Data Sheet (Cat.No.T86567)

TargetMol

Heparin calcium (MW 3600-5000)

Chemical Properties

CAS No. : 37270-89-6

Formula:

Molecular Weight:

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Heparin (Nadroparin) calcium (MW 3600-5000), an anticoagulant, forms a reversible complex with antithrombin III (ATIII), known as the heparin-antithrombin III complex. This complex then irreversibly binds to and inactivates thrombin and other activated clotting factors IX, X, XI, and XII, thereby inhibiting the conversion of fibrinogen to fibrin [1] [2].
Targets(IC50)	Factor Xa,Antibacterial,Autophagy,Thrombin
In vitro	Heparin is a potent anticoagulant as it accelerates the inhibition of serine proteases in the coagulation cascade by antithrombin. Heparin and structurally related Heparan Sulfate are intricate linear polymers, consisting of a mixture of chains with variable lengths and sequences. These molecules interact most strongly with peptides containing complementarily high positive charge density binding sites. Both Heparin and Heparan Sulfate mainly exhibit a linear helical secondary structure, with sulfate and carboxyl groups displayed along the polysaccharide backbone at specific intervals and orientations. Similar to DNA, Heparin is a highly charged linear polymer and acts as a polyelectrolyte. Heparin's anticoagulant effect is primarily achieved by enhancing the AT-III mediated inhibition of coagulation factors, including thrombin and factor Xa, through its interaction with AT III. It forms a ternary complex with AT III and thrombin, increasing the bimolecular rate constant for thrombin inhibition by 2000-fold. Heparin is predominantly located in mast cell granules of tissues closely associated with immune responses. Additionally, it interacts extensively with FGF-2 and FGFR-1, stabilizing the FGF-FGFR binding and contacting FGFR-1 of adjacent FGF-FGFR complexes, which appears to promote FGFR dimerization [1].
In vivo	Low-molecular-weight heparin calcium (4 mg/kg; s.c. twice daily for 2 consecutive days) has been shown to alleviate skeletal muscle damage and systemic inflammatory responses in IRI SD rats [2]. This was observed in an animal model using adult Sprague-Dawley rats (male, 200-300 g) that were subjected to ischemia-reperfusion (IR) injury [2]. The dosage administered was precisely 4 mg/kg, delivered subcutaneously twice daily over a two-day span. Results indicate a mitigation of the ischemia-reperfusion injury induced by tourniquet application.

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