Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Transmembrane Delivery of Anticancer Drugs through Self-assembling Cyclic Peptide Nanotubes

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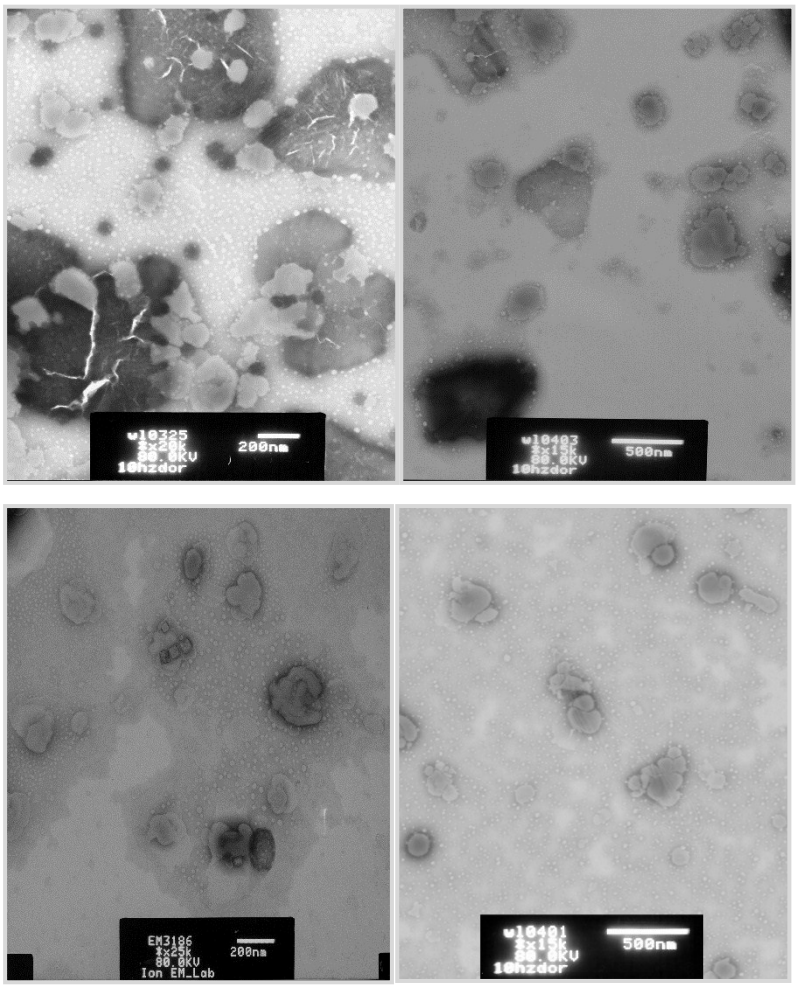


Fig. 1S Micrographs of liposomes obtained using a TEM (JEM-1230, JEOL, Japan) after adsorption of the samples on copper grids and staining negatively with 1% (w/v) uranyl acetate. A: 5-FU; B: tegafur; C: cisplatin; D: cytarabine.

Table 1S Particle size and entrapment efficiency of model drug-loaded liposomes

Drug	Partical size (nm)	Entrapment efficiency (%)
5-FU	627.8 ± 89.5	14.43% ± 3.01%
Cisplatin	351.9 ± 17.5	8.38% ± 1.49%
Tegafur	261.9 ± 28.8	12.13% ± 1.33%
Cytarabine	370.6 ± 54.1	16.25% ± 2.48%

The particle size of liposomes were measured by Zetasizer Nano® (Malvern Instruments, UK) at 633 nm and 25°C. Entrapment efficiency was calculated $W_{entrapment}/W_{total} \times 100\%$, where $W_{entrapment}$ referred to drug amount entrapment in liposomes as measured by separating liposomes from free drugs using a Sephadex G-25 column, and W_{total} referred to total drug amount measured after disrupting the liposomes with Triton X-100.

