

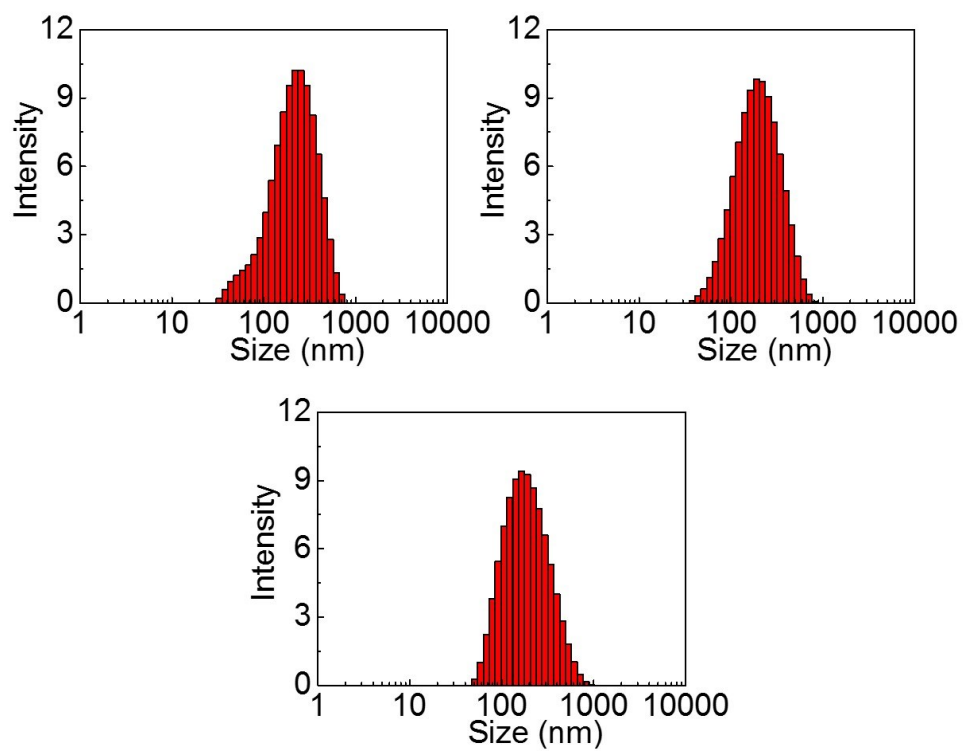
## **Electronic Supplementary Information (ESI)**

*of*

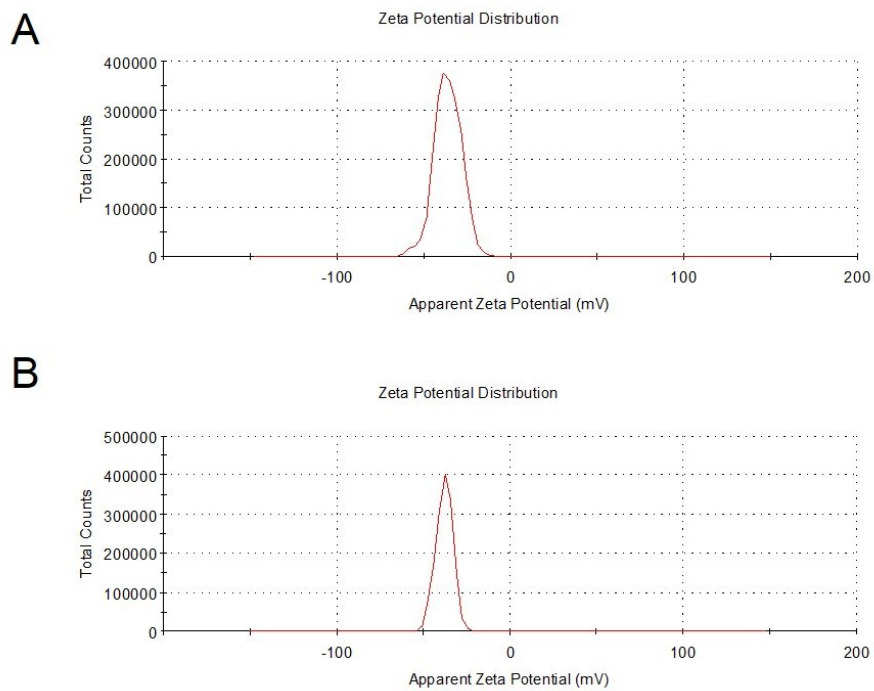
## **Self-delivery nanomedicine to overcome drug resistance for synergistic chemotherapy**

