

pH Sensitive Polyelectrolyte Complex Micelles for Highly Effective Combination Chemotherapy

Thiruganesh Ramasamy^{a†}, Jeong Hwan Kim^{a†}, Ju Yeon Choi^a, Tuan Hiep Tran^a,

Han-Gon Choi^b, Chul Soon Yong^{a,*}, Jong Oh Kim^{a,*}

^aCollege of Pharmacy, Yeungnam University, 214-1, Dae-dong, Gyeongsan712-749, South Korea

^bCollege of Pharmacy, Institute of Pharmaceutical Science and Technology, Hanyang University, 55, Hanyangdaehak-ro, Sangnok-gu, Ansan 426-791, South Korea

[†]Both authors contributed equally.

*Corresponding author: College of Pharmacy, Yeungnam University, 214-1 Dae-dong, Gyeongsan 712-749, South Korea

E-mail: jongohkim@yu.ac.kr (Jong Oh Kim)

Tel: +82-53-810-2813, Fax: +82-53-810-4654

E-mail: csyong@ynu.ac.kr (Chul Soon Yong)

Tel: +82-53-810-2812, Fax: +82-53-810-4654

Methods

Physical characterization

The FT-IR spectrum was recorded using a Thermo Scientific Nicolet Nexus 670 FT-IR Spectrometer and Smart iTR with a diamond window (Thermo Fisher Scientific Inc., Waltham, MA). The crystallinity index of samples was obtained using an X-ray diffractometer (X'Pert PRO MPD diffractometer, Almelo, the Netherlands) with a copper anode (Cu K α radiation) as the source of radiation.

Fluorescence spectrophotometer (Perkin Elmer LS 55, USA) was employed to record the fluorescence spectra of combined free drugs and MTX/DOX-M at an excitation wavelength (λ_{ex}) of 480 and 610 nm for DOX and MTX, respectively, and with a bandwidth of 5 nm for excitation and emission.

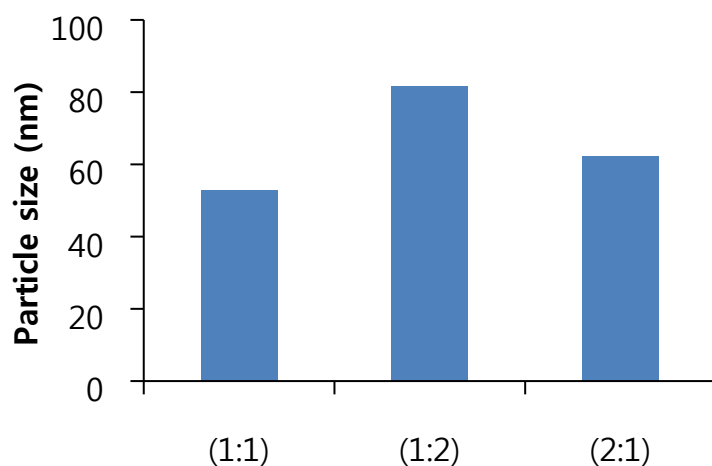


Figure S1. Particle size of MTX/DOX-loaded PEC micelles prepared with low molecular weight PEO-*b*-PAA (MW 6700) at R=0.5. Note: at lower feeding ratio (R=0.25), micelles were unstable.

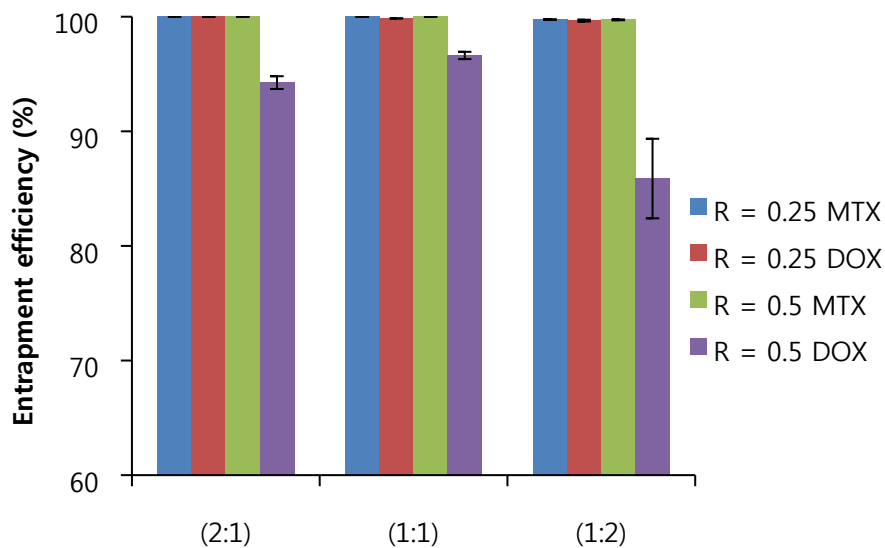


Figure S2. Entrapment efficiency of different ratio of MTX and DOX at two charge ratios (R=0.25 and 0.5).

