CYREX® Laboratories

CLINICAL SPECIFICATIONS

STREPTOCOCCUS MUTANS

Pathogen Type:

A gram-positive bacterium, *Streptococcus mutans* is a known oral cavity pathogen. It may play a role in dental caries. *S. mutans* may also contribute to extra-intestinal tissue disorders.

Associated With:

Dental caries-active[1]
Psoriasis[2]
Cardiovascular disorders[3,4]

Known Cross-Reactions:

Myosin,[3] heart tissue[4]

Clinical Significance:

The detection of antibodies to *S. mutans* indicates the patient may have increased risk of autoimmune cardiovascular disorders. Key for pathogenic streptococci, is the acquisition of nutrients in the survival within and exploitation of the host. *S. mutans* is most successful in the internalization of glucose, galactose, mannose, GlcNAc, and GlcN.[5] This allows *S. mutans* to out-compete other members of the oral microbiome and thus thrive in the host.[5] *S. mutans* is also capable of eliciting potent inflammatory cytokine responses, including interferon-γ, interleukin-4 and interleukin-10, in peripheral blood mononuclear cell cultures.[6] Inflammatory cytokines lead to autoimmunity as seen in the pathogenesis of psoriasis and autoimmune cardiovascular disorders. The detection of IgG antibody against *S. mutans*-specific toxin as well as pathobiont and keystone pathogen such as *Porphyromonas gingivalis* (*P. gingivalis*) toxin in blood, not only can be an indication of microbiota dysbiosis and binding of the toxins to the dental and gum surfaces, but can also be an indication of intestinal barrier damage and systemic inflammation.

This array tests for IgG immune reactivity associated with *Streptococcus mutans*. This is not a measurement of acute infection. Equivocal or out-of-range results indicate IgG antibody reactivity to the tested antigen. We tested 288 blood donor sera against *S. mutrans* antigens at optimal dilution, 10% of these donors were IgG reactive.

References:

1. Lehtonen, et al. Amount and avidity of salivary and serum antibodies against *Streptococcus mutans* in two groups of human subjects with different dental caries susceptibility. Infect Immun, 1984; 43(1):308-313.
2. Valdimarsson, et al. Psoriasis: a T-cell-mediated autoimmune disease induced by streptococcal superantigens. Immunol Today, 1995; 16(3):145-149.
3. Ackermans, et al. Anti-IgG antibodies in rheumatic diseases cross-react with *Streptococcus mutans* SR antigen. Clin Exp Immunol, 1991; 85:265-269.
4. Ferretti, et al. Cross-reactivity of *Streptococcus mutans* antigens and human heart tissue. Infect Immun, 1980; 30(1):69-73.
5. Moye, et al. Fueling the caries process: carbohydrate metabolism and gene regulation by *Streptococcus mutans*. J Oral Microciol, 2014; 6:24878.
6. Hahn, et al. Cytokine induction by *Streptococcus mutans* and pulpal pathogenesis. Infect Immun, 2000; 68(12):6785-6789.