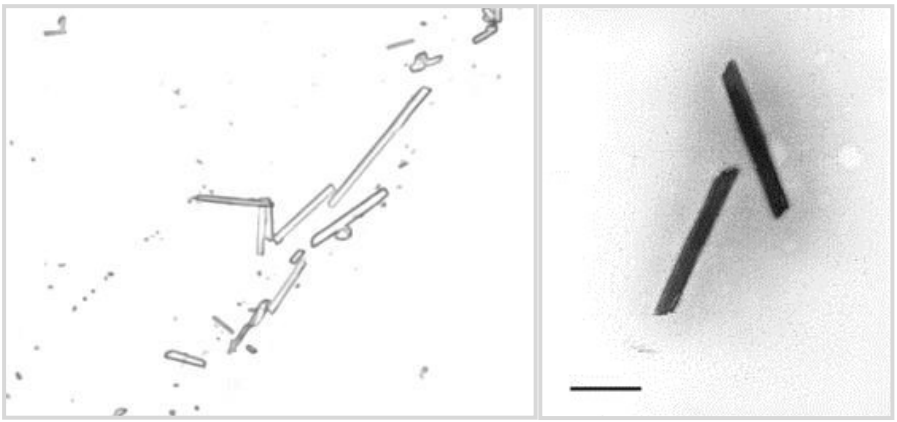


Fig. 2S Optical micrograph (left; ×600) and transmission electron micrograph (right; bar: 1 μm) of bundles of CNPTs precipitated from TFA/$CHCl_3$.

Table 2S. The release of 5(6)-carboxyfluorescein liposomes

Group	R_{DMF} or R_{CP}[a]	R_{Triton}[a]
Blank		245.78%±11.25%
DMF	2.17%±1.29%	208.38%±10.85%
CP (1:50, n/n)	17.55%±0.23%	165.58%±5.08%
CP (1:25, n/n)	18.04%±0.39%	179.18%±6.05%

[a] The ratio $R=(F_{max}-F_0)/F_0$, including R_{DMF}, R_{CP} and R_{Triton}, was used to express the membrane-disrupting, in which F_{max} represents the maximal fluorescence value after the addition of DMF, cyclic peptides or Triton X-100 solution and F_0 is the initial fluorescence of the liposome suspensions.

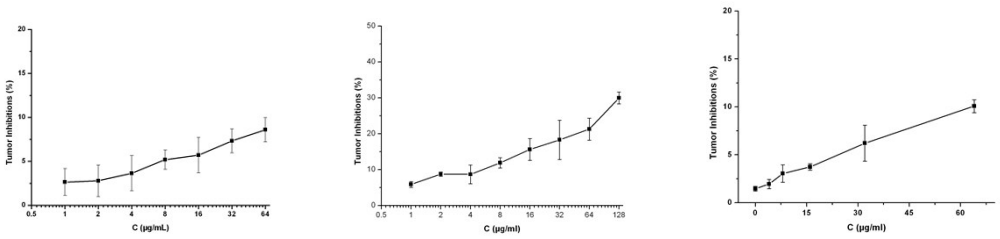
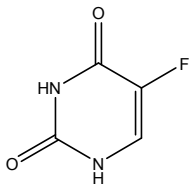
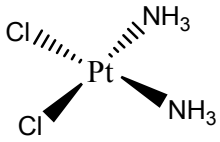
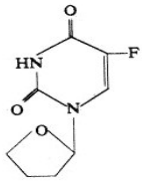
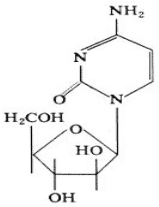


Figure 3S. The inhibitory effect of peptide nanotubes on BEL7402 (left), Hela (middle) and S180 (right) cell proliferation

Table 3S Structure information of model drugs

Drug	Structure	MW	Size (nm)
5-Fluorouracil		130.08	0.44
Cisplatin		300.05	0.48
Tegafur		200.17	0.80
Cytarabine		243.22	1.11