APPLICATIONS OF NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY AND MASS SPECTROMETRY TO THE ANALYSIS OF HEPARIN OLIGOSACCHARIDE MIXTURES

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Heparin is a heterogeneous polysaccharide belonging to the family of glycosaminoglycans. The attention given at the moment to the structural characterization of heparin depends on the fact that peculiarity of molecular size, monomer sequences and sulfation pattern account for a wide range of biological activities. Being the current research interest focused on low and very low molecular weight heparin fragments, to succeed in structure activity relationship studies, the availability of new sophisticated analytical methods and strategies becomes crucial. In the present work a model oligosaccharide mixture, obtained by heparin depolymerisation through controlled physical approach (γ-ray), have been studied through liquid chromatography coupled with an electro spray ionic trap mass spectrometry (LC/ESI-IT-MS) and HMQC heteronuclear NMR technique. Complexes of oligosaccharides with different target proteins, as growth factors and antithrombin, were also studied through MALDI-TOF MS technique.

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