Electronic Supplementary Material (ESI) for Medicinal Chemistry Communications.
This journal is © The Royal Society of Chemistry 2014

Supplementary Information for

A novel surface-coated nanocarrier for efficient encapsulation and delivery of Camptothecin to cells

Rie Wakabayashi,[a,b] Ryutaro Ishiyama,[a] Noriho Kamiya,[a,b,c] and Masahiro Goto*[a,b,c]

[a] *Department of Applied Chemistry, Graduate School of Engineering, Kyushu University, Motooka 744, Nishi-ku, Fukuoka 819-0395, Japan*

[b] *Center for Transdermal Drug Delivery, Kyushu University, Motooka 744, Nishi-ku, Fukuoka 819-0395, Japan*

[c] *Center for Future Chemistry, Kyushu University, Motooka 744, Nishi-ku, Fukuoka 819-0395, Japan*

*Corresponding author. E-mail: m-goto@mail.cstm.kyushu-u.ac.jp

Table of Contents

1. Materials

Camptothecin, chloroform, triethylamine and cyclohexane were purchased from Wako Pure Chemical Industries (Osaka, Japan). Dimethyl sulfoxide, acetic acid and methanol were purchased from Kishida Chemical Co., Ltd. (Osaka, Japan). Pluronic F-68 was purchased from MP Biomedicals (Santa Ana, CA, USA). Pluronic F-127 was purchased from Sigma–Aldrich (St. Louis, MO, USA). Acetonitrile was purchased from Kanto Chemical, Co. (Tokyo, Japan). Cell counting kit-8 and Cellstain® Hoechst 33432 were purchased from Dojindo Laboratories (Kumamoto, Japan). LysoTracker® Green DND-26, Dulbecco's modified Eagle medium (DMEM, low glucose, pyruvate), fetal bovine serum (FBS), penicillin, streptomycin, Opti-MEM and Dulbecco's phosphate-buffered saline (D-PBS) were purchased from Invitrogen (GIBCO, Carlsbad, CA, USA). 1,2-Dioleoyl-sn-glycero-3-phosphoethanolamine-N-lissamine rhodamine B sulfonyl (ammonium salt) was purchased from Avanti polar lipids (Alabaster, AL, USA).

2. Photographs of aqueous dispersions of CPT–Pluronic complexes

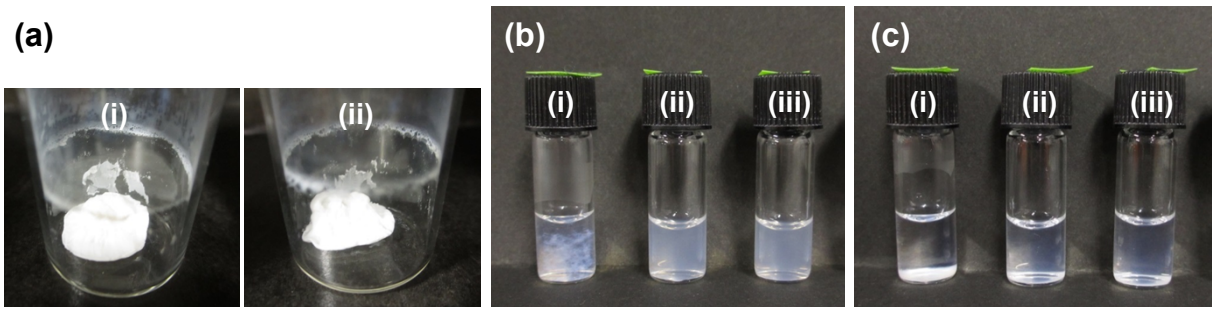

Figure S1. Photographs of CPT–Pluronic hybrid solutions (a) before dispersion in water: (i) CPT–Pluronic F-68 and (ii) CPT–Pluronic F-127. (b) As-prepared aqueous dispersions and (c) aqueous dispersions after 1 week of (i) free CPT, (ii) CPT–Pluronic F-68 and (iii) CPT–Pluronic F-128.

