Supporting Information

Synthesis, characterization, and biological evaluation of a porphyrin-based photosensitizer and its isomer for effective photodynamic therapy against breast cancer

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Si.No.	Contents		Page
1	Characteristics of P-1 and P-2	HPLC purity spectra (Figure S1 and Figure S2)	S3
		^{1}H NMR spectra (Figure S3 and Figure S4)	S4
		Cold-spray ionization mass spectrometry (Figure S5 and Figure S6)	S5
		FTIR spectroscopy (Figure S7 and Figure S8)	S6
2	HPLC purity spectra of other compounds (Figure S9-Figure S14)		S7-S9
3	Chemical structure of P-1, P-2, and HMME (Figure S15)		S10
4	Calculation of IC50 values (Table S1-Table S3)		S11
5	Evaluation of side effects (Figure S16)		S12

Figure S1. HPLC purity of compound P-1.

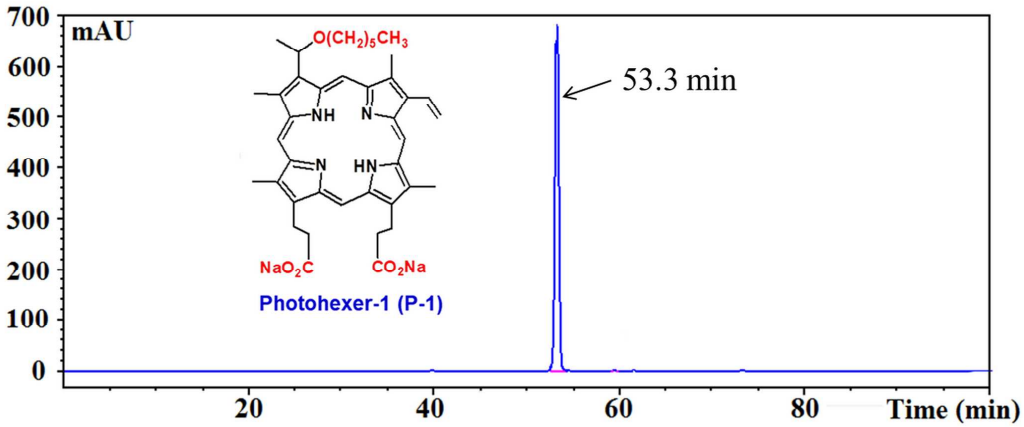

Figure S2. HPLC purity of compound P-2.

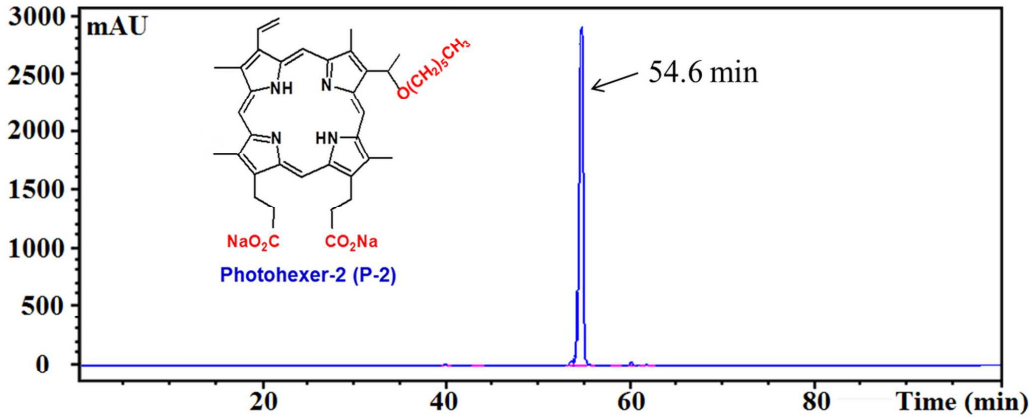

Figure S3. ^{1}H NMR of P-1 in DMSO-d6 at 400 MHz.

