Heparinase I Lyophilized, Research Grade

Part No

60-010 (0.5 IU/vial)
60-012 (2 IU/vial)
60-014 (10 IU/vial)
60-017 (100 IU/vial)

Product Information

Synonyms Heparinase; Heparin lyase; Heparin eliminase

Source *Flavobacterium heparinum* (Recombinant)

EC Number 4.2.2.7

CAS Number 9025-39-2

Product Format Heparinase I is presented in a phosphate buffered saline pH 7.0 containing a disaccharide as lyoprotectant and lyophilized in a vacuum-sealed vial. No bovine serum albumin (BSA) or preservatives added.

Reconstitution & Catalytic Concentration Post-reconstitution

Part No	*Purified water*	*Activity/vial*	*Catalytic conc.*
60-010	250 µL	≥ 0.5 IU/vial	≥ 2 IU/mL
60-012	250 µL	≥ 2 IU/vial	≥ 8 IU/mL
60-014	250 µL	≥ 10 IU/vial	≥ 40 IU/mL
60-017	250 µL	≥ 100 IU/vial	≥ 400 IU/mL

Storage and Shipping Information

Storage Temperature 2°C to 8°C
Transport Conditions Shipped at ambient temperature

Catalytic Reaction

The enzyme cleaves selectively (*via* an elimination mechanism) highly sulfated polysaccharide chains containing 1-4 linkages between hexosamines & O-sulfated iduronic acid residues. The reaction yields oligosaccharide products (mainly disaccharides) containing unsaturated uronic acids, which can be detected by UV spectroscopy at 232 nm. The enzyme also cleaves the antithrombin III binding pentasaccharide domain in the heparin molecule.

Substrate Specificity

Heparin; heparan sulfate (specific activity with heparin is approx. **three** times higher than with heparan sulfate)

Properties

- O-glycosylated at Ser-39
- Isoelectric point: 9.3 – 9.5
- Molecular weight: 42,508 Da
- Calcium ion is a cofactor and an activator

Activity

- One international unit (IU) is defined as the amount of enzyme that will liberate 1.0 µmole unsaturated oligosaccharides from porcine mucosal heparin per minute at 30°C & pH 7.0. (Activity depends on the assay temperature, the buffer, the source & the type of Heparin used).
- One Unit (U) is also defined in other preparation as 1 U that liberates 0.1 µmol of unsaturated uronic acid per hour at 25°C and pH 7.5; ***1 IU is equivalent to 600 U.***

Activity Assay Parameters	*Range*	*Optimum*
pH	4.0 – 9.0	7.0 ± 0.1
Temperature	20 – 37°C	30 ± 0.5°C
Calcium Concentration	1.0 – 5.0 mM	2.5 mM

Intended Use, Reference & Precautions

- These products are for ***in vitro*** **R&D use only** & not for therapeutic or other uses.
- Refer to the lot-specific Certificate of Analysis (CoA) for the shelf life when the products are stored as lyophilized vials (without reconstitution) at 2 – 8°C and the actual activity post-reconstitution.
- Reconstitute just before use.
- DO NOT freeze the reconstituted enzyme.

Applications

- *In vitro* neutralization of heparin in blood & plasma samples before analysis.
- Preparation of disaccharides of heparin & the preparation of oligosaccharide libraries.
- Measurement of heparin in blood & plasma using the *in vitro* thromboelastography (TEG) tests.
- Coagulation & anticoagulation efficacy studies.
- Production of low- & ultra-low molecular weight heparins (LMWH & ULMWH) from unfractionated heparin & immobilization of heparinase I for such use.
- In-process, quality control, & compendial testing of heparins, heparan sulfate (HS), heparin- & HS-derived products.
- Structural analysis, mass spectral analysis & characterization of heparin, heparan sulfate (HS), low molecular weight heparins, & synthetic heparin pentasaccharides & oligosaccharides.
- Depolymerization of heparin, HS & chemically modified heparins, & molecular weight profiling of heparins.
- Quantification of contaminants in heparin such as over-sulfated chondroitin sulfate, persulfonated heparin & process-related impurities.
- Glycobiology & cancer biology research.
- Identification of the biological properties of HS that depend on the integrity of the S-domains & determination of the spacing between S-domains.
- *In vitro* host-pathogen interactions in viral infections, virus-adhesion inhibition studies, virus-plaque inhibition assays, cell culture experiments, etc.
- *In vivo* inhibition studies of neovascularization & proliferation of capillary endothelial cells.
- Circumventing the inhibitory effects of heparin in PCR, RT-PCR, real-time RT-qPCR reaction & Western Blot.
- *In vitro* histochemistry, immunohistochemistry, immunocytochemistry & flow cytometry, etc.

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