CHEMICON INTERNATIONAL

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MT1-MMP [MMP-14]
RECOMBINANT PRODOMAIN-CATALYTIC DOMAIN-HEMOPEXIN DOMAIN
(MT1-MMP PROENZYME)

CATALOG NUMBER: CC1043

LOT NUMBER: 21040960

QUANTITY: 5 µg

CONCENTRATION: 5 µg/25µL

BACKGROUND:

Matrix metalloproteinases (MMPs) are Zn^{2+}- and Ca^{2+}-dependent endopeptidases which function in the turnover of extracellular matrix components [3]. Presently, eighteen secreted MMPs and five membrane-type MMPs [4-7] are known to be expressed in vertebrates. Human MT1-MMP consists of 559 amino acid residues with a calculated Mr of 63516 [4,5]. The following domains and sequence regions are distinguished in MT1-MMP: Prodomain (Ser1-Arg88), catalytic domain (Tyr89-Gly261), junction between catalytic domain and hemopexin domain (Gly262-Gly292), hemopexin-like domain (Pro293-Cys485) and C-terminal sequence (Pro486-Val559) with transmembrane segment. A soluble form of MT1-MMP without transmembrane segment has been found in culture medium of a breast carcinoma cell line [8].

MT1-MMP is expressed in adult lung, placenta, kidney, ovaries, intestine, prostate and spleen [5]. Increased amounts of the enzyme are found in tumor tissues such as lung carcinoma [2], gastric carcinoma [9], breast, head and neck carcinoma [10].

MT1-MMP is activated by removal of its prodomain. The reaction is catalyzed by furin, a subtilysin-type serine protease, which recognizes a motif of four basic amino acid residues located between the prodomain and catalytic domain [11].

MT1-MMP activates progelatinase A [4,12,13] and procollagenase-3 [14] by proteolytic cleavage of their domains. The ability of MT1-MMP to activate other matrix metalloproteinases provides potential for enhanced pericellular proteolysis in physiological and pathological processes. In particular, activation of progelatinase A by MT1-MMP is considered to contribute to local degradation of extracellular matrix during cell migration and proliferation. MT1-MMP also hydrolyzes fibrillar collagens I, II and III into characteristic ¾ and ¼ fragments [1,15] and it cleaves a number of other ECM proteins, including fibronectin, vitronectin, laminin-1 and dermatan sulfate proteoglycan [1,11,15]. The activity of MT1-MMP is poorly inhibited by TIMP-1 but efficiently inhibited by TIMP-2 and TIMP-3 [13].

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DESCRIPTION: CC1043 is a recombinant polypeptide sequence produced as a periplasmic protein in E. coli. The proenzyme consists of MT1-MMP residues corresponding to Ser1-Val501 followed by tone Thr-residue and six His-residues. The calculated Mr of the recombinant soluble proenzyme is 58200 Da.

PURITY: Appears as a predominant band at 58 kDa in SDS-PAGE (>80% total protein).

APPLICATIONS: Useful as an antigen standard in immunoassays. The proenzyme can be activated with trace amounts of MT1-MMP catalytic domain [1,2].

PRESENTATION: Provided as a liquid in 50 mM Tris-HCl, pH 7.5, 150 mM NaCl, 5 mM $CaCl_2$.

STORAGE/HANDLING: Maintain frozen at -70°C in undiluted aliquots. The enzyme may be stored at –20°C for several weeks. Repeated freezing and thawing should be avoided.

REFERENCES:

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For research use only; not for use in diagnostic procedures.

Important Note: *During shipment, small volumes of product will occasionally become entrapped in the seal of the product vial. For products with volumes of 200 µL or less, we recommend gently tapping the vial on a hard surface or briefly centrifuging the vial in a tabletop centrifuge to dislodge any liquid in the container's cap.*