

Technical Bulletin

MMP-2 Pre-Activated Human Recombinant

≥ 1,000 pmol/min/μg, expressed in HEK 293 cells

SAE0175

Storage Temperature -70 °C

E.C. 3.4.24.24

Synonyms: 72 kDa gelatinase, Gelatinase A, Matrix metalloproteinase-2, TBE-1, MMP-2

Product Description

Matrix Metalloproteinase-2 (MMP-2) is a member of the matrix metalloproteinase (MMP) family of proteins. MMPs participate 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.¹ MMP-2 cleaves a plethora of substrates, including extracellular matrix components (collagens, fibronectin, and elastin), soluble metabolic mediators (apolipoproteins, for example), secreted and extracellular matrix-anchored growth factors, and cytokines.^{2, 3, 4}

Along with MMP-9, MMP-2 is involved many pathophysiological processes, including leukocyte migration from the circulation into the tissue during inflammation⁵, Chagas' Cardiomyopathy⁶, heart failure⁷ and chronic kidney disease⁸. MMP-2 thus may be regarded as a potential therapeutic target.

As with most MMPs, MMP-2 is secreted as an inactive pro-protein which is activated when cleaved by extracellular proteinases.¹ This product was pre-activated *in vitro* using 4-aminophenylmercuric acetate (APMA). Thus, it is active and ready for use. The highly toxic APMA was removed from the final preparation.

This product is expressed in human HEK 293 cells as a glycoprotein with a calculated molecular mass of 72 kDa (amino acids 110-660). The DTT-reduced protein migrates as a 75-80 kDa polypeptide on SDS-PAGE because of glycosylation. An additional 3 minor bands of ~ 50 kDa, ~ 37 kDa and ~ 25 kDa may appear. This protein is produced in human cells, without the use of serum.

The human cells expression system allows human like glycosylation and folding, and often supports higher specific activity of the protein. This recombinant protein is expressed without artificial tags.

This product is supplied as a 0.22 μm-filtered solution, containing 20 mM Trizma®, pH 7.5, containing 8 mM CaCl₂, 119 mM NaCl, 20% Glycerol and 0.05% Brij® 35.

The specific activity of this recombinant human MMP-2 is measured by its ability to cleave the fluorogenic peptide:
Mca-Pro-Leu-Gly-Leu-Dpa-Ala-Arg-NH₂.

Specific activity: ≥ 1,000 pmol/min/μg

Purity (Sum of all peaks): ≥ 95% (SDS-PAGE)

(The related product SAE0174, MMP-2 human recombinant ≥ 1,000 pmol/min/μg, expressed in HEK 293 cells), is not activated).

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the product at -70 °C. The product retains its activity for at least 2 years as supplied. After initial thawing, it is recommended to store the protein in working aliquots at -70 °C.

References

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3. Iyer, R.P. et al., *Am. J. Physiol. Heart. Circ. Physiol.* **303**: H919–H930 (2012).
4. Page-McCaw, A. et al., *Nat. Rev. Mol. Cell. Biol.* **8**: 221–233 (2007).
5. Hannocks, M.J. et al., *Matrix. Biol.* **75–76**: 102–113 (2019).
6. Medeiros, N.I. et al. *Parasite Immunol.* **39(8)**: 1–8 (2017).
7. Radosinska, J. et al., *Panminerva Med.* **59(3)**: 241–253 (2017).
8. Cheng, Z. et al., *Int. J. Mol. Sci.* **18(4)**: 776 (2017).

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