

Functionalized Carbon Nanotubes: Promising Nanoadjuvants in Vaccine Technology

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Despite the success of current vaccines, there is a clear unmet need for the development of more effective preventive and therapeutic vaccines. Such improvements may include the addition of biomaterials and immuno modulators to bypass important milestones such as efficient proliferation of antigen-specific effector cells (APCs) and enhanced immune responce. CNTs are considered as attractive biomaterials for immunomodulating applications. They are also assumed to fullfill the mentioned challanges. CNTs posses unique properties such as high aspect ratio and flexible surface chemistry which can be custumized for transporting of antigens. They would target APCs effectively and enhance cellular immune responses. Additionally, the ability of CNTs to translocate easily through the lipid bilayer as nanoneedle is really advantagous in cellular immune response. CNTs are rpoeted to activate proinflammatory pathways in addition to the classic complement This phenomenon would enhance the immunogenicity of their antigenic cargo. In this review, we will address the current achievements and findings in the development of novel nanoadjuvants. We will discuss how surface chemistry and charge impact of CNTs on immunological outcomes. we will also focuse on the current understandings of therapeutic efficacy and mechanisms of immunotoxicology of functionalized carbon nanotubes (f-CNT) as antigen carriers in vaccine formulations.

Biography

Naghmeh hadidi has been graduated as PhD of pharmaceutics at the age of 30 years from School of Pharmacy, Shaheed Beheshti University of Medical Sciences. She is the CEO of GMP co. a knowledge based company active in probiotics production. She has about 14 years of experince in pharmaceutical industry. She is the vice president of Tehran youth counsil of chamber of commerce. She is the reviewer in IJPR and some semi public funding associations . She has some internal patents in novel drug delivery systems. She was technical cunsultant of general director of pasteur institute of Iran. She is mainly interested in carbon nanotubes application in theranostics.

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Session name/ number: Vaccine technology
Category: Oral presentation