

IL-1 Ra (Interleukin 1 Receptor Antagonist)

Analyte: Interleukin-1 receptor antagonist

Specimen Type: Serum, Inquire for additional option(s)

Optimum Volume: 1.0 mL

Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
3 days	6 months	1.4 years

Reporting Units: pg/mL

Method: ELISA

Biological or Clinical Significance:

Interleukin-1 receptor antagonist (IL-1ra; also know as IL-1F3) is a 22 – 25 kDa member of the IL-1 family of cytokines. It is an acute phase protein that exists to dampen inflammation. IL-1 (β) is initially produced by monocytes in response to a variety of stimuli. Circulating IL-1 then binds to widely expressed IL-1 type I receptors (IL-1 RI) and initiates a number of pro-inflammatory events. On endothelial cells (EC), IL-1 induces PGE2 and IL-6 release, generating fever, thrombocytosis, and hepatic acute phase protein production. In synovial joints, IL-1 induces chondrocyte nitric oxide production, an event that leads to reduced collagen synthesis and chondrocyte apoptosis. Finally, IL-1 increase neutrophil counts, both in blood and tissue, and thus is able to promote a pro-inflammatory environment in multiple locations. IL-1ra blocks IL-1 action through competitive inhibition. More correctly, although IL-1ra fills the IL-1 binding site in IL-1 RI, it is also unable to orchestrate the creation of a signal-transducing IL-1 RI:IL-1R Accessory protein (IL-1 R AcP) heterodimer complex. Effective IL-1ra concentrations are generally 100-fold greater than local IL-1 concentrations. This is because the IL-1ra half-life is but 6 minutes, and very few IL-1 type I receptors need to be engaged by IL-1 to elicit a cellular response.

Principle of Test Method:

The IL-1ra method is a solid phase ELISA designed to measure IL-1ra in cell culture supernates, serum and plasma. This assay employs the quantitative sandwich enzyme immunoassay technique.

References:

1. Jacques C, Gosset M, Berenbaum F, et al. The role of IL-1 and IL-1Ra in joint inflammation and cartilage degradation. *Vitam Horm.*
2. Danis VA, Millington M, Hyland VJ, Grennan D. Cytokine production by normal human monocytes: inter-subject variation and relationship to an IL-1 receptor antagonist (IL-1Ra) gene polymorphism. *Clin Exp Immunol* 1995; 99:303-310.