

CLINICAL SPECIFICATIONS

TUNA, CANNED

Antigens Made From:

Cooked tuna extracted from a can.

Associated With:

Tuna immune reactivity

Known Cross-Reactions: A β ₄₂ peptide;¹ Marlin²

Clinical Significance:

A recent study showed that anti-amyloid beta (A β ₄₂) reacted strongly with canned tuna, aluminum, phthalates and mercury bound to HSA.¹ Antibodies to canned tuna, and to a lesser extent, raw tuna, and their cross-reactivity with A β ₄₂, may contribute to cognitive decline. Individually, or in combination, the mercury in the tuna and possibly the aluminum and plasticizers used in the can may change the molecular structure of tuna protein so that the result is a strong reaction with the A β ₄₂-specific antibody.¹ Due to cross-reactivity, possible connections between food antigens and human autoimmunity has been previously suggested because proteins in nature can have a similarity in sequence and structure to certain human tissues.^{1,3-6} Reactivity to canned tuna may be used to develop and implement an immune-targeted dietary plan, which includes the avoidance of triggering and known cross-reactive foods. Furthermore, when followed over time, avoidance/prevention treatment plans tailored and supervised by the ordering healthcare professional may help repair the gut barrier, re-establish oral tolerance to the offending food, and prevent/reverse cognitive decline.^{3,7,8} Due to cross-reactivity with A β ₄₂ peptide,¹ patients with circulating antibodies to canned tuna may be at greater risk for AD and other neurological disorders when the blood-brain barrier is breached.

References:

1. Vojdani and Vojdani. Immunoreactivity of anti-A β P-42 specific antibody with toxic chemical food antigens. *J Alzheimers Dis Parkinsonism*, 2018; 8(3):1-11.
2. Kondo et al. Parvalbumin is not responsible for cross-reactivity between tuna and marlin: A case report. *J Allergy Clin Immunol*, 2006; 118(6):1382-1383.
3. Vaishnav et al. Aquaporin 4 molecular mimicry and implications for neuromyelitis optica. *J Neuroimmunol*, 2013; 260:92-98.
4. Agris et al. Plant DNA topoisomerase 1 is recognized and inhibited by human SCI-70 sera autoantibodies. *Exp Cell Res*, 1990; 189:276-279.
5. Lunardi et al. Glycine-rich cell wall proteins act as specific antigen targets in autoimmune and food allergic disorders. *Int Immunol*, 2000; 12(5):647-657.
6. Bullard-Dillard et al. Anti-Sm autoantibodies of systemic lupus erythematosus cross react with dietary plant proteins. *Immunol Invest*, 1992; 21(3):193-202.
7. Cordain et al. Modulation of immune function by dietary lectins in rheumatoid arthritis. *Br J Nutr*, 2000; 83:207-217.
8. Atkinson et al. Food elimination based on IgG antibodies in irritable bowel syndrome: a randomized controlled trial. *Gut*, 2004; 53(10):1459-1464.