Supporting information

Linear−Dendritic Copolymer Composed of Polyethylene Glycol and All-trans-Retinoic Acid as Drug Delivery Platform for Paclitaxel against Breast Cancer

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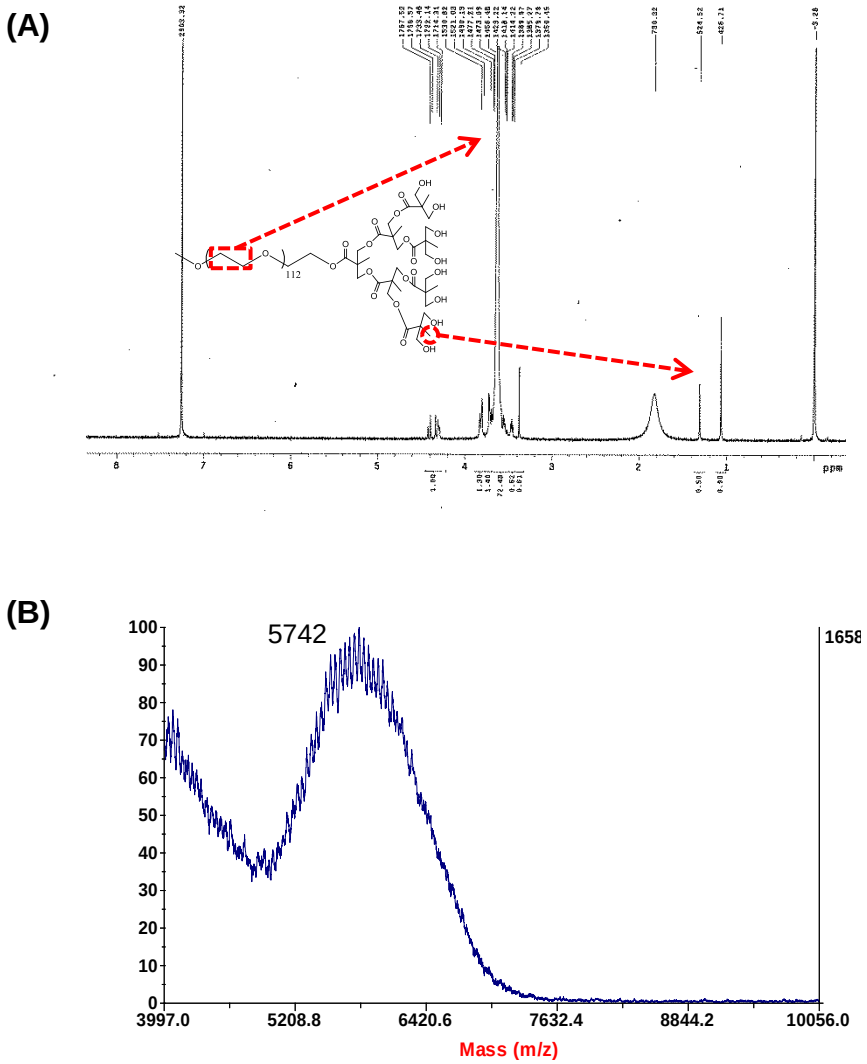


Figure S1. (A) ^{1}H NMR of PEG-G3-OH_8. (B) The MALDI-TOF MS of PEG-G3-OH_8.

