CYREX® Laboratories

CLINICAL SPECIFICATIONS

TRANSGLUTAMINASE-6

Function:

Transglutaminases are a family of enzymes. They form protein polymers, like scaffolding, which are vital in the formation of barriers and stabilizing structures. Tissue Transglutaminase-6 (tTG6) is expressed in neural tissue.[2] The tTG6 enzyme is not commonly expressed in the small intestine but can be found in mucosal antigen-presenting cells.[2] Commercial food industry uses transglutaminase to bind proteins together in the making of processed meats, including fish and imitation meats.[5]

Antibodies Appear:

Celiac disease[2]
Cerebral Palsy[3]
Gluten Ataxia[1,2]
Gluten Ataxia with Enteropathy[2]
Gluten Reactivity[2]
Idiopathic sporadic ataxia[2]
Peripheral Neuropathy[1,2]

Known Cross-Reactions: Transglutaminase-2 and -3[2]

Clinical Significance:

Its close homology to tTG2 and tTG3 provides a clear possibility that tTG6 could be involved in the pathogenesis of gluten reactivity–related neurological dysfunction.[2] Researchers speculate that autoimmunity against tTG6 may result from early brain damage and associated inflammation.[3] Patients with high levels of antibodies against tTG6 are suspected of having autoimmunity against neuronal tissue. Neuronal clinical conditions may manifest as Cerebral Palsy,[3] Gluten Ataxia[1,2] or Peripheral Neuropathy.[1,2] Antibodies may appear in serum before the clinical onset of symptoms. Patients with positive antibodies to tTG6 should be assessed for increased intestinal permeability or "leaky gut."

References:

1. Aeschlimann, et al. Detection of conformation-specific antibodies to transglutaminase 6 in neurology patients. 14th Annual International Coeliac Disease Symposium 2011, Oslo, Norway; Poster Presentation.
2. Hadjivassiliou, et al. Autoantibodies in gluten ataxia recognize a novel neuronal transglutaminase. Ann Neurol, 2008; 64(3):332–343.
3. Stenberg, et al. Autoantibodies to Transglutaminase 6 in children with cerebral palsy. 14th Annual International Coeliac Disease Symposium 2011, Oslo, Norway; Poster Presentation.
4. Vojdani, et al. Immune response to dietary proteins, gliadin and cerebellar peptides in children with autism. Nutri Neuroscience, 2004; 7(3):151-161.
5. Yokoyama, et al. Properties and applications of microbial transglutaminase. Appl Microbiol Biotechnol, 2004; 64:447-454.

A3XSPEC_05162018_RevA0