

Product Data Sheet

Product Name: Hyaluronidase

Cat. No.: GC19789

Chemical Properties

Cas. No. 37326-33-3;9001-54-1

Formula

M.Wt

Solubility Water : 100 mg/mL (Need ultrasonic) Storage Store at -20°C, protect from light

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure



Caution: Product has not been fully validated for medical applications. For research use only.

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Protocol

Cell experiment [1]:

Cell lines LiSa-2 liposarcoma cells

Preparation Method LiSa-2 cells were treated with Hyaluronidase (400µg/ml).

Reaction
Conditions 400µg/ml; 24h

Applications Hyaluronidase treatment triggered a robust increase in glycolysis, as measured by glucose uptake and lactate production. Hyaluronidase enriched GLUT1 at the plasma membrane and acutely reduced TXNIP levels.

Animal experiment [2]:

Animal models 3 month-old male C57BL/6J mice

Preparation Method Mice were subjected to controlled cortical impact (CCI) traumatic brain injury. Sterile-filtered Hyaluronidase (1U) or vehicle (sterile PBS) was delivered 4min after CCI or sham injury via stereotaxic intracerebroventricular (ICV) injection.

Dosage form 1U in 10µl; intracerebroventricular injection; single injection

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Applications

Hyaluronidase reduced edema in the ipsilateral hippocampus at 24h after CCI compared to vehicle-treated CCI mice. Hyaluronidase reduced the percentage of hyperintense, edematous voxels in the ipsilateral hippocampus measured by T2-weighted magnetic resonance imaging.

References:

- [1] Sullivan WJ, Mullen PJ, Schmid EW, et al. Extracellular Matrix Remodeling Regulates Glucose Metabolism through TXNIP Destabilization. *Cell*. 2018 Sep 20;175(1):117-132.e21.
- [2] Washington PM, Lee C, Dwyer MKR, et al. Hyaluronidase reduced edema after experimental traumatic brain injury. *J Cereb Blood Flow Metab*. 2020 Oct;40(10):2026-2037.

Background

Hyaluronidase is an enzyme that hydrolyzes hyaluronic acid. Hyaluronidase can reduce tissue viscosity and increase tissue permeability through the hydrolysis of hyaluronic acid. Hyaluronidase is used in research related to drug diffusion assistance and the management of complications in medical aesthetics^[1-4].

In vitro, Hyaluronidase (400µg/ml) was used to treat 3T3L1 adipocyte cell lines and mouse primary preadipocytes (from subcutaneous, visceral, or brown adipose tissue) for 8 days. Hyaluronidase significantly inhibited adipocyte differentiation and reduced lipid accumulation^[5]. Hyaluronidase (400µg/ml) was applied to LiSa-2 liposarcoma cells for 24 hours. Hyaluronidase significantly increased cellular glucose uptake and lactate production, while enhancing plasma membrane GLUT1 localization and reducing TXNIP levels^[6].

In vivo, Hyaluronidase (1U; 10µl) was administered via stereotactic intracranial injection in a controlled cortical impact traumatic brain injury model using C57BL/6J mice. Hyaluronidase significantly reduced brain edema after traumatic brain injury^[7]. Hyaluronidase (12mg/kg) was intravenously injected into C57BL/6 mice for 30 minutes. Hyaluronidase significantly decreased the thickness of the retinal arteriolar glycocalyx and increased retinal microvascular permeability^[8].

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- [1] Yuan J, Hou B, Guo K, et al. Tumor-derived exosomal hyaluronidase 1 induced M2 macrophage polarization and promoted esophageal cancer progression. *Exp Cell Res*. 2024 Jun 1;439(1):113963.
- [2] Shakouri A, Parvan R, Adljouy N, et al. Purification of hyaluronidase as an anticancer agent inhibiting CD44. *Biomed Chromatogr*. 2020 Jan;34(1):e4709.
- [3] Tolwinski NS, Kano-Sueoka T. Hyaluronidase generates a single-cell suspension from cultured mouse lung epithelial cells. *Biotechniques*. 1997 May;22(5):856-8, 860.
- [4] Meuwese MC, Broekhuizen LN, Kuikhoven M, et al. Endothelial surface layer degradation by chronic hyaluronidase infusion induces proteinuria in apolipoprotein E-deficient mice. *PLoS One*. 2010 Dec 8;5(12):e14262.
- [5] Drygalski K, Higos R, Merabtene F, et al. Extracellular matrix hyaluronan modulates fat cell differentiation and primary cilia dynamics. *Biochim Biophys Acta Mol Cell Biol Lipids*. 2024 May;1869(4):159470.
- [6] Sullivan WJ, Mullen PJ, Schmid EW, et al. Extracellular Matrix Remodeling Regulates Glucose Metabolism through TXNIP Destabilization. *Cell*. 2018 Sep 20;175(1):117-132.e21.
- [7] Washington PM, Lee C, Dwyer MKR, et al. Hyaluronidase reduced edema after experimental traumatic brain injury. *J Cereb Blood Flow Metab*. 2020 Oct;40(10):2026-2037.
- [8] Leskova W, Pickett H, Eshaq RS, et al. Effect of diabetes and hyaluronidase on the retinal endothelial glycocalyx in mice. *Exp Eye Res*. 2019 Feb;179:125-131.

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