

26G-ISMS34 Cyclodextrin-based Supramolecular Drug Carriers and Active Pharmaceutical Ingredients

○ Taishi HIGASHI¹, Keiichi MOTOYAMA¹, Hidetoshi ARIMA^{1,2}

¹Department of Physical Pharmaceutics, Graduate School of Pharmaceutical Sciences, Kumamoto University,

²Program for Leading Graduate Schools “HIGO (Health life science: Interdisciplinary and Global Oriented) Program”, Kumamoto University

Cyclodextrins (CyDs) are cyclic oligosaccharides composed of six (α -CyD), seven (β -CyD), and eight (γ -CyD) glucopyranose units that can form inclusion complexes with various organic and inorganic compounds. Recently, we have developed CyD-based supramolecular drug carriers for low-molecular weight drugs, peptide/protein drugs, gene and nucleic acid drugs through the combination with functional polymers or macromolecules, such as dendrimer, polyethylene glycol (PEG) and liposome (Fig. 1). Moreover, we also utilized CyDs as active pharmaceutical ingredients. In this presentation, we introduce the recent applications of CyDs as drug carriers and active pharmaceutical ingredients. The topics of the presentation are shown as follows.

- 1) Folate-appended CyDs as drug carriers for low-molecular weight anticancer drugs
- 2) Reversible PEGylation for peptide/protein drugs based on CyD/adamantane interaction
- 3) Polypseudorotaxane hydrogels as a stabilizer for antibodies
- 4) Ligand-appended dendrimer/CyD conjugates as gene and nucleic acid drugs carriers
- 5) Folate-appended CyDs as tumor-selective anticancer drugs

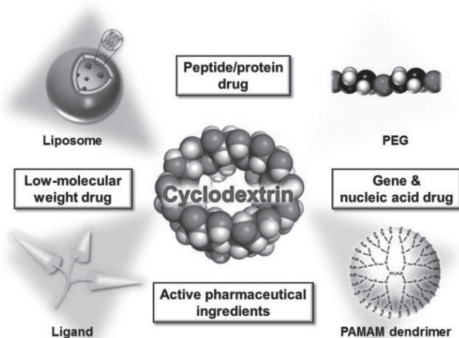


Figure 1. The Combination of CyDs and Functional Materials as Drug Carriers and Active Pharmaceutical Ingredients