

CLINICAL SPECIFICATIONS

WHEAT GERM AGGLUTININ

Function:

The biological function of Wheat Germ Agglutinin (WGA) in wheat is unknown; however, its suggested function is to protect against fungal infection due to its ability to bind to chitin-containing cell walls. WGA is a lectin protein that binds to N-acetylglucosamine (GlcNAc) and is a binder of gram-positive bacteria via GlcNAc moieties in the peptidoglycan layer of the cell wall.

Antibodies Appear:

Celiac disease⁶
 Diabetes^{2,3}
 Gastrointestinal disorders¹
 Gastrointestinal endocytosis⁴

Known Cross-Reactions: Lysozyme aka muramidase or N-acetylmuramide glycanhydrolase⁷

Clinical Significance:

The presence of antibodies to Wheat Germ Agglutinin (WGA) is an indication of food sensitivity. The offending food and its known cross-reactive foods should be eliminated from the diet. Patients with gluten-sensitive enteropathy (Celiac disease)⁶ and/or Insulin-Dependent Diabetes Mellitus² typically have high levels of IgG antibodies against WGA. IgA antibodies against WGA are found in patients with gluten-sensitive enteropathy (Celiac disease).⁶ Genetically susceptible people, prone to diabetes, have higher incidence of spontaneous Type 1 Diabetes when exposed to wheat antigens in association with a pro-inflammatory gastrointestinal environment.³ Therefore, if antibodies to Wheat are elevated, consider follow-up testing of intestinal barrier integrity.

References:

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3. Mojibian, et al. Diabetes-specific HLA-DR-restricted proinflammatory T-cell response to wheat polypeptides in tissue transglutaminase antibody negative patients with type 1 diabetes. *Diabetes*, 2009; 58:1789-1796.
4. Pustai, et al. Antinutritive effects of wheat-germ agglutinin and other N-acetylglucosamine-specific lectins. *Brit J Nutri*, 1993; 70:313-321.
5. Rüdiger and Gabius. Plant lectins: occurrence, biochemistry, functions and applications. *Glycoconjugate J*, 2001; 18(8):589-613.
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