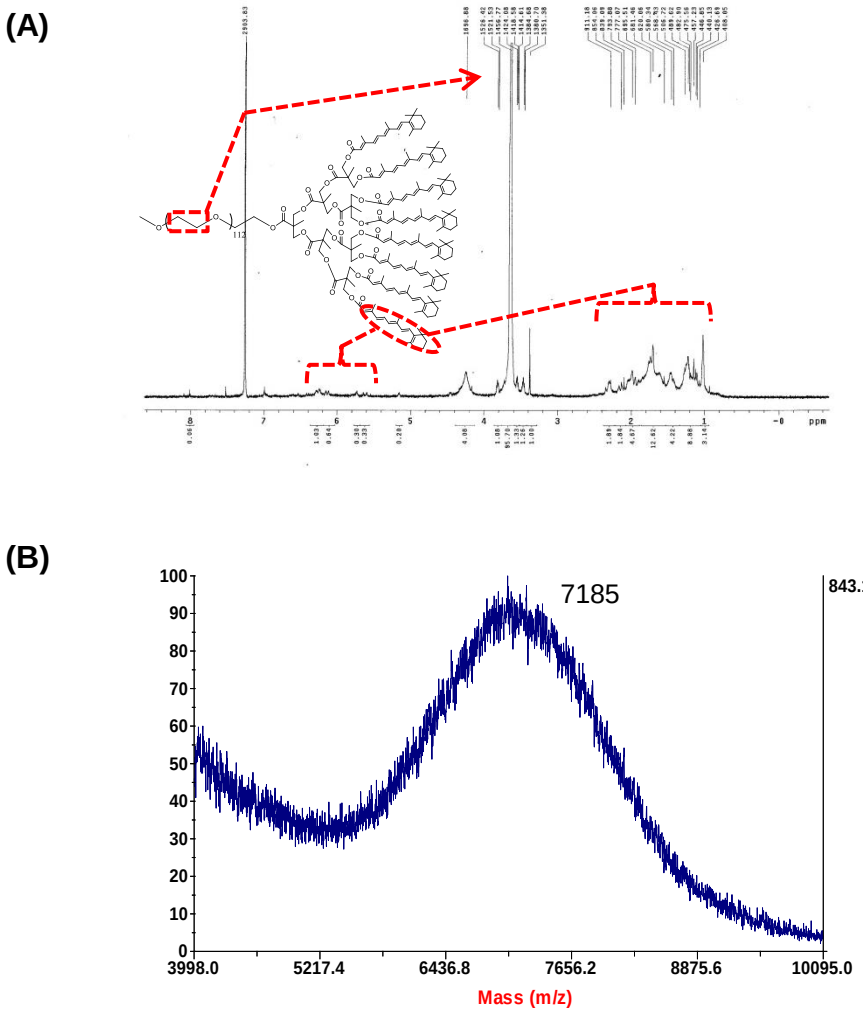
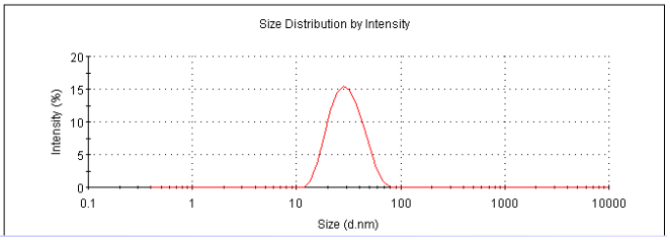


Figure S2. (A) ^{1}H NMR of PEG-G3-RA$_8$. (B) The MALDI-TOF MS of PEG-G3-RA$_8$.

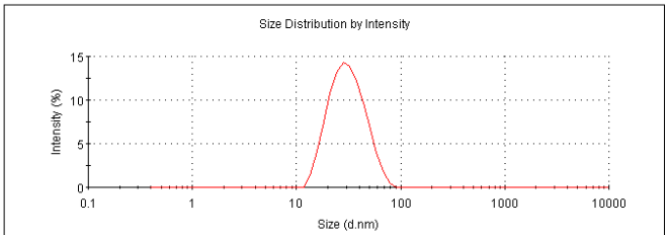
10

		Size (d.nm):	% Intensity	Width (d.nm):
Z-Average (d.nm): 28.36	Peak 1:	31.42	100.0	11.09
PdI: 0.141	Peak 2:	0.000	0.0	0.000
Intercept: 0.931	Peak 3:	0.000	0.0	0.000
Result quality : Good				



