CYREX® Laboratories

CLINICAL SPECIFICATIONS

TOTAL SECRETORY IgA (saliva)

Function:

Mucosal surfaces are the first lines of defense against invasion and colonization by pathogenic microorganisms. The principal molecule of mucosal immune responses is Secretory IgA (SIgA), a complex of polymeric IgA and the epithelial cell-derived secretory component. Upon activation, B-cells in the mucosa form these complexes, which, through polymeric IgA receptors (pIgR), bind to the mucus layer protecting the gut epithelium, thereby preventing antigen attachment to the intestinal wall and its subsequent penetration of the intestinal lining. Mechanisms of defense include agglutination, mucus trapping, neutralization of enzymes, toxins and viruses and interaction with innate anti-microbial factors. Immunoglobulin A is the only isotype that can be selectively passed across mucosal walls to reach the lumens of organs lined with mucosal cells.

Low Levels Associated With:

Adenoid hyperplasia
Adrenal insufficiencies
Celiac disease
Chronic stress
Congenital rubella
Crohn's disease
Cutaneous candidiasis
Epstein-Barr virus
High Cortisol production
Immune hypersensitivity
Intestinal barrier dysfunction
Medications
Mucosal immune deficiency
Nutritional deficiencies
Recurrent herpes infection
Recurrent tonsillitis
Ulcerative colitis

High Levels Associated With:

Acute stress
Alcoholism
Chronic GI infection
Chronic dental/oral infection
Heavy smoking
Intestinal barrier dysfunction
Medications
Orophanrygeal carcinoma

Clinical Significance:

Proper levels of SIgA minimize inflammatory responses to immune complexes and reduces the likelihood of negative pathophysiological consequesnces.[4,6] Deficiency of IgA is the most common primary immune imperfection, affecting 1 in 300 to 1 in 18,500 individuals depending on the population studied.[3] Most IgA-deficient people are healthy, however others may be suffer from allergy, recurrent infections, autoimmune disease or neoplasia.[2,6] Increasing SIgA may be achieved by up-regulating pIgR expression, which is regulated by stimulants that include LPS, dietary proteins and peptides, hormones[5] (glucocoricoids, of which cortisol is the most important) and cytokines (TNF-α, IL-4, IFN-γ).[4] Severe protein malnutrition has been shown to result in reduced pIgR expression.[4] Secretion of saliva from submanibular glands depends on signals from nerves, with sympathetically-mediated stimuli (acetylcholine, norepinephrine, epinephrine, dopamine) contributing to two times greater output of IgA than parasympathetic stimulation.[1]

Suggested Reading:

1. Carpenter, et al. The influence of nerves on the secretion of immunoglobulin A into submandibular saliva in rats. J Physiol, 1998; 512(2):567-573.
2. Heneghan, et al. Celiac sprue and immunodeficiency states: a 25-year review. J Clin Gastroenterol, 1997; 25(2):421-425.
3. Hirvonen, et al. A sensitive enzyme immunoassay for the measurement of low concentrations of IgA. J Immunol Methods, 1993; 163:59-65.
4. Kaetzel, et al. The polymeric immunoglobulin receptor (secretory component) mediates transport of immune complexes across epithelial cells: a local defense function for IgA. Proc Natl Acad Sci, 1991; 88:8796-8800.
5. Li, et al. Transcriptional control of the murine polymeric IgA receptor promoter by blucocorticoids. Am J Physiol, 1999; 276:G1425-G1434.
6. Mayer. Immunodeficiency and mucosal Immunity: an overview, in Mestecky J et al, eds. Mucosal Immunology (Vol 2). Elsevier Academic Press, New York; 2005.