

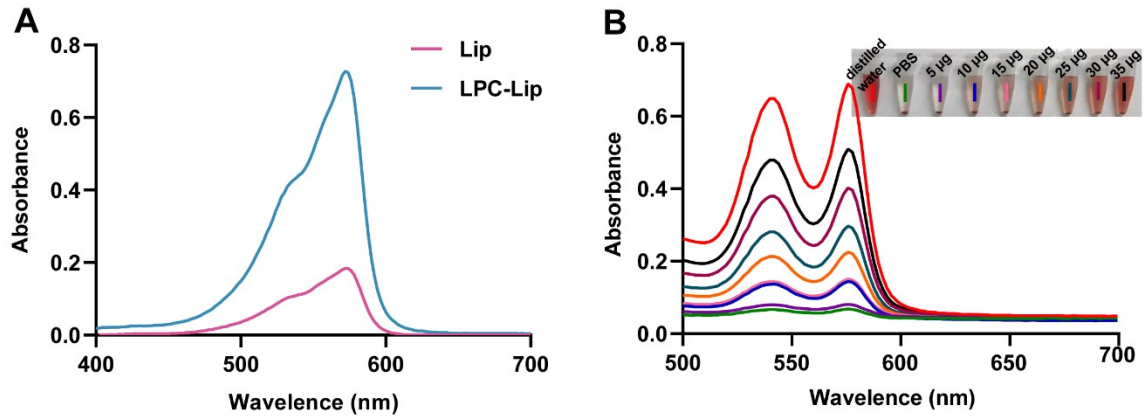
## Supplementary Information

### **Engineering Lipusu by lysophosphatidylcholine for improved tumor cellular uptake and anticancer efficacy**

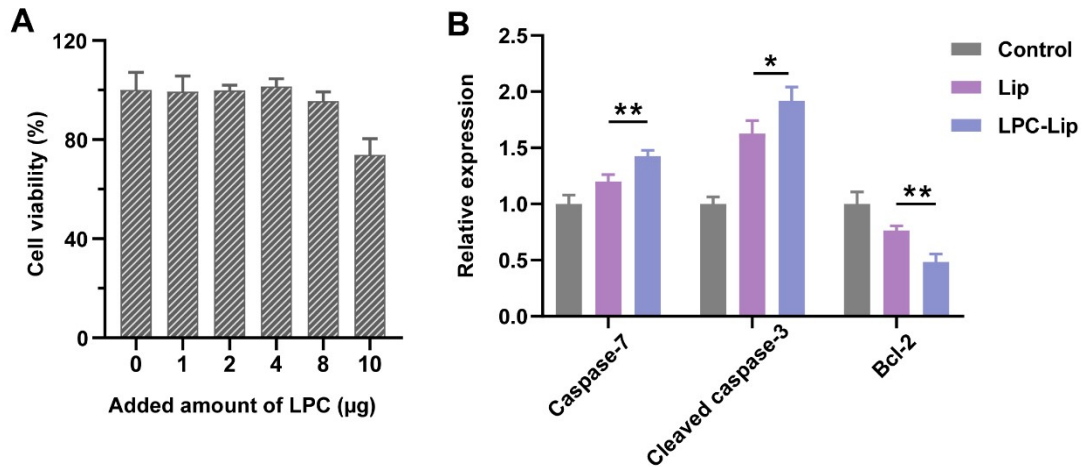
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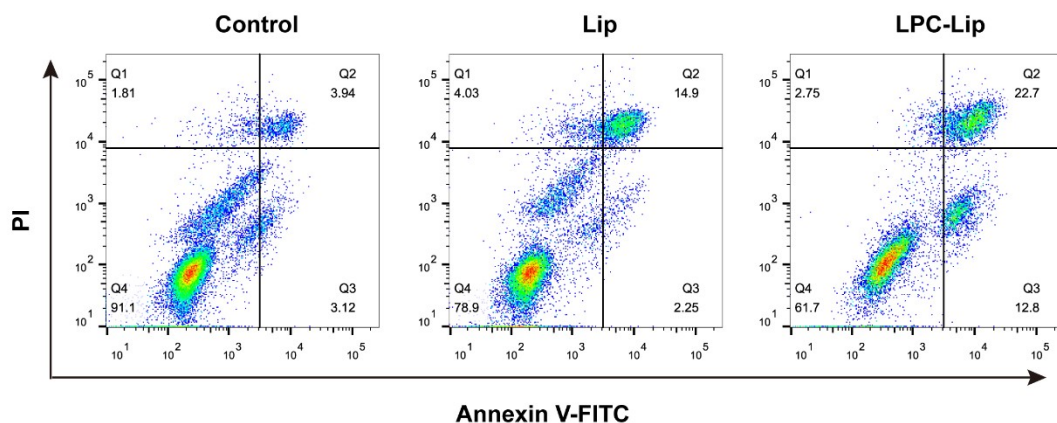
