Tannic acid-Mediated Surface Functionalization of Polymeric Nanoparticles

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Abstract:

Polymeric nanoparticles (NPs) are decorated with various types of molecules to control their functions and interactions with specific cells. We previously used polydopamine (pD) to prime-coat poly(lactic-co-glycolic acid) (PLGA) NPs and conjugated functional ligands onto the NPs via the pD coating. In this study, we report tannic acid (TA) as an alternative prime coating that is functionally comparable to pD but does not have drawbacks of pD such as optical properties and interference of ligand characterization. TA forms a stable and optically inert coating on PLGA NPs, which can accommodate albumin, chitosan, and folate-terminated polyethylene glycol to control the cell-NP interactions. Moreover, TA coating allows for surface loading of polycyclic planar aromatic compounds. TA is a promising reactive intermediate for surface functionalization of polymeric NPs.

Keywords:

drug delivery; polymeric nanoparticles; surface functionalization; tannic acid

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