten proteins into account.

More information: Specific Non-Gluten Proteins of Wheat are Novel Target Antigens in Celiac Disease Humoral Response, *J. Proteome Res.*, Just Accepted Manuscript

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Abstract

While the antigenic specificity and pathogenic relevance of immunologic reactivity to gluten in celiac disease have been extensively researched, the immune response to non-gluten proteins of wheat has not been characterized. We aimed to investigate the level and molecular specificity of antibody response to wheat non-gluten proteins in celiac disease. Serum samples from patients and controls were screened for IgG and IgA antibody reactivity to a non-gluten protein extract from the wheat cultivar *Triticum aestivum* 'Butte 86'. Antibodies were further analyzed for reactivity to specific non-gluten proteins by two-dimensional gel electrophoresis and immunoblotting. Immunoreactive molecules were identified by tandem mass spectrometry. Compared with healthy controls, patients exhibited significantly higher levels of antibody reactivity to non-gluten proteins. The main immunoreactive non-gluten antibody target proteins were identified as serpins, purinins, α -amylase/protease inhibitors, globulins, and farinins. Assessment of reactivity towards purified recombinant proteins further confirmed the presence of antibody response to specific antigens. The results demonstrate that, in addition to the well-recognized immune reaction to gluten, celiac disease is associated with a robust humoral response directed at a specific subset of the non-gluten proteins of wheat.

Provided by American Chemical Society

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