*Rong-Rong Zheng, † Lin-Ping Zhao, † Ling-Shan Liu, † Fu-An Deng, Xia-Yun Chen,*

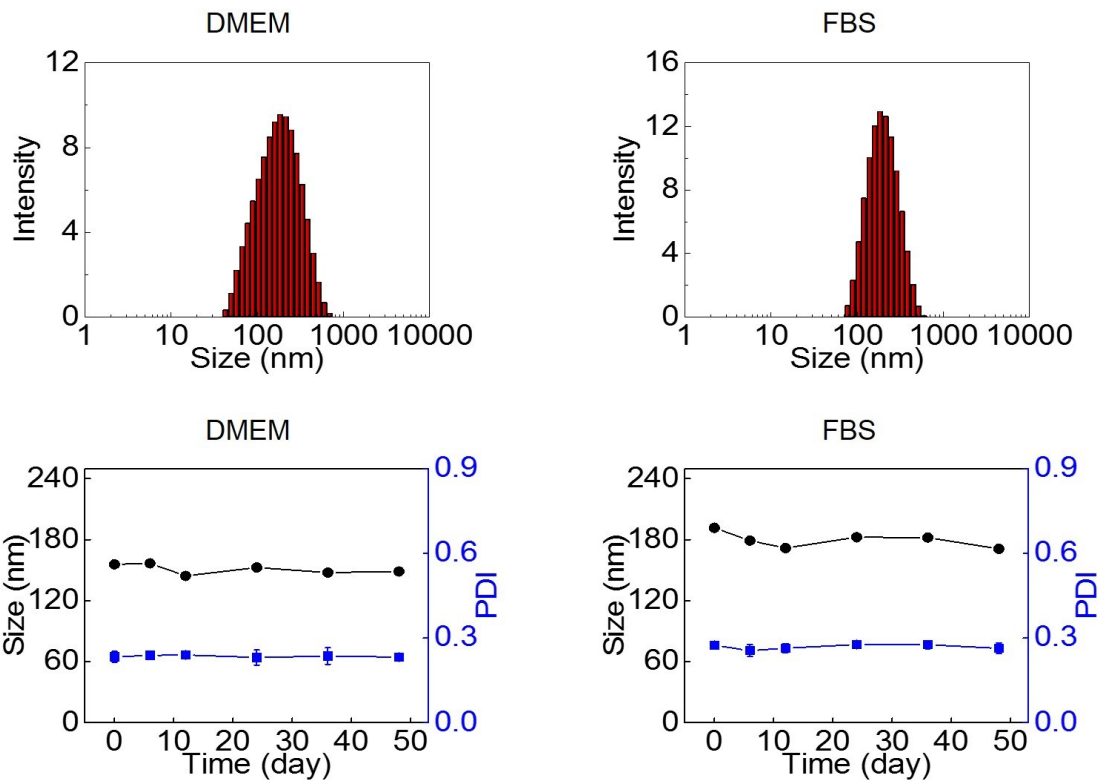
*Xue-Yan Jiang, Chang Wang, Xi-Yong Yu, \* Hong Cheng\* and Shi-Ying Li\**



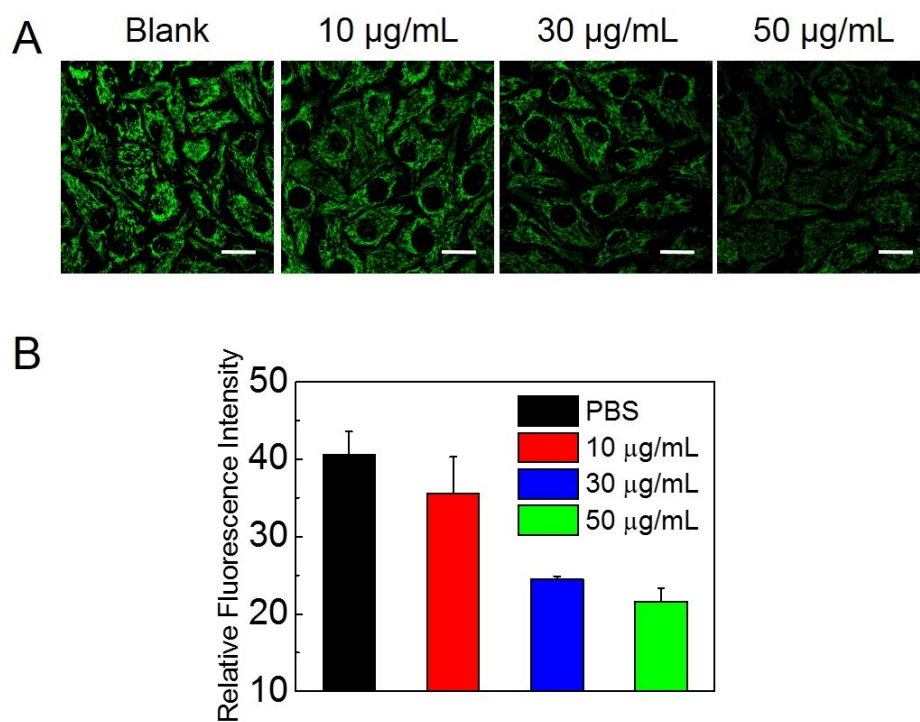
**Fig. S1** The particle size distribution of  $\alpha$ -TD in three independent experiments.



