



Genorise® Recombinant Human MMP-1

Catalog Number: GR119222

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

1. GR238016 50 ml Reagent Reservoir, 100/case, 5 packs/case (pack of 20)
2. GR238004 Tissue Culture 96-well Microplate, individually packed, Case of 50
3. GR238019 1.5 ml Microcentrifuge tube with screw cap and free-standing, pack of 500
4. GR238007 125 ml leak-resistant HDPE bottle, colorless, pack of 24
5. GR238002 Microplate 12x8-Well Strip High Binding, Case of 50
6. GR238003 Microplate 12x8-Well Strip Medium Binding, Case of 50
7. GR238032 42592 Costar Stripwell Microplate 1 x 8 Flat Bottom, High Binding, Case of 100
8. GR238001 468667 Thermo Microplate 12x8-Well Strip Nunc Maxisorp F8, Case of 60
9. GR238031 96-well microplate sealer plastic, pack of 100



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Description

Source: *E. coli* derived

Composition: Pro187-Asn469

Accession # P03956

N-terminal Sequence Analysis: Pro

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 SDS-PAGE 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% human 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 HUMANS AND ANIMALS.

**FOR LABORATORY RESEARCH USE ONLY
NOT FOR USE IN HUMANS AND ANIMALS**