

Chondroitinase AC

Lyophilized

PN 60-022
60-023

Synonyms

Chondroitin sulfate lyase; Chondroitin AC lyase

Source

Flavobacterium heparinum (recombinant)

EC Number

4.2.2.5

CAS Number

9047-57-8

Catalyzed Reaction

The enzyme cleaves, via an elimination mechanism, sulfated and non-sulfated polysaccharide chains containing 1-4 linkages between hexosamines and glucuronic 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 is active on chondroitin sulfates A and C, chondroitin and hyaluronic acid, but is not active on dermatan sulfate (chondroitin sulfate B).

Substrate Specificity

Chondroitin sulfates A and C, chondroitin, hyaluronic acid. (The specific activity with chondroitin sulfate A is approx. 1.5 times higher than the specific activity with chondroitin sulfate C).

Properties

- Lyophilized powder
- Molecular weight: 79,557 Da
- Isoelectric point: 9.0 – 9.1
- pH optimum for activity: 4.5 – 6 with chondroitin sulfate A
6 – 7 with chondroitin sulfate C
- pH range for activity: 3.5 – 9 with chondroitin sulfate A
4.5 – 9 with chondroitin sulfate C
- Optimal testing temperature range: 20 °C – 37 °C
- Optimal storage temperature: 5 +/- 3 °C

Purity

Made from Chondroitinase AC (PN 50-006) ≥90 % by reversed phase HPLC analysis.

Enzymatic Activity

One international unit (IU) is defined as the amount of enzyme that will liberate 1.0 μmole unsaturated oligosaccharides from chondroitin sulfates A and C and hyaluronic acid per minute at 30 °C.

Reconstitution

Add 250 μL of water to reconstitute to its original formulation

Stability

Expiration is 24 months from manufacturing date when stored at 5 +/- 3°C

Applications

- As research reagent (glycosaminoglycan degradation).
- For the preparation of di- and oligo- saccharides of chondroitin sulfates and the preparation of oligosaccharide libraries.
- Degradation of hyaluronic acid.

Availability

A proprietary expression system for *F. heparinum* and the fermentation and isolation processes developed by IBEX Pharmaceuticals allow the production of

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large quantities of high purity product.

References

- Review: "Enzymatic Degradation of Glycosaminoglycans". S. Ernst et al. in *Critical Reviews in Biochemistry and Molecular Biology* (1995), 30(5): 387-444.
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- "Purification, Characterization and Specificity of Chondroitin Lyases and Glycuronidase from *Flavobacterium heparinum*". K. Gu, R.J. Linhardt, M. Laliberté, K. Gu and J. Zimmermann, in *Biochem. J.* (1995) 312: 569-577.
- "A comparative Study Between a Chondroitinase B and a Chondroitinase AC from *Flavobacterium heparinum*". M.Y.M. Michelacci and D.C.P. Dietrich, in *Biochemical Journal* (1975) 151: 121-129.
- "Crystal Structure of Chondroitin AC Lyase, a Representative of a Family of Glycosaminoglycan Degrading Enzymes". J. Féthière, B. Eggimann and M. Cygler, in *J. Mol. Biol.* (1999) 288: 635-647.