

9th World Drug Delivery Summit

June 30-July 02, 2016 New Orleans, USA

Biocompatible polymeric assembly as a HIV drug delivery system

Byeongwoon Song¹, Istvan Puskas², Lajos Szente² and James E K Hildreth^{1,3}¹University of California, USA²CycloLab, Hungary³Meharry Medical College, USA

HIV infection and its associated diseases continue to increase despite the progress in our understanding of HIV biology and the availability of a number of antiretroviral drugs. Current HIV treatment regimens require a combination of antiretroviral drugs to be taken at least daily for the remainder of a patient's life. Adherence remains a significant factor in the success of HIV therapy. A drug delivery system that allows sustained drug release could reduce the medical burden and costs associated with medication non-adherence. Here, we describe a novel supramolecular assembly that contains an anionic polymer hyaluronic acid (HA), cationic polymer poly-L-lysine (PL), and anionic oligosaccharide sulfobutylether-beta-cyclodextrin (SBECD). Physicochemical analysis suggested that HIV reverse transcriptase inhibitors Zidovudine and Lamivudine were successfully encapsulated into an amorphous polymer assembly in a non-covalent manner. Raman microanalysis suggested that the cyclodextrin SBECD contributed to homogeneous incorporation of the antiviral drug into the polymer assembly. Viral inhibition and *in vitro* drug release studies suggested that the supramolecular assemblies loaded with HIV drugs exhibited potent antiviral activity and maintained sustained drug release. A novel drug delivery formulation described in this study could facilitate our efforts to reduce the morbidity and mortality associated with HIV infections and could be utilized in the design of therapeutic approaches for other human diseases.

Biography

Byeongwoon Song is a Project Scientist at University of California, Davis. He has earned his undergraduate degree in Microbiology from Seoul National University and graduate degree in Virology from Columbia University and was a Postdoctoral fellow and a Research Associate at Harvard University. He has served on the Faculty at Emory University before joining UC Davis. His research focuses on virus-host cell interactions and the design of polymeric drug delivery systems. He has published 37 papers in reputed journals and has been serving as an Editorial Board Member of a number of journals.

bwsong@ucdavis.edu

Notes: