

Polymer-stabilised magnetic nanoparticles do not affect the viability of magnetically-functionalised cells

Dzamukova M., Naumenko E., Zakirova E., Dzamukov R., Shilyagin P., Ilinskaya O., Fakhrullin R.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Here we report the synthesis of (poly)allylamine-coated superparamagnetic iron oxide nanoparticles for the surface modification of living cells. Magnetic functionalisation of cow embryonic lung cells did not affect the viability of the coated cells, confluent monolayer formation and proliferation, as demonstrated using fluorescence and white light microscopy, flow cytometry and MTT assay. Functionalised cells were magnetically responsive. We believe that the single-step approach described here is a novel and potentially promising way to functionalise mammal cells with magnetic nanoparticles for the subsequent applications in cell therapy, directed cells delivery and spatial positioning in tissue engineering.

Keywords

Cow embryonic lung cells, Cytotoxicity, Iron oxide superparamagnetic nanoparticles