Magnetic Resonance Contrast Agents for Cancer Imaging using PEG-Fatty Acid

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Diagnosis of cancer in the early stages requires sensitive magnetic resonance (MR) probes to detect low concentrations of magnetic substances. In this study, ultrasensitive magnetic resonance contrast agents (UMRCAs) composed of magnetic nanocrystals and amphiphilic block copolymers were synthesized for cancer detection using polyethylene glycol and fatty acid. The chemical structures and the compositions of PEGylated magnetic nanoparticles were analyzed. UMRCAs displayed remarkable colloidal stability and high sensitivity as MR probes. Furthermore, UMRCAs exhibited low cytotoxicity and excellent cancer detection ability in an in vivo animal model.