CYREX® Laboratories

CLINICAL SPECIFICATIONS

ALPHA GLIADIN + GLIADIN TOXIC PEPTIDE

Function:

A glycoprotein in wheat α-Gliadin is an alcohol-soluble protein. Gliadin Toxic Peptides (GTPs) are a group of peptides highly resistant to digestion. GTPs bind to receptors on intestinal epithelial cells.

Associated With:

Celiac disease[1]
Autism[2]
Crohn's disease[3]

Known Cross-Reactions: Cerebellar[2]

Clinical Significance:

Detection of antibodies to gliadin may indicate abnormal mucosal immune response, intestinal barrier dysfunction, and cognitive decline.[4] Studies on neurological effects[5] after gluten ingestion have given rise to the possibility of gluten playing a role in Alzheimer's disease (AD). The outcome of GTPs varies from individual to individual because different ligands for the same receptor induce very different biological effects. GTPs may cause a release of zonulin, signaling intestinal tight junctions to open, which puts the body at risk for autoimmunity; another threat to the intestinal barrier is GTP's ability to break down endothelial cell cytoskeletal structures.[6] Wheat proteins play multiple roles in the gut-brain axis. The existence of ataxia is quite common in non-celiac gluten sensitive (NCGS) patients with cerebellar ataxia being the most frequently diagnosed neurological syndrome; neuropathologically, there is cerebellar degeneration in this condition.[reviewed in 7] Antibodies made against $A\beta_{42}$ peptide cross-react with both alcohol- and water-soluble components of wheat.[4] This indicates that patients with circulating antibodies to alpha-gliadin and GTP may be at greater risk for AD and other neurological disorders when the blood-brain barrier is breached.

References:

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2. Vojdani et al. Immune response to dietary proteins, gliadin and cerebellar peptide in children with autism. Nutr Neurosci, 2004; 7(3):151-161.
3. Vojdani and Vojdani. Gluten and non-gluten proteins of wheat as target antigens in autism, Crohn's and Celiac disease. J Cereal Sci, 2017; 75:252-260.
4. Vojdani and Vojdani. Immunoreactivity of Anti-AβP-42 Specific Antibody with Toxic Chemicals and Food Antigens. J Alzheimers Dis Parkinsonism, 2018; 8(3):1-11.
5. Hadjivassiliou et al. Neurological dysfunction in coeliac disease and non-coeliac gluten sensitivity. Am J Gastroenterol, 2016; 111(4):561-567.
6. Lammers et al. Gliadin induces an increase in intestinal permeability and zonulin release by binding to the chemokine receptor CXCR3. Gastroenterology, 2008; 135(1):194-204.
7. Daulatzai. Non-celiac gluten sensitivity triggers gut dysbiosis, neuroinflammation, gut-brain axis dysfunction, and vulnerability for dementia. CNS Neurol Disord Drug Targets, 2015; 14(1):110-131.

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