

FULLERENE C60 BASED NANOPARTICLES COATED WITH HYPERBRANCHED POLYETHYLENIMINE (PEI) FOR GENE DELIVERY

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ABSTRACT

Polyethylenimine (PEI) was extensively investigated as a non-viral vector system due to its high content in amino groups. These provide a great ability to complex and condense negatively charged DNA or RNA. Fullerene (C60), which also showed a good potential in drug delivery, was derivatized onto the surface with hyperbranched PEI. The interaction between fullerene and PEI was conveniently followed by UV-Vis spectroscopy: the characteristic peak of C60, at $\lambda=330$ nm, decrease during the reaction until disappearance [1]. FT-IR, TGA/DSC and XPS data confirmed the structure of water soluble C60-PEI [2]. TEM exhibited a compact and spherical morphology of the C60-PEI conjugate. Depending on the C60 : PEI ratio, nanoparticles with diameters between 3 ÷ 80 nm were obtained, as DLS and TEM results indicated. Agarose gel electrophoresis assay, performed for several N/P ratios, showed that C60-PEI has a good DNA binding ability [3].

References:

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Acknowledgement:

This work was financially supported by project PN-II-ID-PCCE-2011-0028, contract: 4/30.05.2012.