CYREX® Laboratories

CLINICAL SPECIFICATIONS

AFLATOXINS (saliva)

Chemical Found In:

Aflatoxins are organic chemical compounds produced by a polyketide pathway by many strains of the mold Aspergillus, *Aspergillus flavus* is a particular strain common contaminant in agricultural products such as wheat, peanuts and corn.

Associated With:

Loss of oral tolerance

Known Cross-Reactions:

Clinical Significance:

The presence of salivary antibodies to Aflatoxins bound to human proteins is an indication of loss of mucosal tolerance and mucosal immune reactivity to dietary Aflatoxins. Once infiltrating the human body, Aflatoxin or its metabolites can bind to human tissue proteins and form neo-antigens. In animal studies, dietary aflatoxins were shown to have an inflammatory effect on the intestines and thus increase intestinal permeability to large molecules.[6, 7] 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. Aflatoxin exposure can occur via airborne spores entering through the lung barrier, ingested food products entering through the intestinal barrier, or contacted spores entering through the skin barrier. Inhaled spores result first in activation of mucosal production of SIgA in body secretions, including saliva.[5] One study has shown a correlation between the level of antibodies to Aflatoxins and cumulative exposure of Aflatoxins over a period of several months.[3] Thus, the severity of aflatoxin harmfulness can be compounded by factors such as vitamin deficiency, caloric deprivation, alcohol abuse, and infectious disease status.[1] Aflatoxosis can suppress immune function, including lowering secretory IgA (SIgA) levels.[4] Due to the vital role SIgA plays in host defense, insufficient SIgA levels may cause a heightened vulnerability to microbial diseases, worsen he effects of malnutrition, and interact synergistically with other toxins.[1, 4] Animal studies show that Aflatoxin interferes with vitamins A and D, iron, selenium and zinc nutrition.[2] Persons with salivary antibodies to Aflatoxins bound to human proteins should avoid exposure to the substance.

Suggested Reading:

1. Bennett and Klich. Mycotoxins. Clin Microbial Rev, 2003; 16(3):497-516.
2. Quazi and Fayyaz. Aflatoxin contaminated foods and health risk perspective for Pakistani population. Mycopath, 2006; 4(2):27-34.
3. Sun, et al. Determinants of formation of aflatoxin-albumin adducts: a seven-twnship study in Taiwan. Br J Cancer, 2002; 87:966-970.
4. Turner, et al. Modification of immune function through exposure to dietary aflatoxin in Gambian children. Environ Health Perspect, 2003; 111:217-220.
5. Vojdani, et al. Saliva secretory IgA antibodies against molds and mycotoxins in patients exosed to toxigenic fungi. Immunopharmacol Immunotoxicol, 2003; 25(4):595-614.
6. Grenier and Applegate. Modulation of intestinal functions following mycotoxin ingestion: meta-analysis of published experiments in animals. Toxins, 2013; 5:396-430.
7. Akbari, et al. The intestinal barrier as an emerging target in the toxicological assessment of mycotoxins. Arch Toxicol, 2017; 91:1007-1029.