**Fig. S2** Zeta potential of self-assembled (A)  $\alpha$ -TOS and (B)  $\alpha$ -TD.

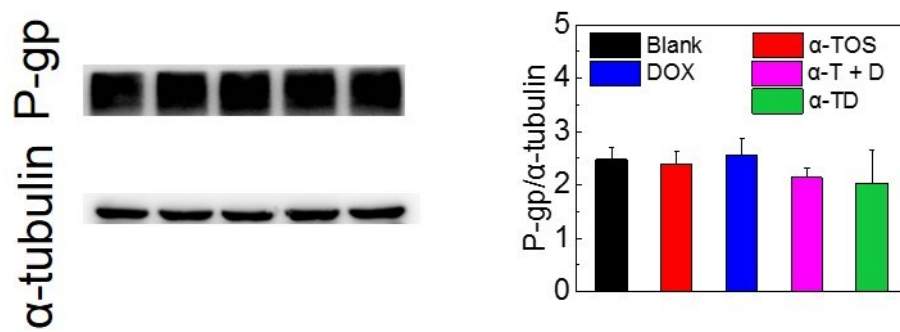


**Fig. S3** The particle size distribution and the stability of  $\alpha$ -TD in the presence of DMEM or FBS.

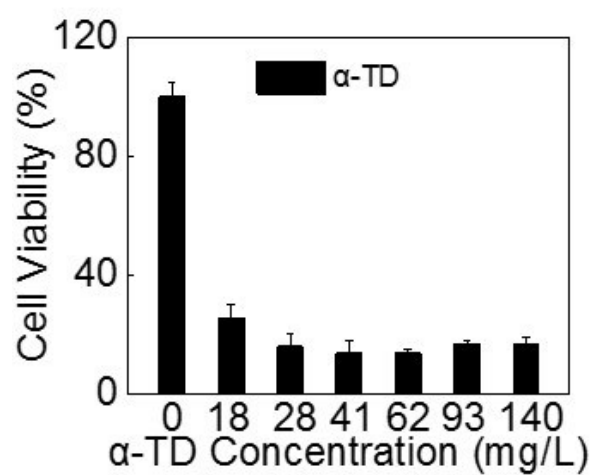


**Fig. S4** (A) CLSM images and (B) quantitative fluorescence analysis of MCF-7 cells after treatment with gradient concentrations of  $\alpha$ -TOS and stained by Rhodamine 123.

Scale bar: 20  $\mu\text{m}$ .

