

Product Information

Anti-Matrix Metalloproteinase-14, N-Terminal antibody produced in rabbit, affinity isolated antibody

Product Number **M5808**

Product Description

Anti-Matrix Metalloproteinase-14 (MMP-14, MT1-MMP), N-terminal is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 185-299 in the N-terminal region of human matrix metalloproteinase-14 (membrane-type matrix metalloproteinase-1), conjugated to KLH. The antibody is purified through a protein G column and eluted out with both high and low pH buffers and neutralized immediately after elution, followed by dialysis against phosphate buffered saline.

Anti-MMP-14, N-Terminal may be used for the detection and localization of human MMP-14 by immunoblotting, immunohistochemistry, and ELISA. The antibody specifically binds to MMP-14 and does not cross-react with the other MMP family members (MMP-1, MMP-2, MMP-3, MMP-9, etc). By immunoblotting against the reduced protein, the antibody reacts primarily with a band at ~65 kDa.

The matrix metalloproteinases (MMPs) are a family of at least eighteen secreted and membrane-bound zinc-endopeptidases. Collectively, these enzymes can degrade all the components of the extracellular matrix, including fibrillar and non-fibrillar collagens, fibronectin, laminin, and basement membrane glycoproteins. In general, a signal peptide, a propeptide, and a catalytic domain containing the highly conserved zinc-binding site characterize the structure of the MMPs. In addition, fibronectin-like repeats, a hinge region, and a C-terminal hemopexin-like domain allow categorization of MMPs into the collagenase, gelatinase, stomelysin, and membrane-type MMP subfamilies.¹⁻³ MMPs contain the motif His-Glu-X-X-His (X represents any amino acid) that binds zinc in the catalytic site, as well as another zinc molecule and two calcium molecules structurally. They fall within the matrixin subfamily and are EC designated 3.4.24.x. This group also contains astacin, reprolysin, and serralysin, as well as other more divergent metalloproteinases. All MMPs are synthesized as proenzymes, and most of them are secreted from the cells as proenzymes. Thus, the activation of these proenzymes is a critical step that leads to extracellular matrix breakdown.

MMPs are considered to play an important role in wound healing, apoptosis, bone elongation, embryo development, uterine involution, angiogenesis,⁴ and tissue remodeling, and in diseases such as multiple sclerosis,^{2,5} Alzheimer's,² malignant gliomas,² lupus, arthritis, periodontitis, glomerulonephritis, atherosclerosis, tissue ulceration, and in cancer cell invasion and metastasis.⁶ Numerous studies have shown there is a close association between expression of various members of the MMP family by tumors and their proliferative and invasive behavior and metastatic potential.

MMP-14, also known as membrane-type matrix metalloproteinase-1 (MT1-MMP) activates gelatinase-A (MMP-2).⁷ The expression of MMP-14 appears to be constant in all fibroblastic cells. MMP-14 degrades collagens types I, II, and III, gelatin, aggrecan, fibronectin, laminin and vitronectin, and proteoglycans.⁸ MT-MMPs contain a cleavage site for furin proteinases between the propeptide and the catalytic domain, providing basis for furin-dependent activation of latent MT-MMPs prior to secretion. However, it appears that cleavage at the furin site is not required for activation of MT1-MMP.⁹ Interestingly, proMMP-14 is secreted in complex with TIMP-2 and it is activated by plasmin.¹⁰

MMP-14 is associated with tumor cells and by activating MMP-2, it promotes tissue invasion and metastasis. It also serves as a membrane receptor for TIMP-2, allowing it to bind with high affinity to the C-terminal of MMP-2. The human MMP-14 gene has the chromosomal location of 14q12.2.

Reagent

Supplied in phosphate buffered saline containing 0.09% (w/v) sodium azide.

Protein concentration: 0.5 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store at –20 °C. For continuous use, the antibody may be stored at 2–8 °C for up to six months. For extended storage, the solution may be aliquoted and frozen at –20 °C. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile

Immunoblotting: a working dilution of 1:100-1:500 is determined using a A375 lysate.

Indirect ELISA: a working dilution of 1:1,000 is recommended.

Immunohistochemistry: a working dilution of 1:50-1:100 is determined using formalin-fixed, paraffin-embedded human cancer tissue sections.

Note: In order to obtain best results and assay sensitivity in various techniques and preparations, we recommend determining optimum working dilutions by titration.

References

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