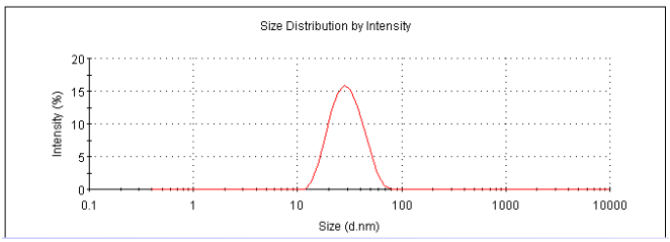
20

		Size (d.nm):	% Intensity	Width (d.nm):
Z-Average (d.nm): 28.45	Peak 1:	32.46	100.0	12.52
PdI: 0.134	Peak 2:	0.000	0.0	0.000
Intercept: 0.940	Peak 3:	0.000	0.0	0.000
Result quality : Good				



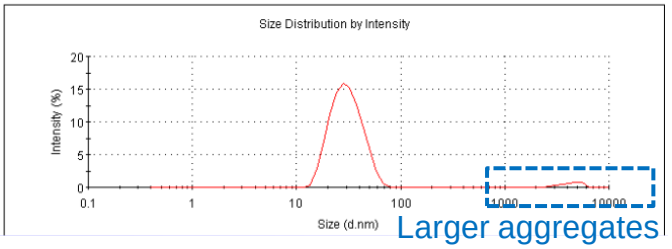
30

		Size (d.nm):	% Intensity	Width (d.nm):
Z-Average (d.nm): 27.64	Peak 1:	30.91	100.0	10.61
PdI: 0.103	Peak 2:	0.000	0.0	0.000
Intercept: 0.936	Peak 3:	0.000	0.0	0.000
Result quality : Good				



40

		Size (d.nm):	% Intensity	Width (d.nm):
Z-Average (d.nm): 29.41	Peak 1:	31.40	97.1	10.56
PdI: 0.179	Peak 2:	4478	2.9	887.1
Intercept: 0.934	Peak 3:	0.000	0.0	0.000
Result quality : Good				



50

		Size (d.nm):	% Intensity	Width (d.nm):
Z-Average (d.nm): 32.53	Peak 1:	31.48	91.2	10.67
PdI: 0.282	Peak 2:	302.5	5.9	92.11
Intercept: 0.929	Peak 3:	5057	2.9	578.1
Result quality : Good				

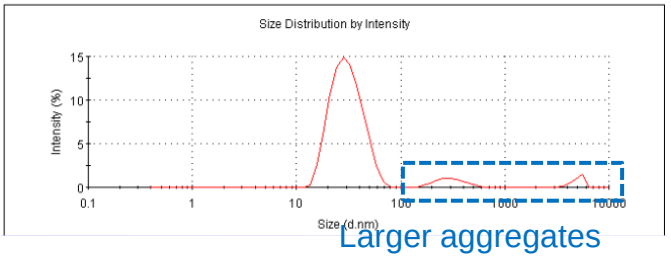


Figure S3. Optimization of micelle formulation at different feed ratios of PTX/PEG-G3-RA_8 (% w/w). The mean diameter and size distribution of micelles were evaluated by dynamic light scanning (DLS). Large aggregates were measured when the feed ratio reached as high as 40% and 50%.