3. Dynamic light scattering (DLS) of CPT–Pluronic complexes

Aqueous dispersions of CPT–Pluronic hybrids were prepared at a CPT concentration of 0.1 mg/mL and DLS analysis was performed on a Zetasizer Nano-Zs. The size distributions of the samples as prepared and after incubation at room temperature for 1 week are shown in Fig. S1.

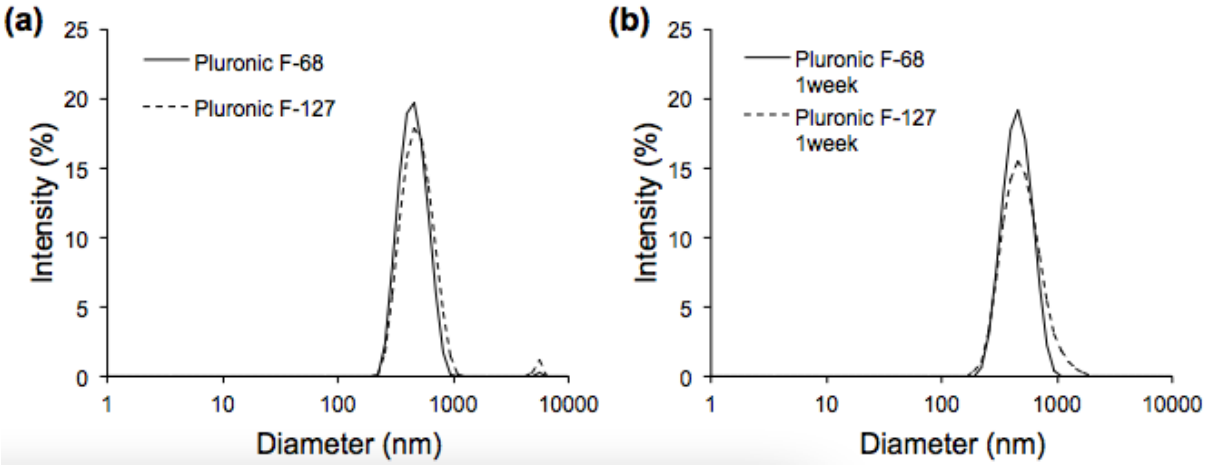

Figure S2. Size distributions of CPT–Pluronic hybrids (a) as prepared and (b) after 1 week of incubation. Solid line: CPT–Pluronic F-68 and dashed line: CPT–Pluronic F-127.

4. Release profiles of CPT from CPT–Pluronic complexes

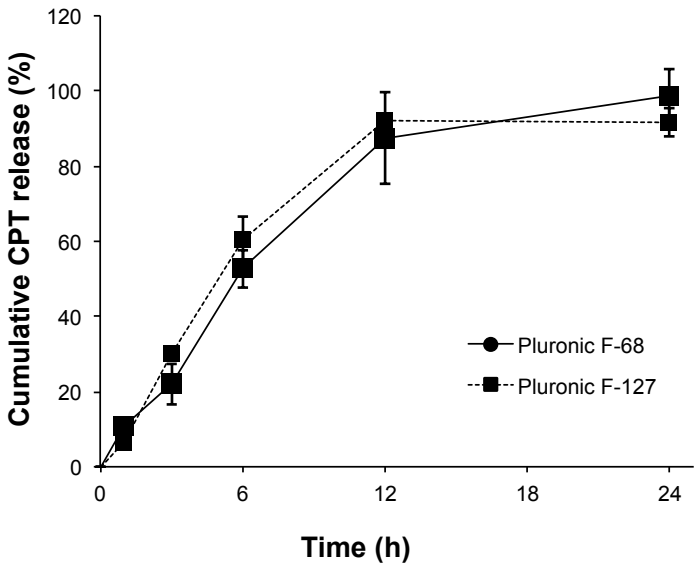

Figure S3. Release kinetics of CPT from CPT–Pluronic complexes. Data are shown as mean ± standard deviation (SD) from representative runs.

