

ISOLATION OF A HEPARIN-LIKE POLYSACCHARIDE WITH HIGH
ANTICOAGULANT ACTIVITY FROM *NODIPECTEN NODOSUS*
(BIVALVIA:PECTINIDAE)

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Heparin-like glycosaminoglycans are important subset of polysaccharides that represent the third major class of biopolymer. These molecules are very heterogeneous in terms of molecular weight, charge density, physicochemical properties and biological activities. The heparin is an exogenous anticoagulant compound and its effect is due the formation of a ternary complex with antithrombin and different proteases of the coagulation cascade. However, the use of heparin is limited because of its high haemorrhagic risk. Because members of heparin family have been detected in a wide range of marine invertebrates, the present study aimed to characterize a heparin-like polysaccharide from the mollusk *Nodipecten nodosus* and to verify its anticoagulant effect. Although the glycan resists treatment with heparin lyases I e III, it is cleaved by nitrous acid. Polyacrylamide gel electrophoresis in barbital buffer showed that this heparin has 30-40 KDa. To verify the ability of this heparin-like glycan as an anticoagulant molecule, the purified polysaccharide was tested on the aPTT assay before and after treatment with nitrous acid. This assay showed an activity 4-folds lower (43.2 units/mL) than bovine heparin (180 units/mL). The glycan has also demonstrated high ability in activate the inhibition of Factor Xa ($IC_{50} = 0.835 \mu\text{g/mL}$) and thrombin ($IC_{50} = 9.3 \text{ ng/mL}$), in the presence of antithrombin. These results point to an important antithrombotic activity of the mollusk glycan.

Key words: anticoagulant, bivalvia, heparin, mollusk

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