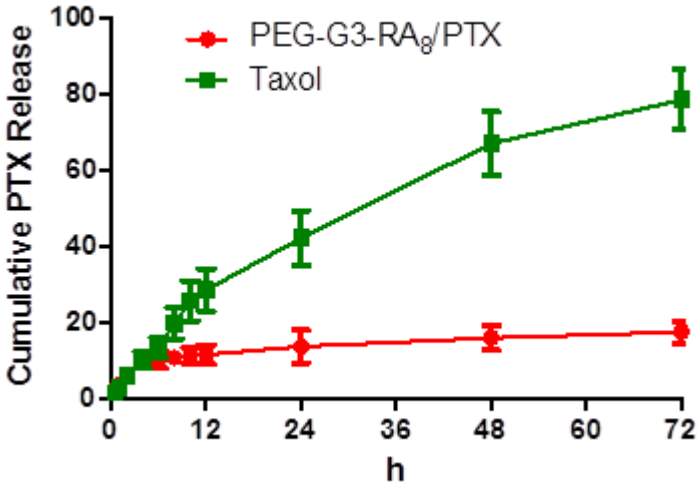
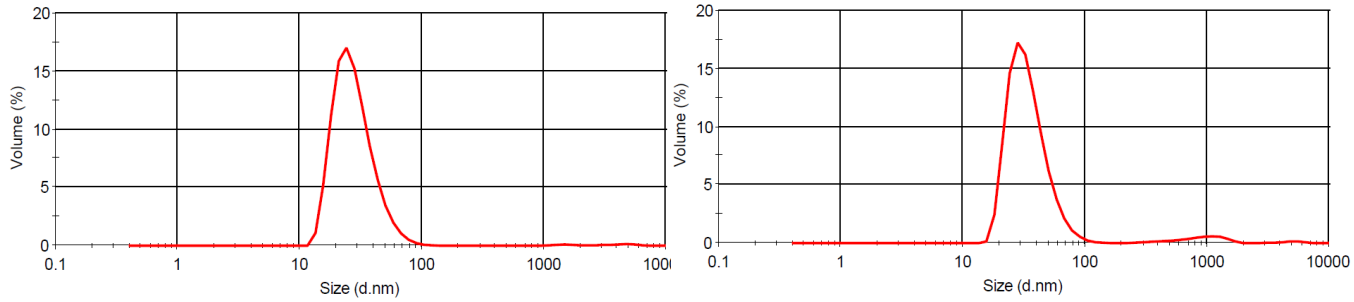


Figure S4. In vitro PTX release profiles from Taxol and PEG-G3-RA_8/PTX micelles in PBS at 37 ° C. Data are represented as means ± SD (n = 3).

