

7<sup>th</sup> International Conference and Exhibition on

# BIOPOLYMERS AND BIOPLASTICS

October 19-20, 2017 San Francisco, USA

## Effect of chitosan derivatives grafted poly(ethylene glycol) on the interaction with human DNA

Hadi S. Al-Lami, Afrodet A. Salih and Sara H. Mutasher  
University of Basra, Basra-Iraq

Chitosan is one of the natural materials used for gene delivery; this is why the current study focused on getting chitosan from chitin extracted from shrimp shells by known and modified chemical methods to obtain chitosan with a high Degree of Deacetylation to increase its solubility. It was characterized by Fourier Transform Infrared and intrinsic viscosity measurement in order to determine the degree of deacetylation and average molecular weight of purified Chitosan. Some chitosan derivatives were prepared by reaction of chitosan with maleic anhydride, adipic anhydride and sebacic anhydride in DMF to prepare N-malonyl chitosan, N-adipoyl chitosan and N-sebacoyl chitosan respectively, and because of low % yields of the resulting products, the three anhydrides were grafted to chitosan in toluene which is nearly doubled the products % yields. The acidic water-soluble derivatives of N-malonyl, N-adipoyl, and N-sebacoyl Chitosan were extended by grafting process in toluene with different poly(ethylene glycol) molecular weights (2000, 40000, and 20000 g/mole). Different %yields were obtained depending on the type of the derivative and the poly (ethylene glycol) chain length to evaluate their effect on binding to the human genomic DNA. The effect of these chitosan derivatives grafted poly (ethylene glycol) samples with human DNA has been explored by using electronic absorption spectroscopy and gel electrophoresis techniques. The observed changes in the physicochemical features of the polymers derivatives on binding to DNA suggest that they may bind to DNA with electrostatic interaction mode.

hadisalman54@yahoo.com