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ProductInformation

ANTI-MATRIX METALLOPROTEINASE-7 (MMP-7), N-Terminal of active enzyme
Developed in Rabbit, Affinity Isolated Antibody

Product Number **M8808**

Product Description

Anti-Matrix Meltalloproteinase-7 (MMP-7) is developed in rabbit using a synthetic peptide corresponding to the aminoterminal end of the active enzyme of human matrix metalloproteinase-7 (matrilysin, PUMP) as immunogen. The antibody is affinity purified using peptide agarose.

Rabbit Anti-MMP-7 specifically binds to MMP-7 and does not cross-react with other MMP family members (MMP-1, MMP-2, MMP-3, etc). By immunoblotting against the reduced protein, the antibody reacts with bands at 28 kDa and 18 kDa (the pro- and active-forms, respectively). It also reacts with non-reduced MMP-7. The antibody may be used for immunoprecipitation, immunohistochemistry and ELISA.

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, the structure of MMPs is characterized by a signal peptide, a propeptide, and a catalytic domain containing the highly conserved zinc-binding site. 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.[1,2,3] MMPs contain the motif His-Glu-Xaa-His 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, periodontis, glumerulonephritis, atherosclerosis, tissue ulceration, and in cancer cell invasion and metastasis.[6] Numerous studies have shown that there is a close association between expression of various members of the MMP family by tumors and their proliferative and invasive behavior and metastaic potential.

The tissue inhibitors of metalloproteinases (TIMPs) are naturally occurring proteins that specifically inhibit matrix metalloproteinases and regulate extracellular matrix turnover and tissue remodeling by forming tight-binding inhibitory complexes with the MMPs. Thus, TIMPs maintain the balance between matrix destruction and formation. An imbalance between MMPs and the associated TIMPs may play a significant role in the invasive phenotype of malignant tumors.

MMPs and TIMPs can be divided into two groups with respect to gene expression: the majority exhibit inducible expression and a small number are produced constitutively or are expressed at very low levels and are not inducible. Among agents that induce MMP and TIMP production are the inflammatory cytokines TNF-α and IL-1β. A marked cell type specificity is a hallmark of both MMP and TIMP gene expression (i.e., a limited number of cell types can be induced to make these proteins).

Matrix Metalloproteinase-7 (MMP-7, EC 3.4.24.23) was first discovered in the involuting rat uterus. It is also known as matrilysin, putative MP I (PUMP1), uterine MP, and is a member of the gelatinase family. It is the smallest member (28 kDa) of the MMP family and lacks the COOH-terminal pexin-like domain shared by other MMPs.. MMP-7 is expressed in epithelial cells of normal and diseased tissues. MMP-7 degrades collagen IV and X, gelatin, casein, laminin, aggrecan, entactin, elastin, versican and fibrinogen. MMP-7 is activated by plasmin and MMP-3. It is implicated in the activation of other proteinases such as plasminogen,

MMP-1, MMP-2, and MMP-9. It is frequently expressed in various types of cancer including colon, stomach, prostate, and brain cancers. MMP-7 is overexpressed in 80% of human colorectal cancers and known to be an important factor for early tumor growth, with a potential function also for later progression steps, like invasion and metastasis. In addition, MMP-7 also regulates intestinal α-defensin activation in innate host defense,[7] releases TNF-α in a model of herniated disc resorption, and cleaves FasL to generate a soluble form in a model of prostate involution.[8] MMP-7 is upregulated by PMA, TNF-α, EGF and IL-1.

The human MMP-7 gene has the chromosomal location of 11q21-q22.

Reagents

Rabbit Anti-MMP-7, N-Terminal of active enzyme is supplied in 0.01 M phosphate buffered saline, pH 7.4, containing 50% glycerol and 15 mM sodium azide as preservative.
Protein concentration is approximately 1 mg/ml.

Precautions and Disclaimer

Due to the sodium azide content a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8°C for up to one month. For extended storage, the solution may be stored 0° to –20°C. The antibody is supplied with 50% glycerol to prevent freezing. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile

A working dilution of 1:1,000 is determined by immunoblotting using a concentrated cell culture media from a stimulated human cell line, and an alkaline phosphatase conjugated secondary antibody using BCIP/NBT as substrate. Higher antibody concentrations may be necessary for non-human samples.

Note: Low protein levels produced (pg/ml) often require concentration of cell culture media to visualize the bands by immunoblotting. MMP-7 does not appear to be produced by most quiescent cells, but treatment of many cell types with the phorbol ester TPA stimulates production of MMP-7.

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

References

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