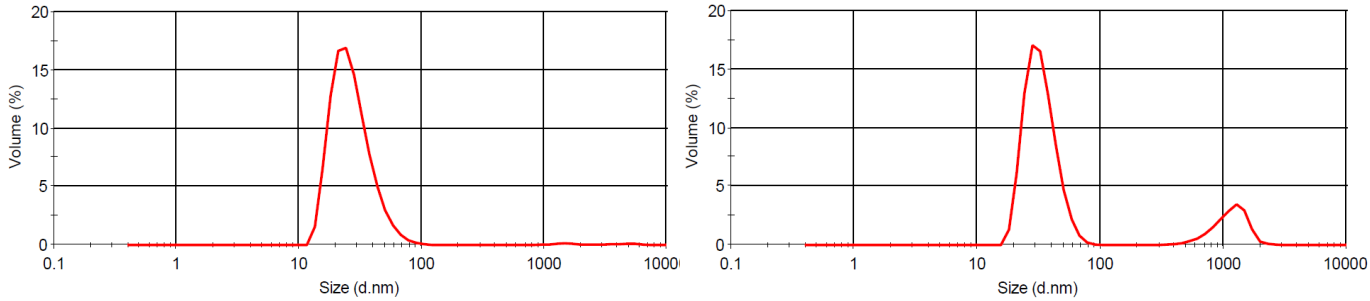
10% FBS

1 h

24 h



20% FBS



40% FBS

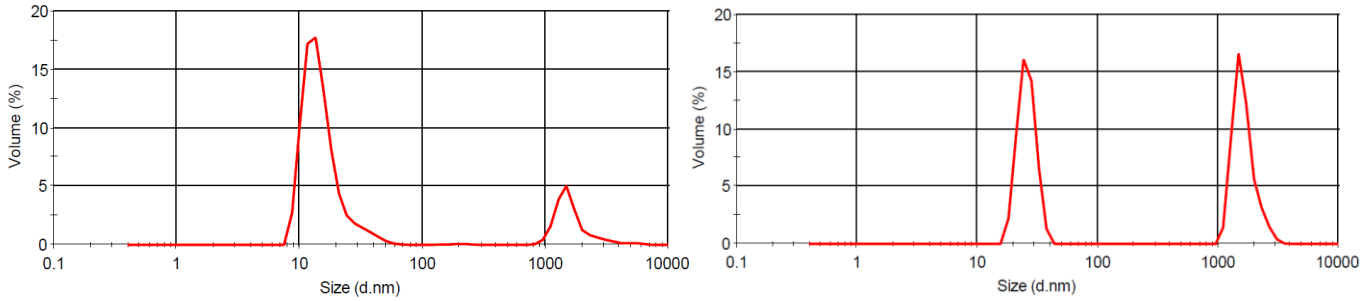


Figure S5. The stability of PEG-G3-RA_8/PTX micelles incubated in different FBS solutions at 37 ° C for 1 or 24 h. The partical size was masured by DLS.

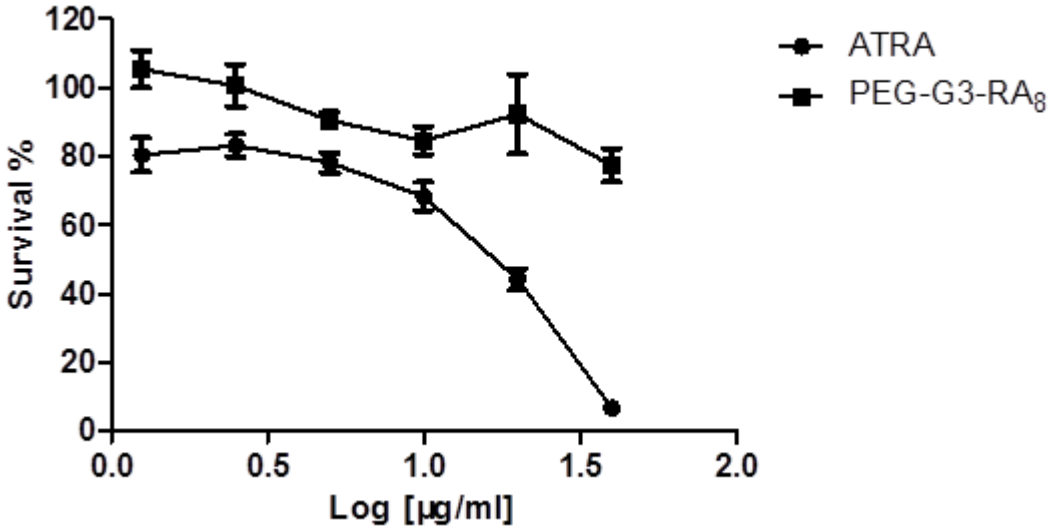


Figure S6. The cytotoxicity of ATRA and PEG-G3-RA_8 incubated at different concentrations for 48 h. Data were presented as mean ± SD (n = 4).