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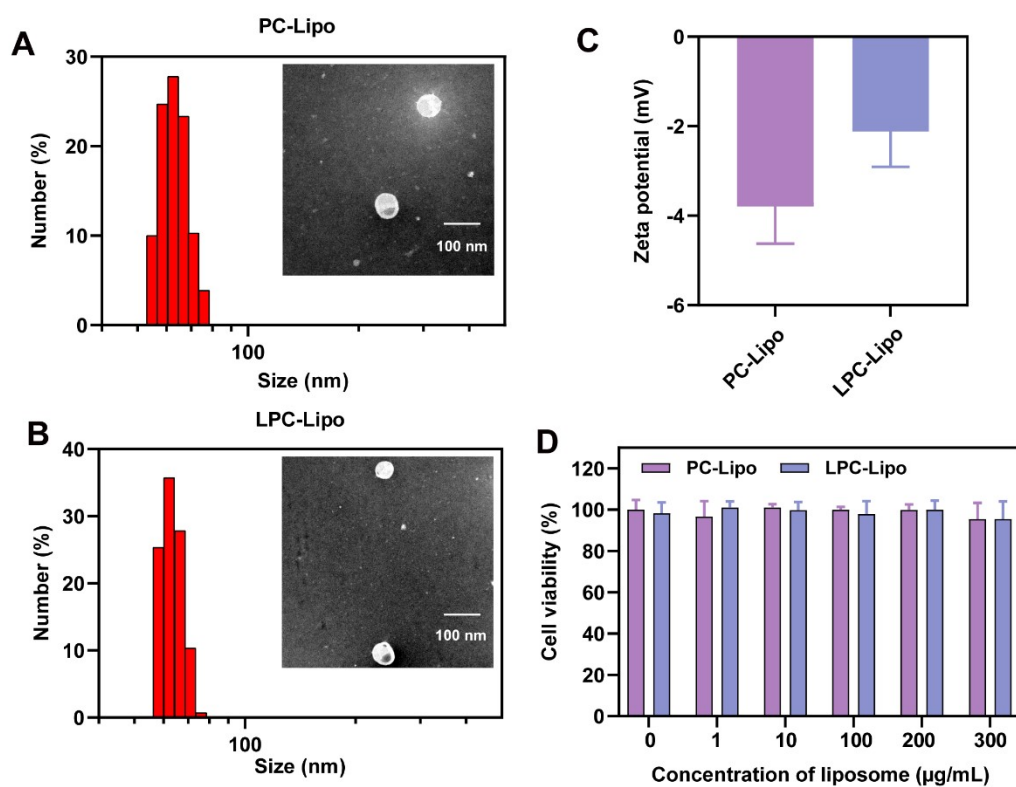
**Fig. S1** (A) Assay of Lysophosphatidylcholine in Lip and LPC-Lip. (B) Hemolytic activities of LPC with different amounts, and comparison with distilled water (positive control) and PBS (negative control).