5. Chemical stability of CPT in CPT–Pluronic complexes

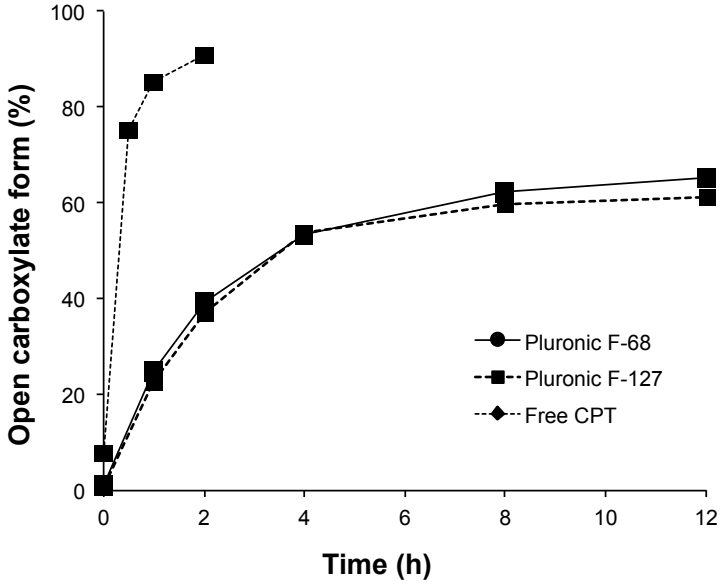

Figure S4. Chemical stability of CPT in CPT–Pluronic complexes.

