

ICTP (CTX-MMP)

Analyte: C-Terminal Telopeptide Type I Collagen, CTX-MMP

Specimen Type: Serum

Optimum Volume: 0.5 mL

2-8°C -20°C -70°C

1 day 1 month 1 month

Reporting units: ug/L

Method: RIA

Biological or Clinical Significance:

Pyridinoline cross-linked carboxyterminal telopeptide of type I collagen, ICTP, is the carboxyterminal telopeptide of type I collagen, joined through trivalent crosslinks and released during the degradation of mature type I collagen. Type I collagen is the most abundant collagen type in the body and the only collagen type found in the mineralized bone. It accounts for more than 90% of organic bone matrix. In addition, type I collagen is found in loose connective tissues together with other collagen types.

Type I collagen in tissues is present in fibers, the structure of which shows some tissue-specific variation. In bones type I collagen molecules are crosslinked via three residues of hydroxylysine, lysine or their derivatives which form a fluorescent, cyclic pyridinoline-structure and non-fluorescent unknown structures linking three different collagen polypeptide chains together. In loose connective tissues, the major mature cross-link of type I collagen is non-fluorescent and contains histidine as one of the amino acid residues.

ICTP is found in an immunochemically intact form in blood, where it seems to be derived from bone resorption and degradation of loose connective tissues. ICTP is produced through action of e.g., matrix metalloproteinases, which are enzymes involved in tissue destruction in various pathological conditions. Therefore, increased serum concentrations of ICTP are associated with increased lysis of bone, such as multiple myeloma, osteolytic metastases, and rheumatoid arthritis. Renal insufficiency, glomerular filtration rate of ≤ 50 mL/min/1.73m² leads to elevated ICTP concentrations in blood. The liver does not seem to be involved in the metabolism of the serum ICTP antigen. As ICTP is not produced through physiological, Cathepsin-K mediated bone resorption, its concentration is less affected by menopause, for example.

Principle of Test Method:

The ICTP assay is a competitive radioimmunoassay.