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## Protocatechuic acid loaded chitosan coated iron oxide nanoparticles for cancer therapy

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Iron oxide nanoparticles (FNPs) were synthesized by co-precipitation method, followed by coating with chitosan (CS) biopolymer and used as a nanocarrier for efficient delivery of anticancer agent protocatechuic acid (PA). The Fourier transform infrared spectra revealed that the FNPs nanoparticles could be successfully coated with CS polymer and PA as an active anticancer drug. The magnetic measurements showed that the designed nanocarrier and protocatechuic acid-chitosan-iron oxide nanocomposite (PA-CS-FNP) were superparamagnetic while the release of PA from PA-CS-FNP nanocomposite was found to be in a sustained

manner and significantly lower in phosphate buffered solution at pH 7.4 than pH 4.8, due to different release mechanism. The spherical shape of nanosized FNPs and PA-CS-FNP was observed by Transmission Electron Microscopy (TEM) and loading of PA in the PA-CS-FNP nanocomposite was estimated to be about 11.3 %. In addition, PA-CS-FNP nanocomposite showed higher inhibitory effect to cancer cell growth than free PA, without affecting normal fibroblast (3T3) cell growth.

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