Abstract

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Self-assembled siRNA Encapsulated PLGA Nanaoparticles PreparationbyaMicrofluidic Device

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Abstract

In 2019, a novel coronavirus was an outbreak. Liu et al. have reported that siRNA-basedtreatmentenables an effective solution in combating COVID-19 [1]. Under such a situation, the siRNAdrugdelivery system was highly expected. PLGA (Poly(lactic-co-glycolic acid)) is an attractivepolymerto develop drug delivery systems (DDS) owing to its biocompatibility and biodegradablilty[2].However, it is difficult to load siRNA into PLGA nanoparticles (NPs) with fairlyhighencapsulation efficiency (EE) with conventional method such as evaporation method. Researcherscommonly use cationic excipients such as polyethyleneimine (PEI), dioleyltrimethylam-moniumpropane (DOTAP) to increase the EE. However, such cationic excipients are often show cytotoxicity. Thus, it is urgently needed to develop a method that could highly encapsulate siRNA without cationic excipients. Our group has previously developed a device that can fabricate precisely size-controlled lipid NPs [3]. In this study, we apply it to prepare PLGA-siRNA NPs. A PLGA polymer solution was prepared by dissolving PLGA in acetonitrile, while siRNA was dissolved in acetic acid solution. Both solutions were then introduced into the microfluidic device to form the polymeric NPs. After dialysis, the size of NPs was measured by dynamic light scattering, and the concentration of siRNA was evaluated by RiboGreen RNA assay.

Biography

Yi BAO got her master's degree, and is studying for doctor's degree at Hokkaido University, Japan. Estimation of the Effectiveness of Potential Drug Candidates and Antigen–Antibody Interactions in Convalescent Plasma Therapy published online ahead of print, 2020 Jul 8.