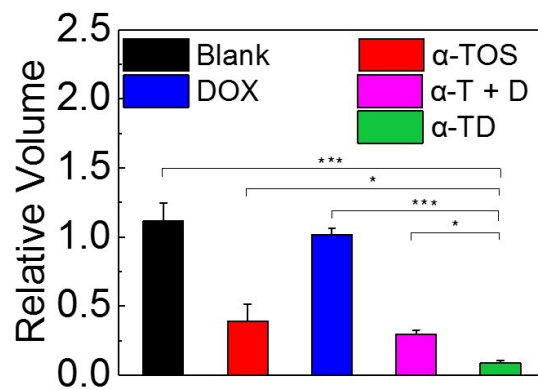
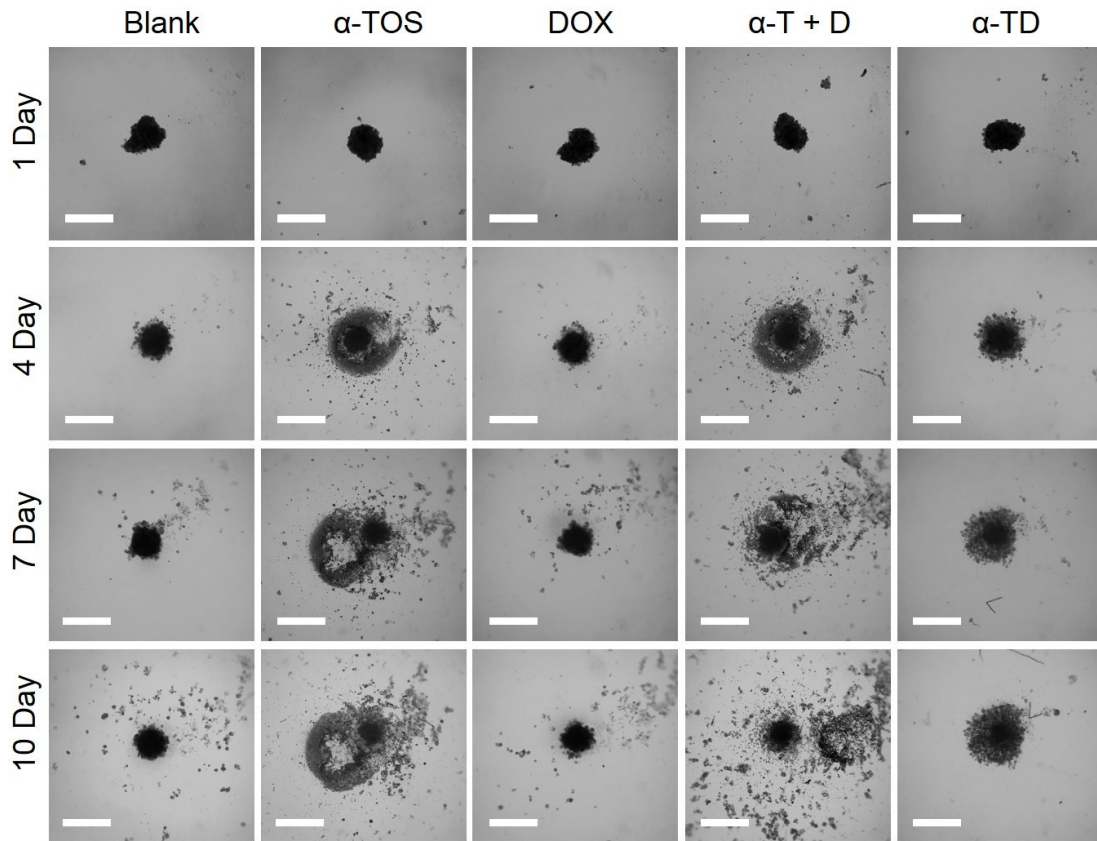


**Fig. S5** Western blot and quantification analysis of P-gp expression in MCF-7 ADR cells after treatment with  $\alpha$ -TOS, DOX,  $\alpha$ -T + D or  $\alpha$ -TD for 6 h.



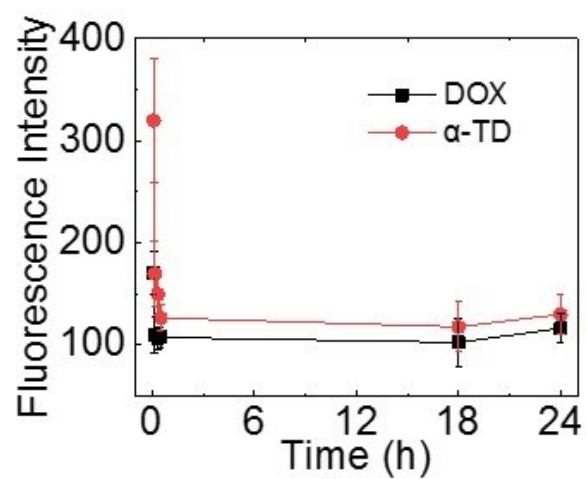
**Fig. S6** Cell viability of normal 3T3 cells after treatment with gradient concentrations

of  $\alpha$ -TD.

