Product Information

Heparinase I from *Flavobacterium heparinum*

Lyophilized powder stabilized with approx. 25% bovine serum albumin, ≥200 units/mg protein (enzyme + BSA)

H2519

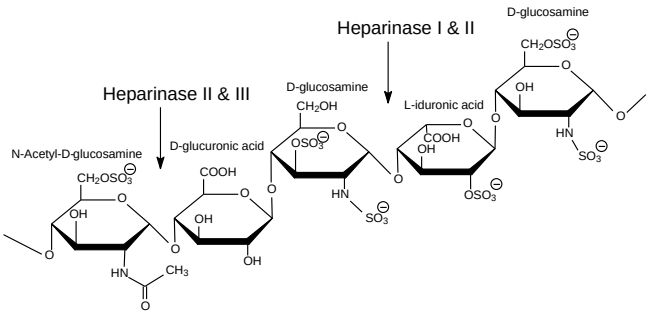
Product Description

CAS Registry Number: 9025-39-2

Enzyme Commission (EC) Number: 4.2.2.7

Molecular Mass: ~43 kDa[1]

Synonym: Heparin lyase I



Heparinases selectively cleave sulfated glycans with α(1-4) glycosidic linkages between the glucosamine and uronic acid residues in the heparin polymer. The cleavage proceeds via an elimination reaction, to form oligosaccharides with unsaturated uronic acid residues (double bond between C4 and C5). There are three types of heparinases:[2]

- Heparinase I cleaves heparin and heparan sulfate (relative activity about 3:1) at the linkages between hexosamines and O-sulfated iduronic acids, to yield mainly disaccharides.
- Heparinase II cleaves heparan sulfate, and to a lesser extent heparin (relative activity about 2:1), at the 1→4 linkages between hexosamines and uronic acid residues (both glucuronic and iduronic), to yield mainly disaccharides.
- Heparinase III cleaves at the 1→4 linkages between hexosamine and glucuronic acid residues in heparan sulfate, to yield mainly disaccharides. The enzyme is not active towards heparin or low molecular weight heparins.

Heparinase I, II, and III will degrade heparin in solution. However, when heparin is added to blood, heparin will bind to thrombin and become unavailable to the heparinase enzyme.

Substrate specificity has been tested for all three types of heparinases and heparin sulfate lyases.[3] Several publications have reported mechanistic studies of heparinase I.[4-10]

Heparin interferes with DNA transcription in PCR, and in reverse transcription of RNA. Heparinase catalytically cleaves heparin in a random fashion.[11] Heparinase I (Cat. No. H2519) and Heparinase II (Cat. No. H6512) have each been used successfully to treat samples to remove that interference.[12] The heparinase can be removed via phenol-chloroform extraction to precipitate the protein.

Several theses[13] and dissertations[14-19] have cited use of product H2519 in their research protocols.

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.

Reagent

This product is supplied as a lyophilized powder stabilized with ~25% bovine serum albumin (BSA).

Unit Definition: One unit will form 0.1 µmole of unsaturated uronic acid per hour at pH 7.5 at 25 °C using heparin sodium as substrate.

International Unit (I.U.) of Heparinase definition: One I.U. will form 1 µmole of unsaturated uronic acid per minute. One I.U. is approximately equivalent to ~600 Sigma units.

The assay method used for this product is a modification of a published method.[20]

Storage/Stability

Store the lyophilized powder at –20 °C.

Preparation Instructions

This enzyme is typically dissolved at 1 mg/mL in 20 mM Tris-HCl, pH 7.5, 50 mM NaCl, 4 mM $CaCl_2$, and 0.01% BSA.

References

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