6. Intracellular delivery of CPT–Pluronic complexes

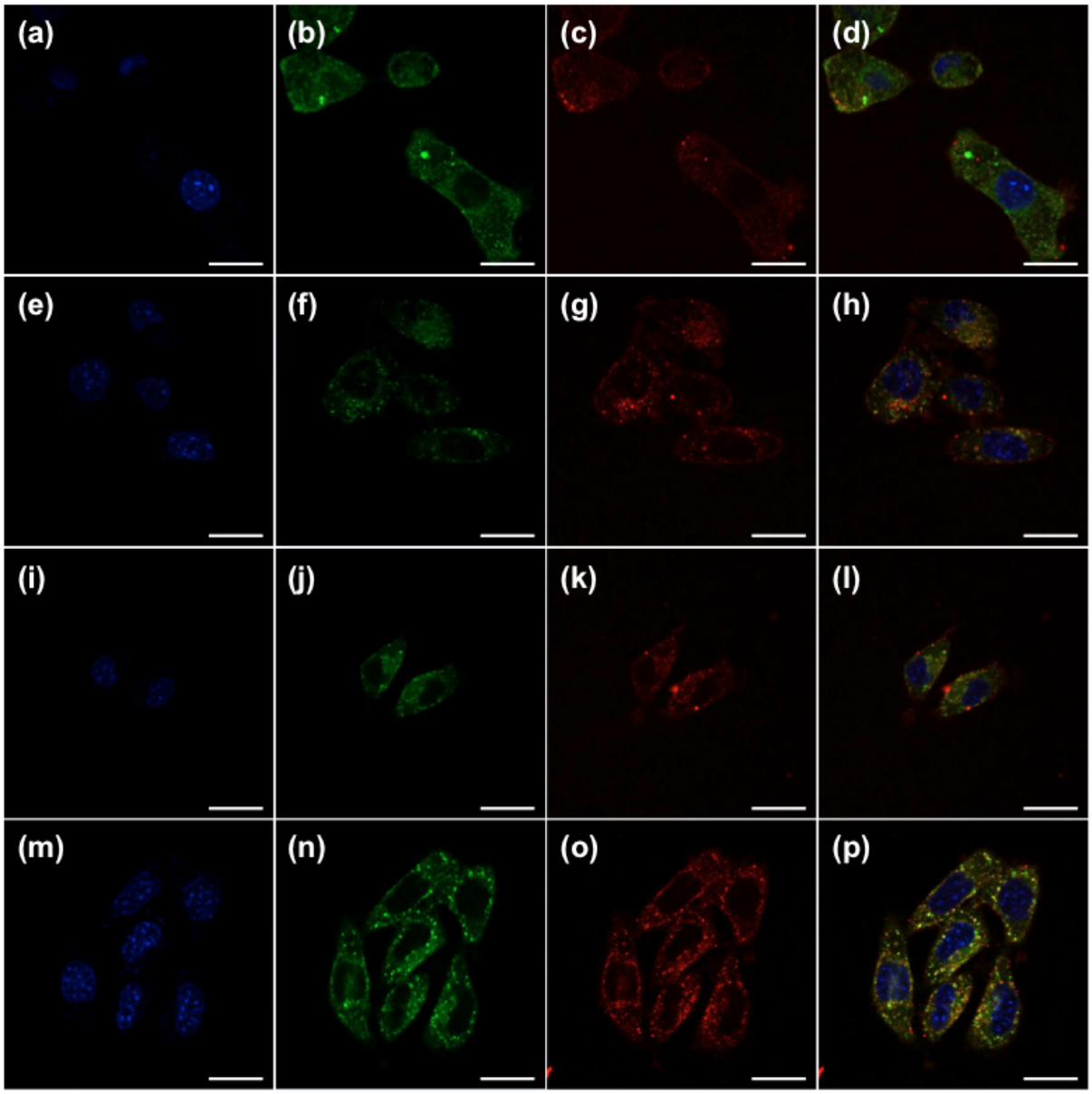

Figure S5. Intracellular delivery of CPT–Pluronic complexes in B16 cells: (a–d) CPT–Pluronic F-68, 2 h; (e–h) CPT–Pluronic F-68, 6 h; (i–l) CPT–Pluronic F-127, 2 h; (m–p) CPT–Pluronic F-127, 6 h. (a, e, i, m) Nuclei stained with Hoechst 33342, (b, f, j, n) endosomes/lysosomes stained with Lysotracker® Green, (c, g, k, o) CPT–Pluronic complexes stained with Rho-DOPE and (d, h, l, p) associated combined images. Scale bar: 20 µm.

7. Cellular uptake study of CPT–Pluronic complexes by flow cytometry

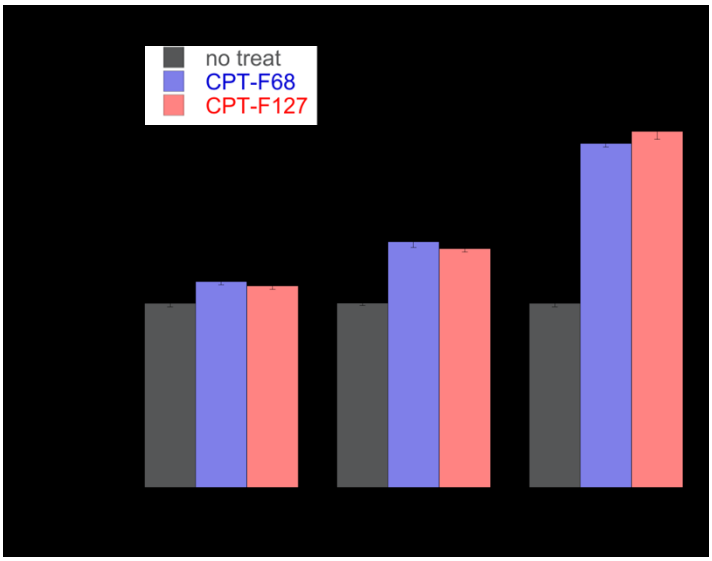

Figure S6. Cellular internalization study of CPT-Pluronic complexes by flow cytometry. CPT–Pluronic F-68 or F-127 labeled with Rho-DOPE (CPT dose: 0.1 μg/mL) was incubated with B16 cells at 37°C and cellular uptake was evaluated at 6, 12, and 24 h. Data are mean ± SD, n = 3.