

Technical Information

C2C HUSA™

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

Cat. No.:	60-1017
Tests:	96
Method:	ELISA
Range:	156-5000 pg/ml
Detection limit:	70 pg/ml
Incubation time:	2 hours
Sample volume:	30 µl
Sample type:	Second Morning void urine is recommended, but spot urine samples may be used.
Sample preparation:	Store urine samples at 4°C for 24 hours, for longer storage store at -20°C. Frozen samples should be thawed gradually at room temperature; vortex and centrifuge or allow sedimentation for a minimum of 30 minutes.
Reference values:	uC2C levels in urine vary with age. In normal healthy individuals: uC2C levels are very high in growing babies and children, and decrease substantially in healthy adults. Active exercise may increase the uC2C levels.
Species:	Human
Cross reaction:	No cross reactivity with corresponding neopeptide peptides derived from collagen I and collagen III is detected.

Intended use:

- The C2C is a specific biomarker for cartilage degradation.
- The C2C biomarker can be used to monitor drug intervention in pre-clinical and clinical research:
 - C2C levels increase with addition of MMP enzymes
 - C2C levels are modulated with addition of MMP inhibitors
- Increased uC2C levels appear to be predictive of ROA and pre-ROA

Background:

Joint cartilage is composed of a type II collagen-based fibrillar network complexed to proteoglycans. Type II collagen consists of 3 identical α chains arranged in a triple helix that form fibrils.

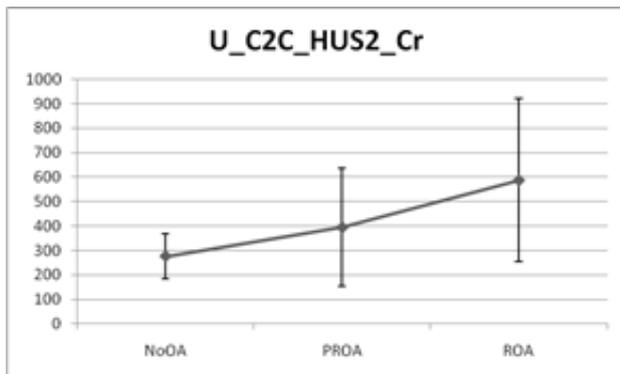
Within this fibrillar meshwork resides the large aggregating proteoglycan aggrecan. In arthritis, type II collagen is extensively cleaved and destroyed by the activity of collagenases, which results in loss of type II collagen (Billinghurst et al., 1997).

Different collagenases, namely MMP-1, MMP-8 and MMP-13, can cleave type II collagen. Fragments containing the neopeptide created at the C terminus of the $\frac{3}{4}$ piece of type II collagen cleavage product (C2C neopeptide fragments) are recognized by the C2C antibodies which are specific to type II collagen.

The C2C HUSA™ is a colour-monitoring sandwich immunoassay that measures the C2C neoepitope fragments longer than 20 amino acids, present in human urine samples. It has been reported that a 45-mer peptide is the most abundant C2C neoepitope fragment in human urine samples (Nemirovskiy et al., 2007)

A strong correlation of increased uC2C levels with increased risks of having Osteoarthritis (OA) and/or Rheumatoid Arthritis (RA).

**Relative uC2C levels from
3 groups of OA patients**



NoOA: Normal non-OA samples (30)
PROA : Pre-radiographically defined OA (120)
ROA: Radiographically defined OA (100)

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