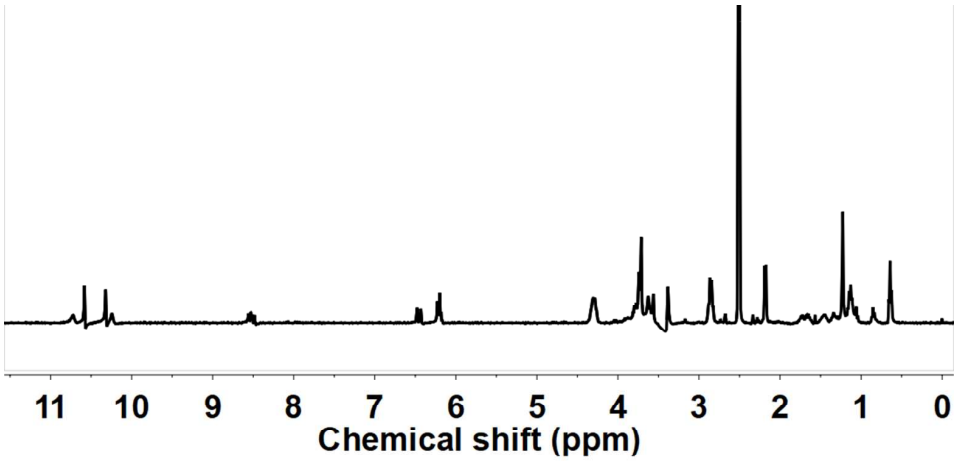

Figure S4. ^{1}H NMR of P-2 in DMSO-d6 at 400 MHz

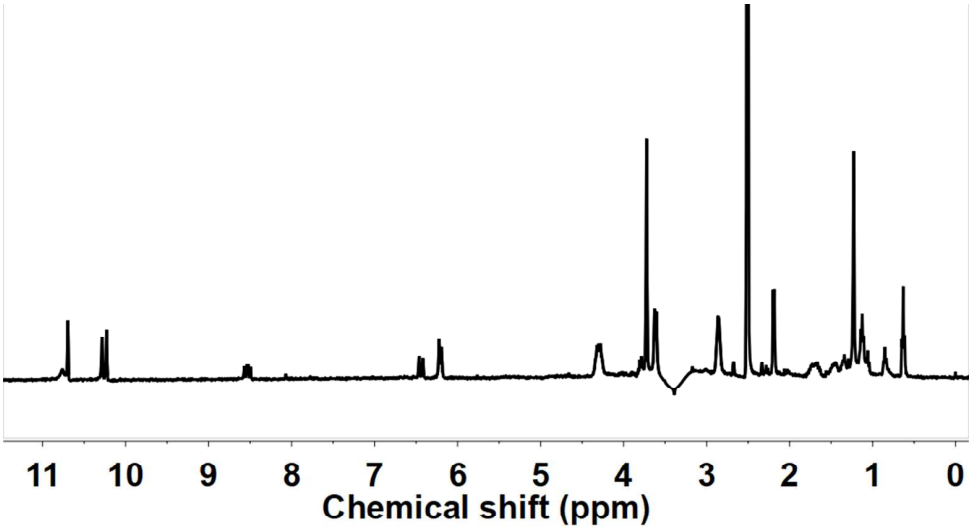

Figure S5. CS-MS m/s of P-1.

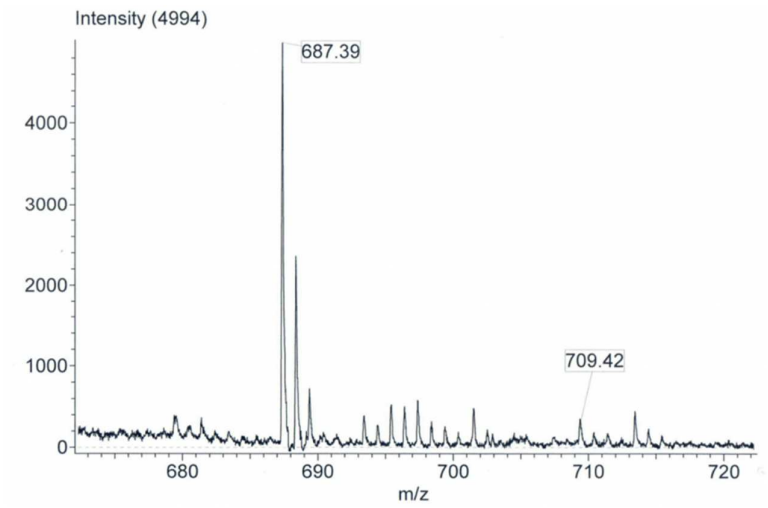

Figure S6. CS-MS m/s of P-2.

