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Bovine Serum Albumin: An efficient biomacromolecule nanocarrier for improve therapeutic efficacy of chrysin

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Abstract

This study manipulated a chrysin loaded bovine serum albumin nanoparticles (BSA NPs), which could solubilize the poorly water-soluble drug and increase the therapeutic efficacy of the drug. Chrysin (5, 7-dihydroxyflavone) is a natural flavonoid which have some significant biological effects on the processes of chemical defense. Chrysin loaded bovine serum albumin nanoparticles (Chrysin-BSA NPs) were synthesized by a simple desolvation procedure. The resultant Chrysin-BSA NPs showed a spherical shape, with a diameter of 97.5 ± 5.75 nm (mean \pm SD) nm and a ζ -potential of - 11 mV. The *in vitro* drug release study of chrysin presented a sustained and controlled release pattern. Cellular toxicity of BSA NPs was also investigated on HFF2 cell lines. Additionally, a hemolysis test of as prepared NPs were performed. Hemolysis assay and cytotoxicity study results on HFF-2 cell line show that as prepared BSA NPs are biocompatible. The *in vitro* cytotoxicity of the nanoparticles were performed by MTT assay on MCF-7 cancer cells. These results suggest that Chrysin-BSA NPs are a new drug delivery system for cancer therapy.

Keywords: Albumin, BSA, Drug delivery, Cancer, Chrysin, Protein

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