

Cross-Reaction between Gliadin and Different Food and Tissue Antigens

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ABSTRACT

A subgroup of coeliac disease patients continues to experience symptoms even on a gluten-free diet (GFD). We attempted to determine whether these symptoms could be due to either cross-contamination with gluten-containing foods or cross-reactivity between α -gliadin and non-gluten foods consumed on a GFD. We measured the reactivity of affinity-purified polyclonal and monoclonal α -gliadin 33-mer peptide antibodies against gliadin and additional food antigens commonly consumed by patients on a GFD using ELISA and dot-blot. We also examined the immune reactivity of these antibodies with various tissue antigens. We observed significant immune reactivity when these antibodies were applied to cow's milk, milk chocolate, milk butyrophilin, whey protein, casein, yeast, oats, corn, millet, instant coffee and rice. To investigate whether there was cross-reactivity between α -gliadin antibody and different tissue antigens, we measured the degree to which this antibody bound to these antigens. The most significant binding occurred with asialoganglioside, hepatocyte, glutamic acid decarboxylase 65, adrenal 21-hydroxylase, and various neural antigens. The specificity of anti- α -gliadin binding to different food and tissue antigens was demonstrated by absorption and inhibition studies. We also observed significant cross-reactivity between α -gliadin 33-mer and various food antigens, but some of these reactions were associated with the contamination of non-gluten foods with traces of gluten. The consumption of cross-reactive foods as well as gluten-contaminated foods may be responsible for the continuing symptoms presented by a subgroup of patients with coeliac disease. The lack of response of some CD patients may also be due to antibody cross-reactivity with non-gliadin foods. These should then be treated as gluten-like peptides and should also be excluded from the diet when the GFD seems to fail.

KEYWORDS

Cross-Reaction; Gliadin; Food Antigens; Tissue Antigens; Celiac Disease; Gluten-Free Diet

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