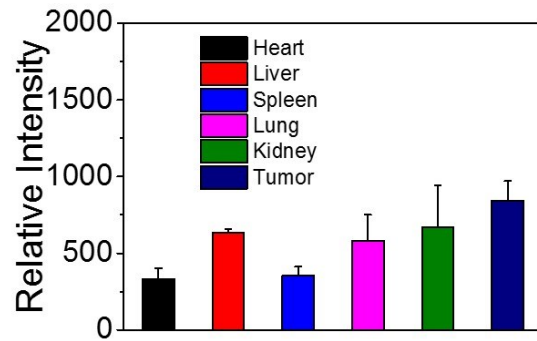
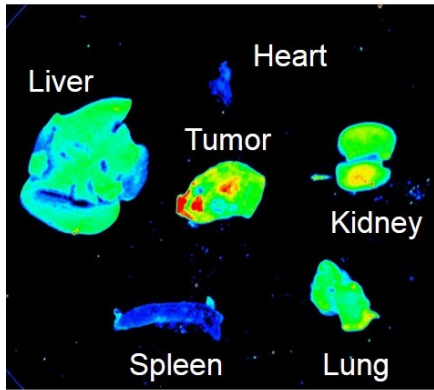


**Fig. S7** The growth and relative quantification analysis of MCF-7 ADR tumor spheroids after treatment with  $\alpha$ -TOS, DOX,  $\alpha$ -T + D or  $\alpha$ -TD for 1, 4, 7 and 10 days.

