

Study of Diamine-functionalized SWCNTs as Vector for Gene Delivery

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Abstract

Gene therapy has drawn a lot of attention in the field of medicine, pharmaceutical sciences and biotechnology due to the potentials for treating chronic diseases and genetic disorders. Delivered gene can achieve the following goals: Immunotherapy, virus-directed enzyme/prodrug therapy (VDEPT), introduction of tumor suppressor gene, anti-angiogenesis. Requirements for gene delivery can express therapeutic gene on target site effectively and deliver interested gene safely.

In the study, we are going to develop a new and stable gene carrier to improve the transfection efficiency and achieve to certain fundamental needs in gene therapy. The diamine molecules will be immobilized onto single-walled carbon nanotubes (SWCNTs) to stabilize SWCNTs/DNA complex and increase the biocompatibility. The biocompatibility of surface-modified SWCNT will be evaluated by cytotoxicity and geno-toxicity. The transfection efficiency and gene expression will further check in vitro.