

TITLE

Preparation and characterization of PLGA nanoparticles covered by albumin for antitumor drug delivery

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Nanoparticle (NP) has been shown significantly affect in antitumor drug delivery systems. Biodistribution of targeted and non-targeted NPs in an organ is an important concept in this area. PLGA is a widely used polymer for fabricating 'nanoparticles' because of its suitable properties, and hence has been the centre of focus for developing drug-loaded nanoparticles for cancer therapy. Albumin is the most abundant protein in serum, of which the concentration is approximately 5% (w/v). The functions of albumin that we expect, is to stealth NPs from white blood cell and lengthen the blood circulation time. A nano precipitation method was implied for the formation of drug encapsulated poly (d,l-lactide-co-glycolide(N-(p-Maleimidophenyl)isocyanate) (PLGA-*PMPI*) NPs, then albumin was conjugated on the prepared NPs surface by maleimide attachment to sulfhydryl groups (cysteines) of albumin. The physicochemical properties of NPs like size, zeta potential, surface morphology, and in vitro drug release, were studied. The goal of the present study was to produce high quality NPs copolymer PLGA decorated by albumin on its surface. The average diameters of the NPs ranged from 170 to 220 nm, zeta potential values was about -10. A biphasic release of DTX was observed for all colloidal suspensions, after a burst effect in which about 60% (w/w) of the loaded drug was released a sustained release profile for about 10 days was observed. The conjugation of albumin evaluated by IR and UV. At the highest surface coverage, BSA is calculated to essentially cover the NP surface area. In general, PLGA nanoparticles covered by albumin shows considerable outcomes in loading and releasing DTX.

Biography

Seyyed Hossein Mostafavi is M.Sc in medical nanotechnology, Tehran University of medical sciences, Tehran, Iran, and has the bachelor of chemistry in Isfahan University of technologies. He ranked 2th elite amongst 310 participants in national graduate entrance exam to enter medical nanotechnology. His interest is Targeted drug and gene delivery and diagnostics using nanotechnology. He worked on some drug delivery systems specially PLGA, PLA Albumin nanoparticles. At last, he participated in writing the nanotechnology's roadmap of Tehran University of medical Sciences.