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Colloidal properties and *in vitro* evaluation of hydroxy ethyl cellulose coated iron oxide particles for targeted drug delivery

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In this study, superparamagnetic iron oxide (Fe_3O_4) nanoparticles were prepared for the targeted drug delivery applications by controlling the colloidal properties with a cellulosic polymer that is hydroxy ethyl cellulose (HEC). Fe_3O_4 particles were treated with HEC in a variable range of polymer concentration. Rheological, electrokinetic, magnetorheological and morphological properties of the dispersions were investigated to have stable and fully covered surfaces of Fe_3O_4 particles by coating with HEC and obtaining non-toxic biocompatible multifunctional magnetic particles. Fully coated HEC and iron-oxide particles were characterized thermally, magnetically and tested for toxicity *in vitro*. Then doxorubicin hydrochloride (DOX), which is an anticancer drug widely used for cancer therapies, was loaded onto nanoparticles and their drug loading efficiency was determined. Finally, effects of DOX-loaded particles on the cancer cells were examined to report a nano drug system which can potentially open new possibilities in the design of therapeutic agents. Results indicated that the synthesized nanoparticles in this study could be suitable to magnetically manipulated targeted delivery systems, imaging, magnetic hyperthermia treatments.

Biography

Sevim İşçi has completed her PhD at the age of 29 years from Istanbul Technical University, Turkey. She is an Associated Professor of Istanbul Technical University, Turkey. She has over 30 publications that have been cited over 150 times, and her publication H-index is 10.

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