

**PC 13 - Novel Unique Reagent for Preparation of Carboxyethyl
Chitosan- β -Acryloyloxypropionic Acid**

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Carboxymethylation is widely known modifying method for chitin and chitosan, providing solubility of the above polymers in a wide δ Í interval. For this purpose chloroacetic acid or glyoxylic acid are used. Previously we have suggested more ecologically safe, cheaper and effective method for preparation of carboxyethylchitosan which compares well with its homologue.

In this work, we propose to use a fundamentally new reagent, β -acryloyloxypropionic acid (β -AOPa), for carboxyethylchitosan. Its basic advantage is that the reagent has as high reactivity towards nucleophilic agents as acrylates, but in contrast to the latter, it is highly soluble in water. β -AOPa was obtained according to dimerization reaction of acrylic acid:



Carboxyethylation of chitosan was carried out by in gel synthesis method under heating at 70°C for 24 h in various conditions according to the scheme:



Using ¹H NMR spectral data, it was concluded that addition β -AOPa to chitosan proceeded much faster as compared with acrylic acid. Treatment of chitosan with β -AOP resulted in the formation of the product with a substitution degree up to 1.3. In contrast to acrylic acid, the use of potassium salt of β -AOPa did not decrease a substitution degree, and did not cause the formation of intermolecular amide cross-links during the reaction. Reaction can be also carried out in 20 % chitosan gel containing LiI (pH~7). In this case lithium salt of β -AOPa is appeared to be more reactive than the acid.