Supporting Information

pH-Sensitive Polymeric Micelles for Co-delivery of Proapoptotic Peptide and Anticancer Drug for Synergistic Cancer Therapy

Anbu Mozhi,†,‡,a Israr Ahmad,†,a Chukwunweike Ikechukwu Okeke,†,‡,a Chan Li,*,†,‡,a Xing-Jie Liang*,†,‡,a

†Laboratory of Controllable Nanopharmaceuticals, Chinese Academy of Sciences (CAS), Zhongguancun, Beijing 100190, China
‡Key laboratory for Biomedical Effects of Nanomaterials and Nanosafety, National Center for Nanoscience and Technology, No. 11, First North Road, Zhongguancun, Beijing 100190, China
aUniversity of Chinese Academy of Sciences, Beijing 100049, China
Corresponding author: Tel; +86-010-82545569; Fax: +86-010-62656765
E-mails: lic@nanoctr.cn, liangxj@nanoctr.cn
Fig. S1 $^1$H NMR spectra of (A) PBAE-PEG, (B) CGKRK$_2$(KLAKLAK)$_2$-conjugated PBAE-PEG copolymer and (C) free CGKRK$_2$(KLAKLAK)$_2$. Spectra were recorded in DMSO-d$_6$. The therapeutic peptide signals in B are denoted by asterisks (*) symbols.
**Fig. S2** GPC traces of PP (PBAE-PEG) and TPPP ((CGKRK)_P(KLAKLAK)_{2PBAE-PEG}) determined by DMF based gel permeation chromatography.
Table S1 Physicochemical characterization of CGKRK\textsubscript{D}(KLAKLAK)\textsubscript{2}-conjugated PBAE-PEG copolymer.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Feed ratio</th>
<th>Mn\textsuperscript{a} (g/mol)</th>
<th>PDI\textsuperscript{a}</th>
<th>CMC\textsuperscript{b} (mg/mL)</th>
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</thead>
<tbody>
<tr>
<td>PP</td>
<td>BD: AP: PEG</td>
<td>4092</td>
<td>1.4</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(1.2:0.9:0.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP</td>
<td>-</td>
<td>2097</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TPPP</td>
<td>PP: TP</td>
<td>8286</td>
<td>1.02</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(1:2.2)</td>
<td></td>
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</table>

\textsuperscript{a}Molecular weight of the polymer was determined by GPC measurements. PDI = Mw/Mn.

\textsuperscript{b}CMC was determined using pyrene as a fluorescence probe. Abbreviation: PP = PBAE-PEG, TP = CGKRK\textsubscript{D}(KLAKLAK)\textsubscript{2}, TPPP = CGKRK\textsubscript{D}(KLAKLAK)\textsubscript{2}-PBAE-PEG.
Fig. S3 The diameter and size distribution of DTX-loaded PP micelles measured by DLS.
**Fig. S4** The GPC traces of time-dependent hydrolysis of TPPP at (A) pH 7.4 and (B) pH 5.5. (C) Determination of molecular weight changes of TPPP copolymer based on time-dependent hydrolysis via GPC analysis.
**Fig. S5** Confocal images of MCF-7 cells treated with Cy5-loaded PP and Cy5-loaded TPPP micelles (1 h). Lysosomes were labelled with LysoTracker for 15-20 min. Red and green colors denote Cy5 and LysoTracker respectively.
**Fig. S6** BIO-TEM images of (A) MCF-7 cells incubated for 36 h with empty PP micelles and (B, C, D, and E) MCF-7 cells incubated with DTX-loaded TPPP micelles. Mitochondria (M) were highlighted by enlarged orange circle and yellow stars. Nucleus (N) was indicated by blue stars. Red stars show large vacuoles.