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Product Information

Anti-Matrix Metalloproteinase-9, Hinge region
produced in rabbit, affinity isolated antibody

Catalog Number **M5427**

Synonym: Anti-MMP-9

Product Description
Anti-Matrix Meltalloproteinase-9, Hinge region, is produced in rabbit using as immunogen a synthetic peptide corresponding to the hinge region (surrounding amino acid 475) of human MMP-9 (gelatinase B). The antibody is epitope affinity purified rabbit IgG.

Anti-MMP-9, Hinge region, specifically binds to gelatinase B and does not cross-react with other MMP family members. By immunoblotting, the antibody reacts with a major immunoreactive band at 65 kDa and a faint band at ~92 kDa. Anti-MMP-9 may be used for the detection and localization of MMP-9 by various immunochemical techniques such as immunoblotting, immunoprecipitation, 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.

Matrix Metalloproteinase-9 is also known as gelatinase B, 92 kDa type IV collagenase. Expression of MMP-9 is more restricted than MMP-2: it is produced by keratinocytes and stored in the granules of neutrophils and eosinophils, but not expressed by dermal fibroblasts. MMP-9 degrades gelatin, type IV, V and XIV collagens, α2-macroglobulin, elastin, vitronectin and proteoglycans. MMP-2 and MMP-9 are thought to play an important role in the final degradation of fibrillar collagens after initial cleavage by collagenases. Interestingly, recent reports provide evidence that both gelatinases also possess collagenolytic activity. MMP-2 cleaves native type I collagen to N-terminal ¾ and C-terminal ¼ fragments identical to those generated by collagenases.[8] In addition, MMP-9, which is expressed specifically by osteoclasts during murine fetal development and in adult human bone, has shown to cleave type I, II and V collagens in the N-terminal nonhelical telopeptide.[9] It is therefore possible that due to their ability to initiate and continue degradation of fibrillar collagen of type I, MMP-2 and MMP-9 play a more important role in the remodeling of collagenous ECM than has been previously thought.

In general, inducers such as PMA, EGF, IL-1β, or TNFα enhance MMP-9 production without altering MMP-2 levels, and TGFβ, which downregulates most MMPs, enhances both MMP-2 and MMP-9 expression.[10] The human MMP-9 gene has the chromosomal location of 20q12-13.

Reagent
Supplied in phosphate buffered saline, pH 7.4, containing 0.05% sodium azide.

Protein concentration; ~0.2 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
For continuous use, the antibody may be stored at 2-8 °C for up to one year. For extended storage, the solution may be stored at –20 °C. Avoid freezing and thawing.

Product Profile
Immunoblotting: the recommended working concentration is 0.5-2 μg/mL using PMA-stimulated A431 cell line.

Indirect ELISA: the recommended working concentration is 0.1-1 μg/mL.

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

References

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