Oversulfation of Heparin

전태영, 김미혜, 홍보희, 김영하, 태기융*
광주과학기술원 신소재공학과 및 나노바이오재료전자공학과
(gytae@gist.ac.kr*)

One of the highly negative charge density of glycosaminoglycan (GAG) - heparin, due to its various sulfate group, is widespread therapeutic use as an anticoagulant and antithrombotic drug. Heparin is dominantly constituted by disaccharide sequences, made up of 2-O-sulfated L-iduronic acid (IdoA2SO_3) and N,6-O-sulfated D-glucosamine (GlcNSO_3-6SO_3). Studies with modified various polysaccharide such as oversulfated chondroitin sulfate and chitosan, indicated that each of these added negative charges is significant in increasing the anticoagulant activity. However the overall activities were still lower than heparin. Those papers reveal that the enhanced anticoagulant effect arose from the introducing sulfate group on that of polysaccharides. In this paper, we prepared oversulfated heparin by adding sulfate group on the carboxylic group of heparin, and its anticoagulant properties were determined by using both factor Xa assay and in-situ fibrin formation assay by using quartz crystal microbalance with dissipation (QCM-D). *Acknowledgement: This research was partially supported by the World Class University (WCU) program at GIST through a grant provided by MEST, Korea (R31-2008-000-10026-0).*