

CLINICAL SPECIFICATIONS

MERCURY COMPOUNDS

Chemical Found In:

Mercury (Hg) is a heavy chemical element that is emitted to the air by human activities, such as manufacturing or burning coal for fuel, and from natural sources, such as volcanoes. It is deposited, via ecosystem transport, into lakes and oceans, where it bioaccumulates in fish. According to the US EPA, “nearly all methylmercury exposures in the U.S. occur through eating fish and shellfish.”¹ In addition, mercury is used in thermometers, barometers, float valves, mercury switches, and other devices where exposure can occur with device breakage. It is also found in amalgam material for dental restorations, energy-efficient light bulbs, and is used in scientific research applications.

Sources:

<https://www.epa.gov/mercury>

Known Cross-Reactions:

Clinical Significance:

The detection of antibodies to Mercury bound to human protein in serum indicates a breakdown in immunological tolerance and induction of chemical intolerance. Mercury or its metabolites can bind to human tissue proteins and form neo-antigens. These new antigens are comprised of the haptenic chemical plus the tissue antigen. The formation of neo-antigens initiates an immune response which may result in antibody production against the chemical and the human tissue. Continued exposure to the chemical and the subsequent production of antibodies against various tissue antigens, may result in autoimmune reactivity.

Persons with antibodies to Mercury bound to human protein in serum should avoid exposure to the substance.

References:

1. <http://www.epa.gov/hg/exposure.htm>
2. Dufault, et al. Mercury exposure, nutritional deficiencies and metabolic disruptions may affect learning in children. Behavioral and Brain Functions, 2009, 5:44 doi:10.1186/1744-9081-5-44.
3. Gallagher and Meliker. Mercury and thyroid autoantibodies in U.S. women, NHANES 2007–2008. Environ Internl, 2013; 40:39–43.
4. Havarinasab and Hultman. Organic mercury compounds and autoimmunity. Autoimmun Rev, 2005; 4:270– 275.
5. Heyer, et al. Chronic low-level mercury exposure, BDNF polymorphism, and associations with self-reported symptoms and mood. Toxicologic Sci, 2004; 81:354–363.
6. Pigatto and Guzzi. Linking mercury amalgam to autoimmunity. Trends Immunol, 2009; 31(2):48-49.