Data Sheet (Cat.No.T86568)

TargetMol

Heparin calcium (MW 15000-19000)

Chemical Properties

CAS No. :

Formula: C26H42CaN2O37S52+

Molecular Weight: 1174.98

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 calcium (MW 15000-19000), an anticoagulant, forms a reversible complex with antithrombin III (ATIII), known as the heparin-antithrombin III complex. This complex binds to thrombin and the activated clotting factors IX, X, XI, and XII, leading to their irreversible inactivation and inhibiting the conversion of fibrinogen into fibrin [1] [2].
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 administered subcutaneously at a dosage of 4 mg/kg twice daily for two days (s.c. twice a day for 2 days) has been shown to mitigate skeletal muscle damage and systemic inflammatory response in ischemia-reperfusion injury (IRI) in adult male Sprague-Dawley rats weighing 200-300 g, demonstrating efficacy in an animal model with ischemic insult (IR) [2]. The regimen effectively alleviated the IRI caused by tourniquet application.

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	0.8511 mL	4.2554 mL	8.5108 mL
5 mM	0.1702 mL	0.8511 mL	1.7022 mL
10 mM	0.0851 mL	0.4255 mL	0.8511 mL
50 mM	0.017 mL	0.0851 mL	0.1702 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

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