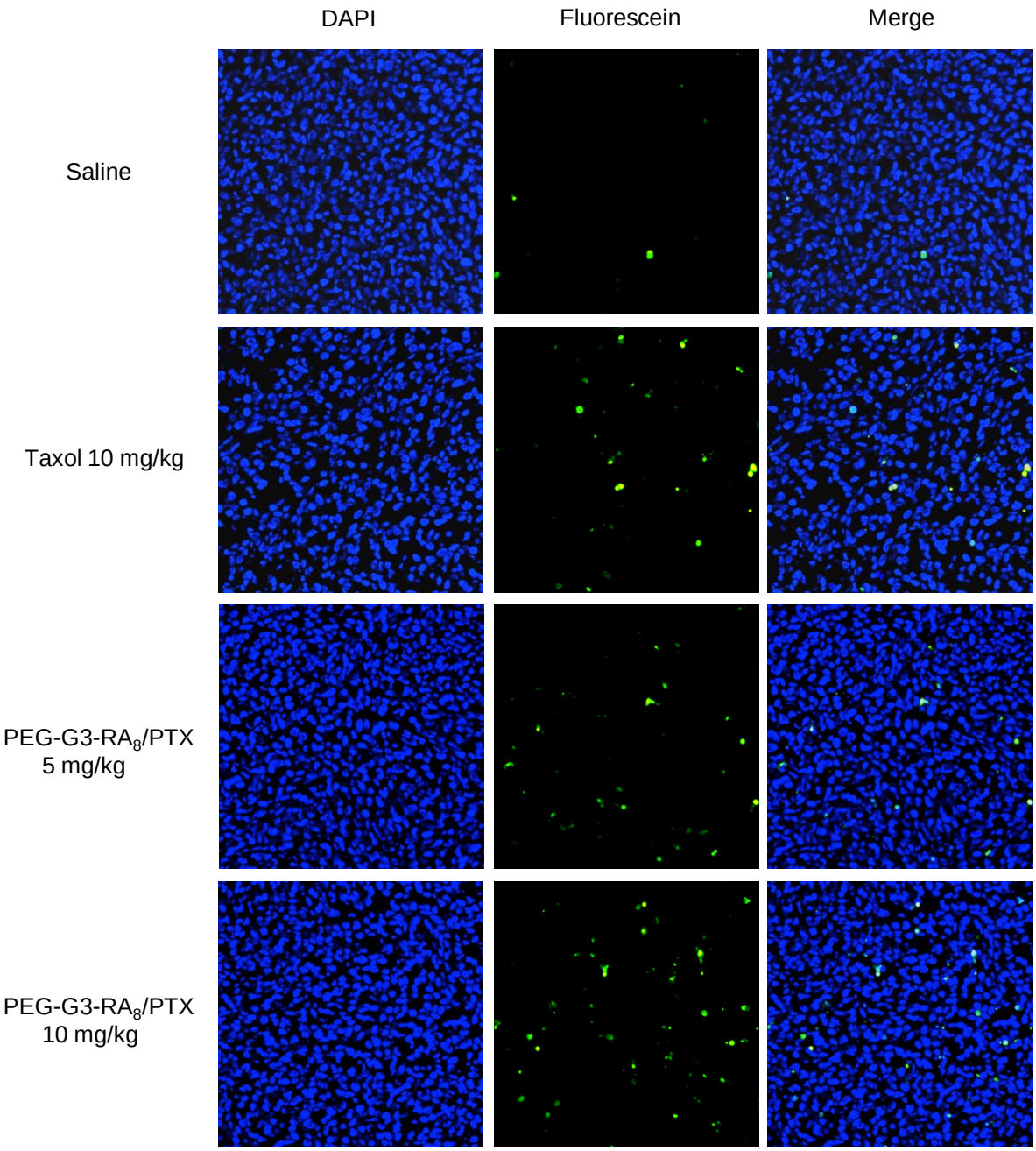


Figure S7. In vivo apoptosis. MCF-7 bearing nude mice were received i.v. injections of Taxol (10 mg/kg) and PEG-G3-RA_8/PTX (5, 10 mg/kg) on days 0, 4, 8 and 12 (saline served as control). Representative histological images were shown using TUNEL assay 2 day after the treatment. The nuclei was stained by DAPI (blue), and green is fluorescein labeled dUTP which indicating the apoptosis cells. The PEG-G3-RA_8/PTX 10 mg/kg treated group induced most significant apoptosis.