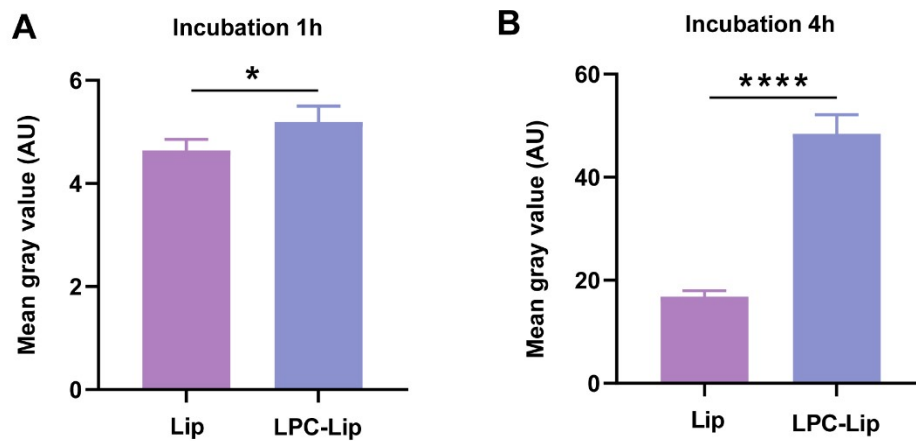
**Fig. S2** (A) Cytotoxicity of LPC with different additions as examined in 4T1 cells. (B) Quantification of relative expression levels of caspase-7, cleaved caspase-3 and Bcl-2. The blots were analyzed by densitometry and normalized to  $\beta$ -Actin. Data are shown as the mean  $\pm$  SD (n=3). The significance levels are shown as \*P<0.05 and \*\*P<0.01.



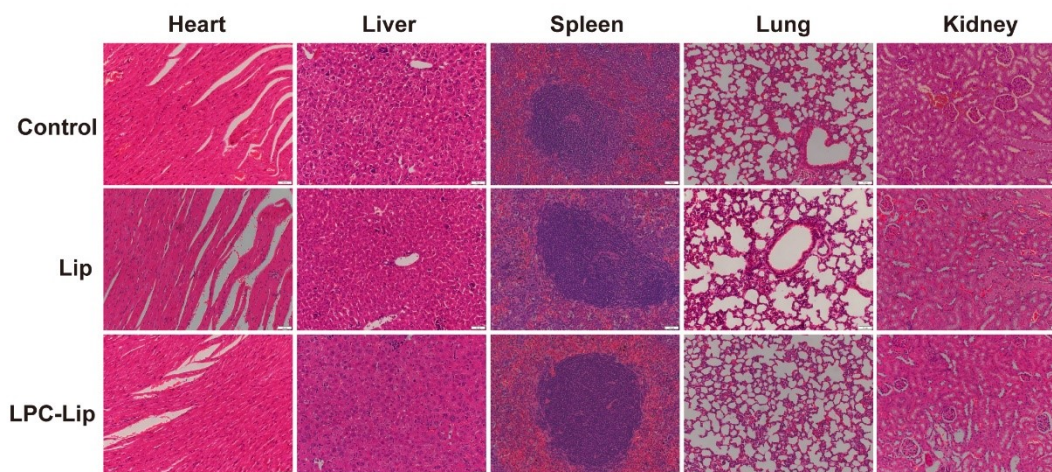
**Fig. S3** Cell apoptosis of 4T1 cells treated with culture medium, Lip and LPC-Lip.



**Fig. S4** Characterization of PC-Lipo and LPC-Lipo. (A, B) The particle size distribution and representative TEM images of PC-Lipo (A) and LPC-Lipo (B). (C) The zeta potential variation of of PC-Lipo and LPC-Lipo. (D) Cytotoxicity of PC-Lipo and LPC-Lipo at different concentrations as examined in 4T1 cells. Data in (C) and (D) are showed as mean  $\pm$  SD (n=3).



**Fig. S5** Quantification of DiI mean fluorescence intensity in 4T1 cells from Fig. 4A using ImageJ. Data are presented as mean  $\pm$  SD ( $n > 50$  cells per group). The significant levels are shown as  $*P < 0.05$  and  $****p < 0.0001$ .



**Fig. S6** Representative H&E-stained images of major organs collected from 4T1 tumor-bearing mice after 17 days of different treatment. Scale bars, 50  $\mu\text{m}$ .