Genorise® Recombinant Canine MMP-1

Catalog Number: GR122050

Matrix metalloproteinase-1 (MMP-1) also known as interstitial collagenase and fibroblast collagenase is an enzyme that is encoded by the *MMP1* gene.[1] MMP-1 has an archetypal structure consisting of a pre-domain, a pro-domain, a catalytic domain, a linker region and a hemopexin-like domain.[2] The Catalytic Domains of MMPs share very similar characteristics, having a general shape of oblate ellipsoid with a diameter of ~40 Å. The Catalytic Domain of MMP-1 is composed of five highly twisted β-strands (sI-sV), three α-helix (hA-hC) and a total of eight loops, enclosing a total of five metal ions, three Ca^{2+} and two Zn^{2+}, one of which with catalytic role. The Catalytic Domain (CAT) of MMP-1 starts with the F100 (non-truncated CAT) as the first amino-acid of the N-terminal loop of the CAT domain. A specific region (183)RWTNNFREY(191) has been identified as a critical segment of matrix metalloproteinase 1 for the expression of collagenolytic activity.[3] On C-terminal part of the CAT Domain the hB α-helix, known as the "active-site helix" encompasses part of the "zinc-binding consensus sequence" HEXXHXXGXXH that is characteristic of the Metzincin superfamily.[4] The α-helix hB finishes abruptly at Gly225 where the last loop of the domain starts. This last loop contains the "specificity loop" which is the shortest in the MMPs family. The Catalytic Domain ends at Gly261 with α-helix hC. MMPs are involved in the breakdown of extracellular matrix in normal physiological processes, such as embryonic development, reproduction, and tissue remodeling, as well as in disease processes, such as arthritis and metastasis. Specifically, MMP-1 breaks down the interstitial collagens, types I, II, and III. Mechanical force may increase the expression of MMP1 in Bovine periodontal ligament cells.[13] MMP1 has been shown to interact with CD49b.[14][15]

References

1. Brinckerhoff CE, et al. (1987). *J. Clin. Invest.* **79** (2): 542–6.
2. Li J, et al. (1995). *Structure* **3** (6): 541–9.
3. Chung L, et al. (2000). *J. Biol. Chem.* **275** (38): 29610–7.
4. Bode W, et al. (1993). *FEBS Lett.* **331** (1-2): 134–40.
5. Huang SF, et al. (2008). *Eur. J. Oral Sci.* **116** (4): 319–23.
6. Dumin JA, et al. (2001). *J. Biol. Chem.* **276** (31): 29368–74.

Related products

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Genorise® Recombinant Canine MMP-1 Protein DataSheet

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Description

Source: *E. coli* derived
Composition: Ala181-Cys465
Accession # A0A8I3RPH1
N-terminal Sequence Analysis: Ala
Structure/Form: Monomer
Predicted Molecular Mass: 31 kDa

Specifications

SDS-PAGE: 31 kDa, reducing conditions
Activity: Measured by its ability to cleave a fluorogenic peptide substrate Mca-KPLGL-Dpa-AR-NH2. The specific activity is 450 pmol/min/μg, as measured under the described conditions.
Endotoxin Level: < 1 EU per 1 μg of the protein by the LAL method.
Purity: > 95%, by SDSPAGE under reducing conditions and visualized by silver stain.
Formulation: Lyophilized from a 0.2 μm filtered PBS with BSA as a carrier protein.

Preparation and Storage

Reconstitution: Reconstitute at 100-500 μg/mL in sterile PBS containing 0.1% Canine or bovine serum albumin.
Shipping: The product is shipped at ambient temperature or in a foam box with ice pads. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage: Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months from date of receipt, -20 to -70°C as supplied.
- 1 month, -20 to -70°C under sterile conditions after reconstitution.

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN CANINES AND ANIMALS.

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