

Radical degradation of sodium alginate by H_2O_2 under ultrasound

최유성, 김주일¹, 오일홍¹, 이인화^{1,*}
조선이공대학교; ¹조선대학교
(ihlee@chosun.ac.kr*)

Alginate, a water soluble natural polymer, is composed of (1-4)-b-D-mannuronate (M) and (1-4)-a-L-guluronate (G) units in the form of homopolymeric (MM- or GG-blocks) and heteropolymeric sequences (MG- or GM-blocks). Alginate is widely used in the food cosmetics and pharmaceutical industries. Even though alginate has been used in a wide range of fields, high molecular weight alginate limits its application of specific fields caused by its high viscosity and poor solubility in water. Many methods have been used for preparation of alginate oligosaccharides, including acid hydrolysis, enzymatic digestion and γ -irradiation. In a previous study it was shown that oxidation reaction of sodium alginate with hydrogen peroxide was much more effective in lowering the molecular weight than any other chemical. The purpose of this work is to study the effect of reaction temperature respectively time on sodium alginate under various conditions. The changes of molecular weight were monitored by GPC-Light scattering and specific viscosities. In addition, the K and a parameters of the MHS (Mark-Houwink- Sakurada) equation were estimated with Mw and intrinsic viscosities of depolymerized alginates.