Recombinant Human MMP-7 (carrier-free)

Catalog# / Size	761302 / 10 µg 761304 / 25 µg 761306 / 100 µg
Regulatory Status	RUO
Other Names	Matrilysin, Matrix Metalloproteinase 7, MMP7, MMP
Description	Matrix metalloproteinases (MMPs) are a family of zinc-dependent endopeptidases that degrade components of the extracellular matrix (ECM) and play essential roles in various physiological and pathological processes such as morphogenesis, differentiation, angiogenesis, tissue remodeling, and tumor invasion. A typical MMP consists of a pro-peptide of about 80 amino acids, a catalytic metalloproteinase domain of about 170 amino acids, a linker peptide of variable lengths and a hemopexin domain of about 200 amino acids. The zinc binding motif HEXXHXXGXXH in the catalytic domain, and the "cysteine switch" motif PRCGXPD in the pro-peptide are common structural signatures. MMP-7, Matrilysin, is one of the smallest members of the MMP family consisting of a pro-peptide domain and a catalytic domain. It can degrade casein, laminin, fibronectin, collagen type III/IV/V/IX/X/XI, gelatin type I/II/IV/ V, elastin, and proteoglycans. MMP-7 is secreted specifically by epithelial cells and its over-expression has been observed in many tumor types such as colorectal cancer, epidermolysisbullosa associated skin cancer, bladder cancer, gastric cancers, pancreatic cancer and esophageal cancer. This enzyme serves essential functions in both innate defense and wound healing, and appears to be one of the most important MMPs in human colon cancers. It has been reported that MMP-7 contributes to tumor malignancy probably by cleaving cell surface proteins such as Fas ligand (reducing its effectiveness in triggering Fas-mediated apoptosis) and E-cadherin (disruption to the E-cadherin/beta-catenin complex results in a switch to a more invasive phenotype in cancer cells). In addition, degradation of IgG by MMP-7 may protect tumor cells from the immune system, since cleavage of IgG will remove much of the immunoglobulins' functionality.

Product Details

Source	Human MMP-7, amino acids Leu18-Lys267 (Accession# NM_002423) with a C-terminal TG-8H-GGQ tag was expressed in CHO cells.
Molecular Mass	The 263 amino acid recombinant protein has a predicted molecular mass of approximately 29.4 kD. The DTT-reduced and non-reduced proteins migrates at approximately 29 kD by SDS-PAGE.
Purity	>90% as determined by Coomassie stained SDS-PAGE.
Formulation	0.22 µm filtered protein solution is in pH 5.5 MES buffer containing 20 mM MES, 10 mM $CaCl_2$, 150 mM NaCl, and 20% glycerol.
Endotoxin Level	Less than 1 EU per µg of protein as determined by the LAL method.
Concentration	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg size and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	Unopened vial can be stored at -20°C or -70°C for six months. For maximum results, quick spin vial prior to opening. **Avoid repeated freeze/thaw cycles**.
Activity	Human MMP-7 cleaves a fluorogenic peptide substrate Mca-PLGL(Dpa)AR with a specific activity value > 500 pmol/µg/min.
Recommended Usage	Bioassay
Application Notes	**Human MMP-7 Activity Assay** Human MMP-7 (hMMP-7) activity is measured by its ability to cleave a fluorogenic peptide substrate Mca-PLGL(Dpa)AR after its activation in the presence of p-Aminophenylmercuric acid. The increase of the product is monitored by increase in intensity of fluorescence at 405 nm with excitation at 320 nm. **Materials**

1. Assay Buffer: TCNB (50 mM Tris, 10 mM CaCl2, 150 mM NaCl, 0.05% Brij-35, pH 7.5)
2. Recombinant Human MMP-7
3. Substrate: MCa-PLGL(Dpa)AR
4. 4-Aminophenylmercuric acetate (APMA)

Activity Assay Procedures

1. Dilute hMMP-7 in the assay buffer at 50 µg/mL.
2. Activate hMMP-7 by adding APMA to a final concentration of 1 mM.
3. Incubate the activating mixture for 30 minutes at 37°C.
4. Dilute the activated hMMP-7 to 0.4 ug/mL (0.4 ng/µL) in Assay Buffer.
5. Dilute the substrate at 20 µM in Assay Buffer.
6. Load into a well plate 50 µL of the 0.4 ng/µL hMM-7 and start the reaction by adding 50 µL of 20 µM Substrate. Include a substrate blank containing 50 µL Assay Buffer and 50 µL of 20 µM Substrate without any hMMP7.
7. Read the product formation by measuring 320/405 nm (Excitation/Emission) in kinetic mode for 5 minutes.
8. The final hMMP-7 concentration is 0.2 µg/mL (200 ng/ml, 20 ng) and the substrate is 10 µM.

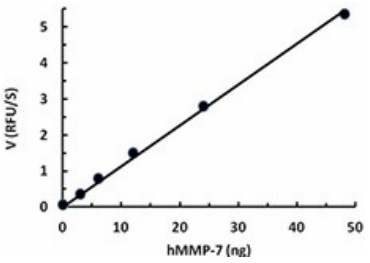
This protein is in the latent form and needs to be activated for bioassay.

BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our 100% satisfaction guarantee. If you have any concerns, contact us at tech@biolegend.com.

Antigen Details

Structure	Monomer.
Distribution	High protein expression in liver, gall bladder, endometrium, and uterus/BM314 colon cancer cell, K562 Leukimia cell, CAPAN-2.
Function	ECM remodeling and wound healing; TIMPs are known inhibitor of MMP-7.
Interaction	Extracellular Matrix (ECM).
Ligand/Receptor	TIMP-1, TIMP-2, TIMP-4.
Bioactivity	ECM remodeling by degrading ECM components.
Biology Area	Angiogenesis, Cell Adhesion, Cell Biology, Neuroinflammation, Neuroscience, Stem Cells
Molecular Family	Enzymes and Regulators
Antigen References	1. Basu S, *et al.* 2015. *PLoS One.* 10:e0123979. 2. Tallant C, *et al.* 2010. *Biochim. Biophys. Acta.* 1803:20. 3. Nagase H, *et al.* 2006. *Cardiovasc. Res.* 69:562. 4. Rundhaug JE. 2005. *J. Cell. Mol. Med.* 9:267. 5. Mott JD, Werb Z. 2004. *Curr. Opin. Cell. Biol.* 16:558. 6. Kioi M, *et al.* 2003. *Oncogene.* 22(54):8662-70.
Gene ID	4316

Product Data



The activity of hMMP-7 was measured with 10 µM of fluorogenic MMP substrate, Mca-PLGL-Dpa-AR-NH2, in the presence of 3, 6, 12, 24, 48 ng of activated hMMP-7. The activity of activated hMMP-7 is >500 pmole/µg/min.

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