C2C (Collagend Type II Cleavage), Serum

**Analyte:** Collagen Type II Cleavage

**Specimen Type:** Serum

**Optimum Volume:** 1 mL

2-8°C  -20°C  -70°C
2 days  11 days  1 year

**Reporting units:** ng/mL

**Method:** ELISA

**Biological or Clinical Significance:**

Joint cartilage is composed of a type II collagen-based fibrillar network complexed to proteoglycans. Type II collagen consists of three identical α chains arranged in a triple helix that form fibrils. Small-diameter fibrils are formed pericellulary, while larger fibrils (up to 300 nm in diameter) are formed in the territorial and interterritorial matrix. Between the collagen fibrils and in association with them are many other matrix molecules, the most common and largest of which is the large aggregating proteoglycan aggrecan. Aggrecan forms aggregates with hyaluronic acid which interact with the collagen fibrillar network.

In osteoarthritis (OA), type II collagen is extensively cleaved and destroyed by the activity of collagenases, which results in loss of type II collagen. A measurable increase in type II collagen denaturation is observed in early OA with a net loss of this molecule. This is associated with increased cleavage of collagen by collagenases. This is accompanied by an increase in the synthesis of type II collagen and aggrecan which are however, often damaged. Different collagenases, namely MMP-1, MMP-8, MMP-13, and MMP-14, can cleave type II collagen. MMP-13 plays probably the greatest role in pathology of OA degrading the larger collagen fibrils in the territorial and interterritorial matrix. MMP-1 is probably more involved in the degradation of newly synthesized collagen.

The neoepitope that is created by the cleavage of type II collagen by collagenases at the C terminus of the primary cleavage site is recognized by the C2C antibody.

Serum C2C is also increased in rheumatoid arthritis (RA) and baseline levels are prognostic of progression.

Autoimmunity to type II collagen plays role in the pathogenesis of rheumatoid arthritis (RA),
eye disease associated with RA and relapsing polychondritis. In these diseases circulating antibodies to type II collagen are found in rheumatoid cartilage, synovium, and in serum.

**Principle of Test Method:**

The C2C assay is a competitive immunoasay.

**References:**