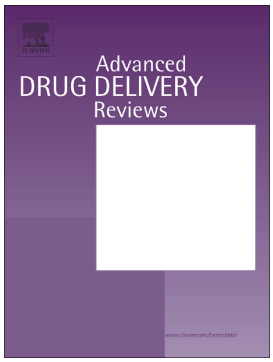

Unintended effects of drug carriers: Big issues of small particles

Hamideh Parhiz, Makan Khoshnejad, Jacob W. Myerson, Elizabeth Hood, Priyal N. Patel, Jacob S. Brenner, Vladimir R. Muzykantov

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Unintended effects of drug carriers: big issues of small particles

Hamideh Parhiz[1,*], Makan Khoshnejad[1], Jacob W. Myerson[1], Elizabeth Hood[1], Priyal N. Patel[1], Jacob S. Brenner[1,*] and Vladimir R. Muzykantov[1,2,*]

[1]Department of Pharmacology, The Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, USA
[2]Center for Targeted Therapeutics and Translational Nanomedicine (CT3N), University of Pennsylvania, Philadelphia, PA, USA

Corresponding authors.
E-mail addresses: ParhizHamideh@gmail.com (H. Parhiz), Jake.brenner@gmail.com (J.S. Brenner), and muzykant@pennmedicine.upenn.edu (V.R. Muzykantov).

Abstract

Humoral and cellular host defense mechanisms including diverse phagocytes, leukocytes, and immune cells have evolved over millions of years to protect the body from microbes and other external and internal threats. These policing forces recognize engineered sub-micron drug delivery systems (DDS) as such a threat, and react accordingly. This leads to impediment of the therapeutic action, extensively studied and discussed in the literature. Here, we focus on side effects of DDS interactions with host defenses. We argue that for nanomedicine to reach its clinical potential, the field must redouble its efforts in understanding the interaction between drug delivery systems and the host defenses, so that we can engineer safer interventions with the greatest potential for clinical success.

Keywords: Drug delivery system; nanoparticle; nanotoxicology; biocompatibility; immunogenicity; inflammation.