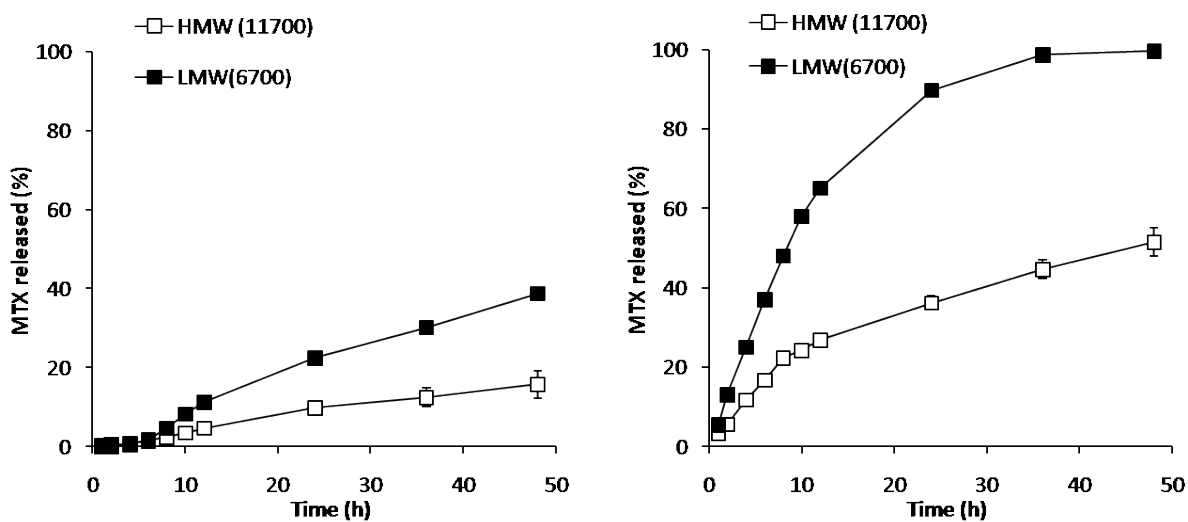


Figure S3. Release profiles of MTX-loaded micelles at pH 7.4 and 5.0. The drug-loaded micelles were prepared with PEO-*b*-PAA (MW 6700) at R=0.5.

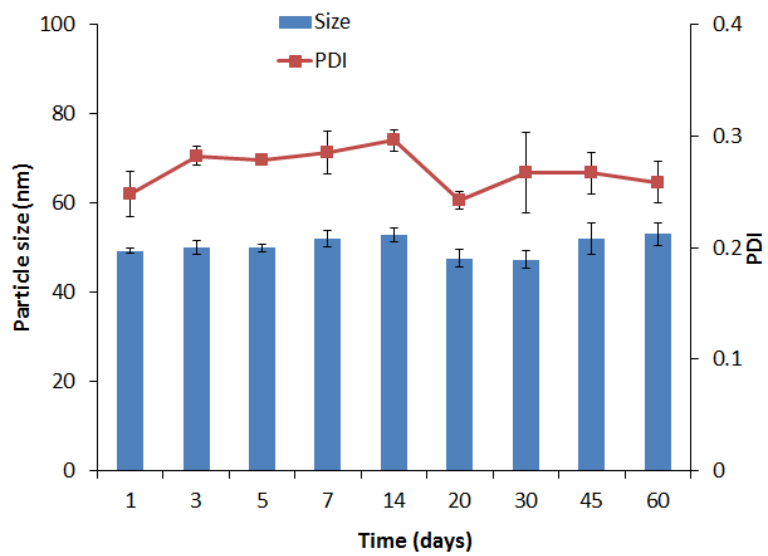


Figure S4. Stability analysis of MTX/DOX-M in terms of particle size and PDI at 4°C