Optimum Conditions For The Synthesis of High Solubility Carboxymethyl Chitosan

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Abstract	A research on optimizing the synthesis conditionsto obtaincarboxymethyl chitosan with the highest solubility in 1%(v/v) acetic acid as a solvent have been performed. Optimization was performed by varying: the concentration of NaOH during alkalizing the chitosan, chitosan: monochloroacetic acidratio, temperature and reaction time. This study uses a full factorial experimental design. The results showed that the highest solubility was found in 40% (w/v) NaOH concentration, chitosan to monochloroacetic acid ratio of 1: 7, reaction temperature of 80 degrees C and reaction time at 4 hours with the solubility up to 63.78 mg /mL. The IR and NMR (H-1 and C-13) spectra confirmed the success of the synthesis. The results of water content, ash content, molecular weight and swelling effect of carboxymethyl chitosan at the highest solubility were 14.27%, 8.48%, 2.8678 x 10(5) g/mol and 884.19%, respectively.
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