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Technical Information

C2C

Neoepitope (at C-terminus of 3/4 peptide) generated through cleavage of type-II collagen by collagenases

Cat. No.:	60-1001-001
Tests:	96
Method:	**ELISA**
Range:	10–1000 ng/ml
Incubation time:	2.5 hours
Sample volume:	25 µl (dilute 1:2)
Sample type:	Serum (also used for plasma, urine, synovial fluid, cell and tissue culture and cartilage extracts).
Sample preparation:	Serum samples should be aliquoted, rapidly frozen and stored at -70 °C. Avoid repeated freezing/thawing of samples. Serum: stable > 1 year at -70 °C.
Species:	Human (also used for bovine, rabbit, dog, guinea pig, rat, horse, rhesus macaque, sheep). The use of mouse samples may lead to high background interference.
Cross reaction:	No cross-reaction with uncleaved triple-helical and heat-denatured human collagen types I and II and uncleaved alpha-chains of collagen types I and II. No cross-reaction with correspondingly cleaved alpha-chains of collagen type-I

Intended use:

The C2C neoepitope is generated by the cleavage of type II collagen by collagenases and is found at the C terminus of the 3/4 length type II collagen collagenase cleavage product and any subsequent degradation products of this large peptide which contain the C-terminal C2C neoepitope (Billinghurst et al., 1997; Poole et al., 2004). The assay can be used to analyse degradation in articular cartilages revealing increased cleavage of type II collagen by collagenases (Dejica *et al,* 2008). Serum C2C is increased in rheumatoid arthritis (RA) and baseline levels are prognostic of progression (Verstappen *et al,* 2006). Singly, or in combination with the C1,2C and CPII assays together with clinical information, Early serum biomarker responses to therapy at 1 month are predictive of radiologic changes at 12 months (Mullan *et al*.2007).

There are a number of low molecular weight peptides present in human urine containing the C2C neoepitope (King et al., 2006). Nemirovskiy et al. (2007) recently characterized these peptides in detail using liquid chromatography-tandem mass spectrometry and demonstrated that a 45 aa peptide in particular was produced specifically by MMP-13 in human cartilage. MMP-13 is thought to be the predominant MMP involved in the pathology of OA. This MMP-13 specific 45 mer with the C-terminus C2C neoepitope containing peptides was found in rat urine. In a cross-sectional population-based study of human subjects with knee pain, (Cibere et al A&R, 2009) reported that higher levels of urinary C2C neoepitope were significantly associated with symptomatic radiographic and symptomatic pre-radiographic MRI detected OA compared to subjects with knee pain but no evidence of OA. Thus, C2C neoepitope was elevated in urine prior to radiographically visible damage in this population of individuals with knee pain. Thus, the C2C neoepitope in urine and serum may have clinical relevance.

As a ratio to CPII, serum C2C is indicative of progression/non-progression of knee OA (Cahue et al, 2007).This is of much potential value in establishing cohorts for clinical trials.

In patients with RA, C2C together with C1,2C and CPII provide indications of early responses to biologic therapy that are predictive of what is seen almost a year later (R.Mullan et al, 2007).

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