Data Sheet (Cat.No.T201393)

TargetMol

Collagenase Type II

Chemical Properties

CAS No. :

Formula:

Molecular Weight:

Storage: Keep away from moisture,Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Collagenase Type II, an endopeptidic matrix metalloproteinase MMP-8 derived from the bacterium Clostridium histolyticum, preferentially degrades type I collagen and is commonly used in tissues requiring high digestive efficiency such as pancreas and liver.
Targets(IC50)	MMP
In vitro	Collagenase Type II is commonly used to isolate primary cells from tissues such as the heart, skeletal muscle, liver, thymus, salivary glands, and cartilage[1]. Instructions for Use (1)Dissolution: Dissolve Collagenase Type II in Hank's Balanced Salt Solution (HBSS) to a concentration of 1 mg/mL, then filter through a 0.2 μm filter for sterility. Common working concentrations are 0.5-2.5 mg/mL (for tissue and cell dissociation) and 1-2 mg/mL (for cartilage digestion). The exact concentration can be adjusted based on experimental conditions or literature recommendations. (2)Tissue or Cell Layer Treatment**: Cover small tissue pieces or cell layers with the collagenase solution and incubate at 37°C. Cut the tissue into 3-4 mm pieces and wash with HBSS containing Ca^{2+} and Mg^{2+}. Add the collagenase solution to fully immerse the tissue pieces and incubate at 37°C for 4-18 hours (depending on the tissue type). A horizontal shaker can be used, and 3 mM of $CaCl_2$ can be added to improve digestion efficiency. (3)Check for Cell Separation: Observe the tissue under a microscope to ensure cells have been successfully dissociated. (4)Centrifugation and Washing: After dissociation, immediately centrifuge the cell suspension and wash twice with buffer to remove residual collagenase, as fresh culture medium will not stop the enzyme's activity. (5)Resuspension and Culturing: Resuspend the cells in fresh culture medium and continue culturing.
In vivo	In a rabbit model, in the knee joint experiment, Collagenase Type II (4 mg/mL, 250 μL) was injected into the right knee, followed by a repeat injection after 3 days, while the left knee received a saline injection as the control. The **Results** showed that the right knee exhibited edema and increased thickness, with rougher and more degenerated cartilage surfaces after 8 days, and abnormal expression of type I and type II collagen. Neutrophils transiently increased in the blood on days 8 and 16, but no systemic inflammatory response was observed, indicating that the method only caused local

In vivo	cartilage degeneration. This induced osteoarthritis model mimics the pathological process of human osteoarthritis (OA) without triggering systemic inflammation typical of rheumatoid arthritis [2]. In the corneal experiment, the right eye (experimental group) was treated with Collagenase Type II (200 μL, 5 mg/mL) for 30 minutes, while the left eye (control group) was treated with a collagenase-free solution. The **Results** showed that no significant inflammatory response occurred in the experimental group post-surgery. Compared to the control group, the experimental group exhibited a significant increase in average corneal curvature and a significant decrease in central corneal thickness. In specific deformities, the experimental group also showed significantly reduced average stress and elasticity modulus, indicating that Collagenase Type II can effectively simulate keratoconus [3].

Solubility Information

Solubility	H2O: 50 mg/mL,Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Reference

Shen P, et al.Optimization of chondrocyte isolation from human articular cartilage to preserve the chondrocyte transcriptome.Front Bioeng Biotechnol.2022 Nov 21;10:1046127.
Park J,et al.A Pathophysiological Validation of Collagenase II-Induced Biochemical Osteoarthritis Animal Model in Rabbit.Tissue Eng Regen Med.2018 May 29;15(4):437-444.
Qiao J,et al.A rabbit model of corneal Ectasia generated by treatment with collagenase type II.BMC Ophthalmol. 2018 Apr 13;18(1):94.