The aim of the present study was to develop chitosan-zinc-pectinate-polyethylene glycol (PEG) nanoparticles (NPs) for colon-targeted delivery of resveratrol. The effects of pectin:ZnCl2:chitosan (PZnC) % w/v, pH and ionic strength of media, and addition of PEG on the colloidal stability and release behavior of resveratrol from NPs were examined by Zeta potential, particle size analyzer, scanning electron microscopy (SEM), and Fourier transform-infrared (FTIR) methods. The particle size and Zeta potential of PZnC NPs in the ratio of 10:1:3% w/v were 399 ± 18 nm and +25 ± 1 mV, respectively. The addition of PEG to PZnC as a solvent for resveratrol (10% w/v) noticeably decreased the size of NPs to approximately 83 ± 4 nm. More than 63% of the resveratrol was encapsulated into the developed NPs; furthermore, a low amount of resveratrol was released during one month, using simulated juice model (pH = 4) as investigated by High Performance Liquid Chromatography (HPLC) analysis of resveratrol. The remaining resveratrol in NPs (~49%) was released in simulated colon fluid in the presence of pectinase. These NPs can be introduced as a novel platform for successful colon delivery of resveratrol in fruit juice matrix.
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