

Antigen Encapsulated in Cationic Charged Polymer Nanoparticles Can Enhance Immune Response of Cytotoxic T Lymphocyte

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In cancer immunotherapy, CTL(Cytotoxic T Lymphocyte) response is very important for T cells to kill tumor cells efficiently. To increase CTL response, exogenous protein antigens must be up-taken and cross-presented by dendritic cells (DCs). Up to now, Poly (D,L-lactide-co-glycolide) (PLGA) has been used as efficient antigen delivery carrier into DCs and also known to increase the efficiency of cross-presentation. We have developed cationic charged PLGA nanoparticles to generate more effective CTL response. The PLGA nanoparticles coated with branched PEI showed more effective cross-presentation ability than normal PVA-coated PLGA nanoparticles. CD8<sup>+</sup> OVA specific T cells were stimulated by MHC class I molecule of bone marrow dendritic cells (BMDCs) and secrete Interleukin-2 (IL-2). The levels of IL-2 and and MHC class I molecule expression value in PLGA nanoparticles coated with branched PEI were 3-fold, and 2-fold higher than those of PVA-coated PLGA nanoparticles. We found that the cationic charge of PLGA nanoparticles induced more efficient intracellular delivery of protein antigens and mediated antigen cross-presentation by MHC class I pathway.