

Synthesis and investigation of chemical structure of N-methyl N-benzyl chitosan by the co-alkylation method**Shamo Z Tapdiqov**

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Chitosan is a linear cationite type natural polyaminosaccharide produced by N-deacetylation of chitin. Chitosan consists of β -(1,4)-2-amino-2-deoxy-D-glucosamine and β -(1,4)-N-acetyl D-glucosamine units. The non-toxicity, biocompatibility and bone adhesion of chitosan confirm its perfect properties in delivery of genes and drugs in medicine and biotechnology. Solubility of chitosan only in acidic environment limits its use as a carrier in controlled release of some drugs. Chitosan derivatives with new properties were synthesized by graft copolymerization, acylation, carboxymethylation, and alkylation reactions of chitosan macromolecule. Such derivatives have new properties and can be managed from a molecular structural and can easily enter into electrostatic or hydrogen bond with low molecular drug preparations.

In this research synthesis of Schiff derivative of chitosan with methyl and benzyl aldehyde at the co-alkylation reaction. The synthesis of N-methyl, N-benzaldehyde chitosan was conducted in two stages - initially by aryl-co-alkylation and then by the reduction process.

The exchange of hydrogen atoms from 85-90% free $-NH_2$

groups on the content of chitosan is commonly found to be substituted by various alkyl and aromatic radicals based on the Schiff reaction. In most cases included of alkyl or aryl group into chitosan macromolecule with the addition of the same radicals. Also, the degree of alkylation or arylation of the amine groups ultimately affect the product's solubility and biological properties. The reaction mechanism and molecular structure of product was studied by the UV-Vis electron spectra was performed. It was determined besides the chitosan, and the reduced chitosan derivatives were very poorly soluble in water. High sensitive method has been used in the discovery of the molecular structure of these polymer modifications. The analysis of samples has been studied in the ultraviolet region due to slight solubility.

Speaker Biography

Shamo Z Tapdiqov in 2011 obtained his Ph.D. degree from the Faculty of Macromolecular Chemistry at the Institute Catalysis and Inorganic Chemistry Azerbaijan National Academy of Sciences in Baku (Azerbaijan) and in 2016 he became the Assoc. Prof. in the same field.

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