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ProductInformation

Heparin sodium salt
from porcine intestinal mucosa

Product Number **H 3125**
Store at Room Temperature

Product Description

CAS#: 9041-08-1
Specific rotation: +47.5 - 51.8°
(15 mg/ml in water, 25 °C)

Heparin is a polymer classified as a mucopolysaccharide or a glycosoaminoglycan. It is biosynthesized and stored in mast cells of various mammalian tissues, particularly liver, lung and mucosa. Commercial heparin is chiefly isolated from beef lung or pork intestinal mucosa.[1]

This product has been traditionally used as an anticoagulant. Heparin binds to antithrombin III, a naturally occurring plasma protease inhibitor, accelerating significantly the rate at which antithrombin III (AT-III) inhibits coagulation proteases (Factor X_a and thrombin).[2,3,4]

In addition, this product has been shown to stabilize tryptase as an enzymatically active tetramer.[5]

It is unlikely that heparin is cell membrane permeable, including that of the brain.[6] Heparin crosses cell membranes poorly, because of its polarity and large molecular size. It is not absorbed from the gastrointestinal and sublingual sites. Passage along the placenta and into the maternal milk is also hindered.

This product is isolated from porcine intestinal mucosa by extraction. Heparin is then complexed, followed by blending and extensive solvent fractionation.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water (50 mg/ml).

Storage/Stability

Heparin is a polysaccharide, which has excellent aqueous solution stability (up to 2 years at 2-8 °C) provided the solutions have been filtered through a 0.2 μm membrane. Alternatively, 0.06-1% benzyl alcohol may be added to solutions to prevent bacterial growth. Any small traces of contaminating organisms in the solution will break down the heparin in order to use its sugars for nutrients, and the stability of non-sterile solutions is very poor. Heparin solutions should not be autoclaved, because additional cross-linking of the sugars may occur at high temperatures. There is no need to freeze solutions of heparin; in fact, solutions of any polysaccharide of high molecular weight should not be frozen.

References

1. The Merck Index, 12th Ed., Entry# 4685.
2. Björk, I. and Lindahl, U., Mechanism of the anticoagulant action of heparin. Molecular Cellular Biochemistry, **48(3)**, 161-168 (1982).
3. Prevention of venous thromboembolism in surgical patients by low-dose heparin: prepared by the Council on Thrombosis of the American Heart Association. Circulation, **55**, 423-426A (1977).
4. Jordan, R., et al., Fractionation of low molecular weight heparin species and their interaction with antithrombin. J. Biol. Chem., **254**, 2902-2913 (1979).
5. Schwartz, L. B., and Bradford, T. R., Regulation of tryptase from human lung mast cells by heparin. Stabilization of the active tetramer. J. Biol. Chem., **261**, 7372-7379 (1986).
6. The Pharmacological Basis of Therapeutics, 7th Ed., Gilman, A. G. et al., Eds., Macmillan (New York, NY: 1985), p. 1341.

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