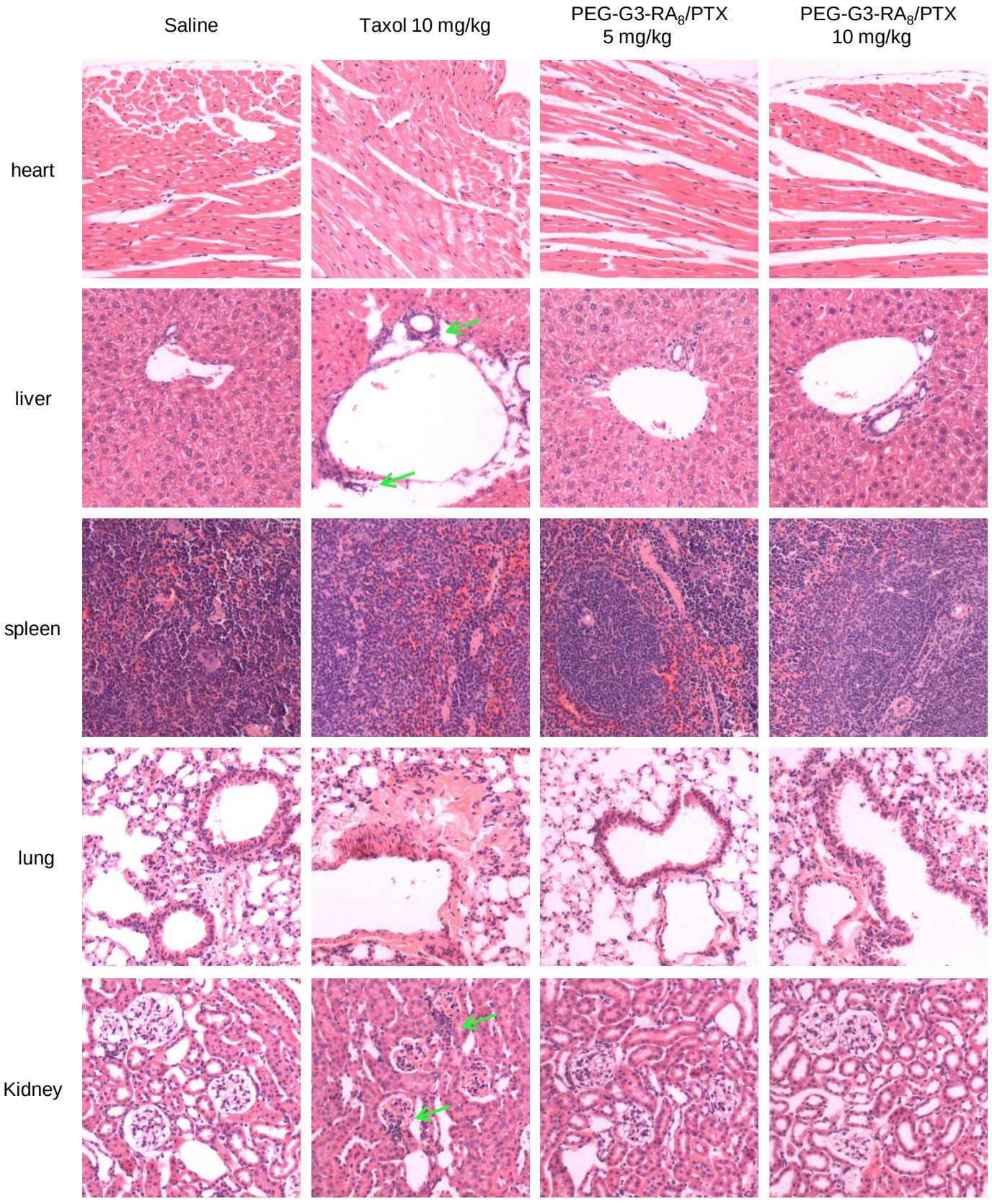


Figure S8. Histological analysis of heart, liver, spleen, lung, kidney sections stained with hematoxylin and eosin after the same treatment in the apoptosis study. As compared to saline treated group, there were no histological evidence of side effects in any of the micelle treated groups. While, there were some inflammatory infiltrations in the liver and kidney of PTX treated group (green arrows).