ASSOCIATION OF PROTEINS TO NANOGERLATES OF CHITOSAN MODIFIED WITH MERCAPTOPROPIONIC ACID AND MERCAPTOUNDECANOIC ACID

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The chemical modifications of chitosan have been studied in the modulation of its physicochemical properties, through reactions of carboxyalkylation, acylation and thiolation, resulting in a wide range of materials with potential biological applications. In this work, the chemical modification of native low molecular weight chitosan with 3-mercapto propane acid and 11-mercapto undecanoic acid is presented by means of a reductive amidation reaction, aiming at the inclusion of side chain segments with thiol termination, for the development of a nanoparticulate system, as well as evaluating its potential as a cargo vector, transport and release of proteins. In particular as an insulin loading vector, as an alternative in diabetes therapy. The preparation of thiolated chitosan / protein biopolymer nanoparticles was carried out by the ionotopic gelation method, switching the proportions of the crosslinking agent pentasodium tripolyphosphate. The structural characterization of the chemical modification was carried out by a comparative method using the FT-IR spectra. The physicochemical properties such as nanoparticle size, zeta potential and entrapment efficiency were determined by the Zetasizer nano zs equipment, atomic force microscopy and UV-Vis absorption spectroscopy. According to the preliminary results, experimental evidence is presented suggesting nanoparticles in relation 2.5 of QSH/TPP, as a promising insulin carrier system, although it will be valid to perform studies in cell lines and in animal models.

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