

HIGH CONTENT OF 3-O-SULFATED GLUCOSAMINE RESIDUES IN A HEPARIN FROM SHRIMP *LITOPENAEUS VANNAMEI*

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Heparin is a sulfated polysaccharide present in several mammalian tissues and widely used as anticoagulant. The presence of compounds that mimics the pharmacological activities of heparins has been described in invertebrates. Here we report the characterization of a novel heparin purified from discards of the shrimp industry. The heparin-like compounds were isolated from the visceras of the shrimp *Litopenaeus vannamei* after proteolysis, fractionation by ion exchange resin and purification by anion exchange chromatography. Structural analysis of the shrimp heparin was performed by its enzymatic depolymerization as well as mono- and two-dimensional nuclear magnetic resonance (NMR) spectroscopy and comparison with the mammalian heparin. The results revealed that the shrimp heparin is rich in glucuronic acid residues and contain a higher amount of 3-O-sulfated glucosamine residues, which is essential for its anticoagulant activity. Beside these differences, a higher molecular weight (36 KDa) and a lower anticoagulant activity (90 UI/mg) was observed in comparison with the mammalian heparin. The search for new heparin analogs in invertebrates is an attractive alternative and it might open a wide variety of new therapeutic applications.

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Key words: *Litopenaeus vannamei*, 3-O-sulfated glucosamine, anticoagulant activity