SYNTHESIS AND CHARACTERIZATION OF PROTEIN LOADED PLGA NANOPARTICLES
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At the moment, numerous nanotechnology applications in medicine are the focus of study because the great potential that represent to find improvements in the diagnostic and treatment of diseases. Drug delivery using nanoparticles is ample investigated for the treatments of diseases because among others, the active compound could be protected by the matrix from non-desirable interactions as well as increase the blood circulation times and also could be targeted to a specific cell or tissue. On the other hand, therapeutic proteins have enormous potential in applications for the treatment and prevention of several human diseases. However, proteins frequently display low physicochemical stability, usually are rapidly degraded and also present short blood half-lives. The development of drug delivery systems able to protect the protein from degradation and control the delivery is of considerable interest. In this work, the encapsulation of water-soluble proteins in poly(lactic/glycolic acid) (PLGA) nanoparticles is investigated. PLGA nanoparticles were prepared by a double emulsification-solvent evaporation technique. The encapsulation of two different proteins: Cytochrom c (Cyt c) an apoptotic protein and Trypsin that is commonly used for the treatment osteoarthritis are presented. Also, Cyt c conjugated to FITC and Trypsin conjugated to FITC were individually encapsulated into PLGA nanoparticles following the same technique. The hydrodynamic diameter, zeta potentials and polydispersion index were evaluated in each preparation.

Keywords: PLGA nanoparticles, protein encapsulation, protein conjugation

References:

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