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Biodegradable polymeric vesicles for multifunctional magnetic resonance imaging and in vitro fluorescence Imaging

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Abstract

Targeted drug therapy not only reduces adverse effects in non-target organs but may also enhance efficacy in the targeted organ. Inorganic imaging agents, delivered together with anti-cancer drugs, enhance the local imaging contrast and provide precise diagnosis as well as evaluation of therapy efficacy. Biocompatible and biodegradable poly (lactic-co-glycolic acid)(PLGA) nanoparticles embedded with Fe_3O_4 and Mn doped ZnS, 100-200 nm sized have been prepared. The prepared particles exhibit excellent MRI contrast enhancement with high r_2* relaxivity and ability for in vitro fluorescence imaging after uptake into cells. These properties strongly support the development of a multifunctional nanomedicine platform based on our particles, where the therapeutic function can be realized by simply loading drugs into the vesicle and controlled targeted drug delivery will be achieved by grafting the polymer shell with environmental-sensitive moieties and targeting groups. These drug loading and delivery and in vivo experiments are ongoing in our laboratories

Biography

Prof K.M. Abu-Salah obtained his B.Sc, from the American University of Beirut and his Ph.D from the University of Leeds (U.K). He is the fellow of the Institute of Biomedical Sciences (U.K.) since 1993. Prior to joining King Abdullah Institute for Nanotechnology to be one of the founders, he was one of the initiators and a professor of biochemistry at KSU till 2007. Prof Abu-Salah has been the head of International collaboration unit at KAIN and the Director of the KSU research chair on “Drug Targeting and Treatment of Cancer Using Nanoparticles”. He published several papers in high impact factor journals and filed several patents in the areas of nano biosensors and nano systems for drug delivery. He participated as well in the establishment of few spin off companies.

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