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THERAGNOSTIC POSITIVELY CHRAGED MAGNETIC NANOPARTICLES

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ABSTRACT

Biodegradable polymeric magnetic dextran nanoparticles were designed as diagnostic tools for applications in magnetic resonance imaging (MRI) and cell tracking. Cationized dextran was selected to cover magnetic iron oxide. Employment of ionic gelation was caused to fabricate magnetic nanoparticles (~50 nm) by simple mixing of cationized dextran and sodium tripolyphosphate. Sustainable controlled release of iron oxide was achieved from the cationized dextran nanoparticles for more than 20 days. Cationized dextran successfully covered the magnetic iron oxide and formed cationized dextran-Fe_3O_4 nanoparticles and enhanced transfection efficiency of fibroblast cells. In vitro MRI experiment showed that these nanoparticles have the same superparamagnetic properties compared with magnetic iron oxide and improved the contrast effects. Magnetic cationized dextran nanoparticles is a promising technology to enhance the tracking of drug delivery systems, in addition to their imaging technology.

KEYWORDS: Biodegradable Nanoparticles, Dextran, Magnetic, MRI & Cell Tracking

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