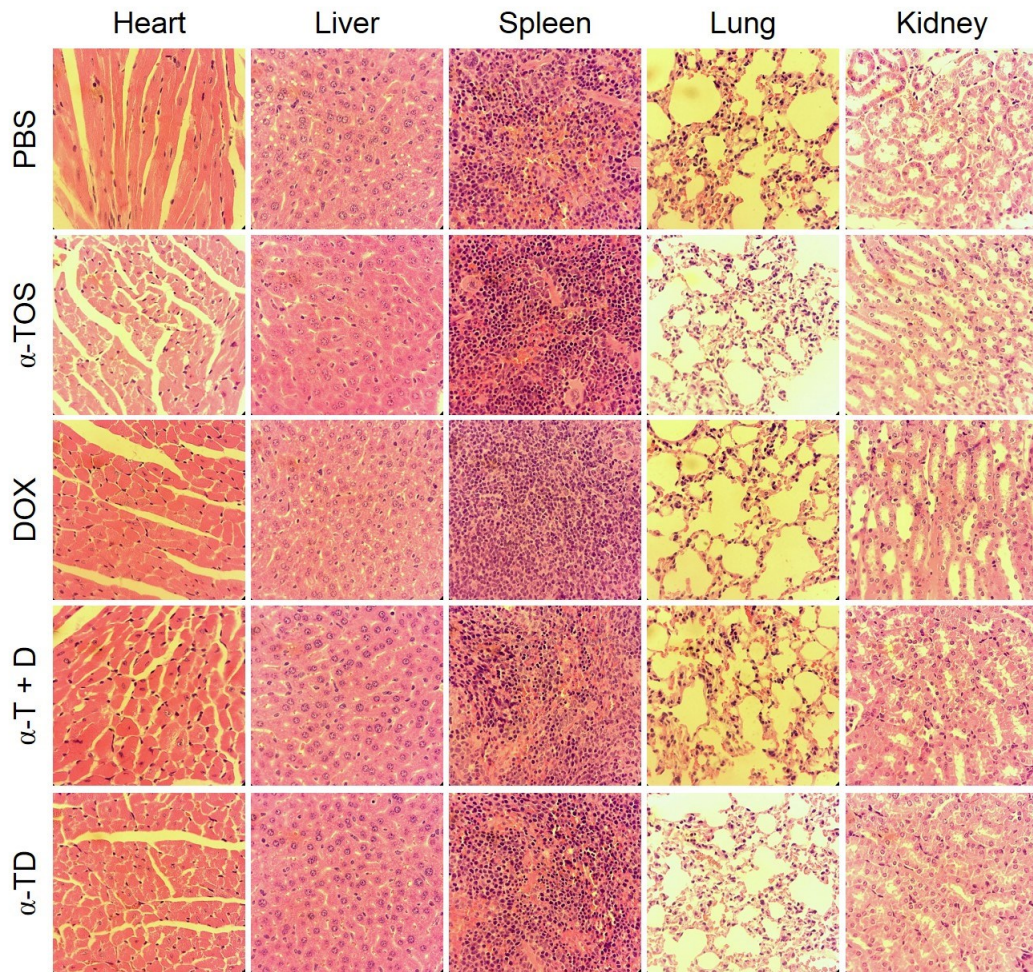




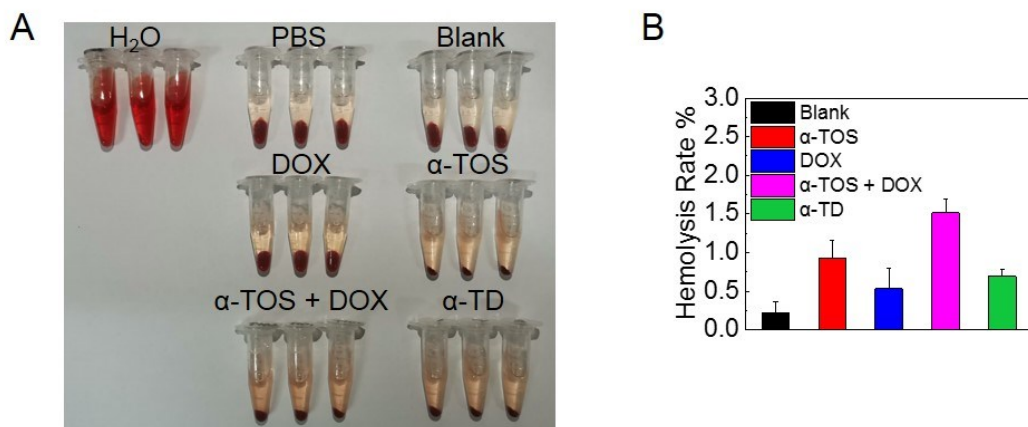
**Fig. S8** Blood circulation of  $\alpha$ -TD after intravenous injection into mice.



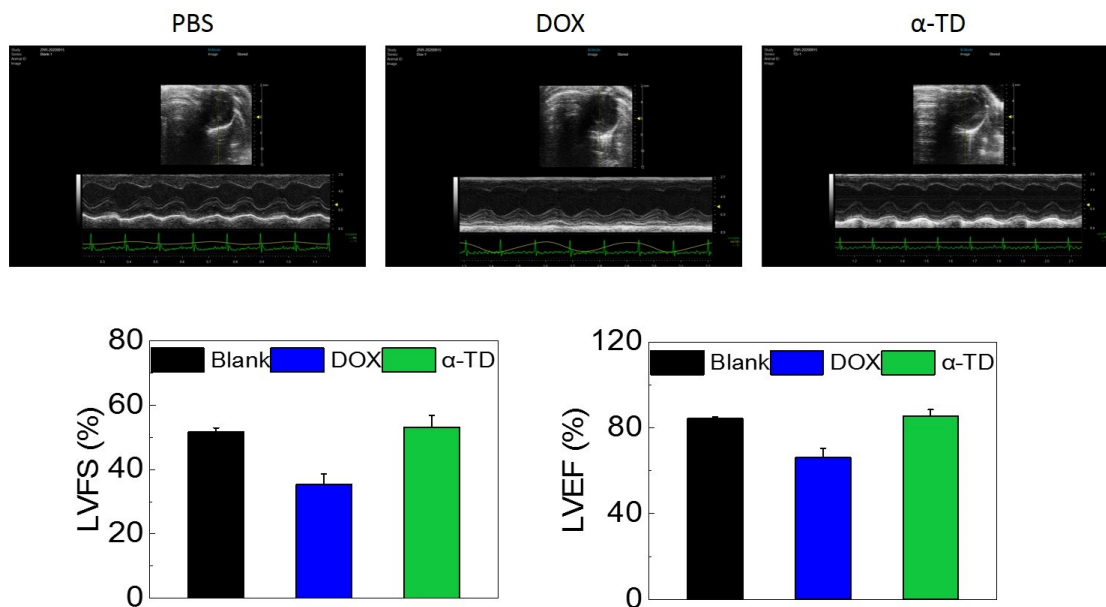
**Fig. S9** Biodistributions of  $\alpha$ -TD after intravenous injection for 2 h.



**Fig. S10** H&E staining of the sacrificed heart, liver, spleen, lung and kidney after treatment with  $\alpha$ -TOS, DOX,  $\alpha$ -T + D or  $\alpha$ -TD on the 14th day.



**Fig. S11** (A) Hemolysis detection and (B) hemolysis rate analysis of  $\alpha$ -TOS, DOX,  $\alpha$ -TOS + DOX or  $\alpha$ -TD. Red blood cells incubated in PBS or deionized water were employed as controls.



**Fig. S12** Photoacoustic images and quantification analysis of left ventricular ejection fractions (LVEF) and left ventricular fractional shortening (LVFS) of mice after treatment with PBS, DOX or  $\alpha$ -TD for 14 day.