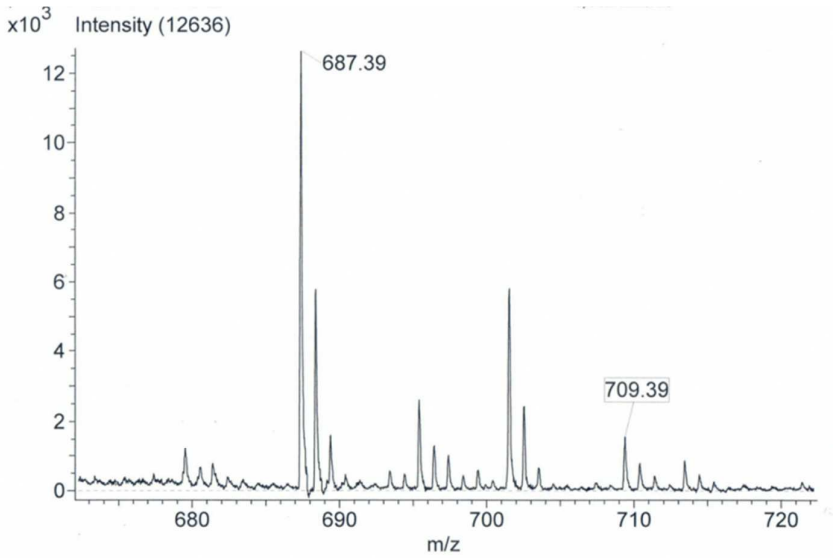

Figure S7. FTIR spectroscopy of P-1.

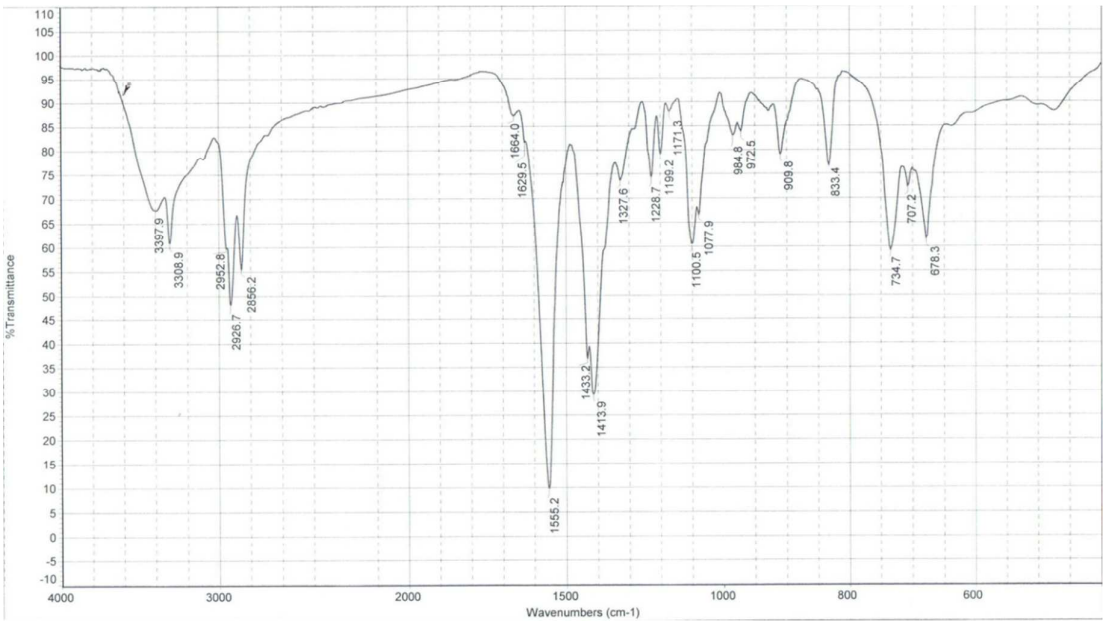

Figure S8. FTIR spectroscopy of P-2.

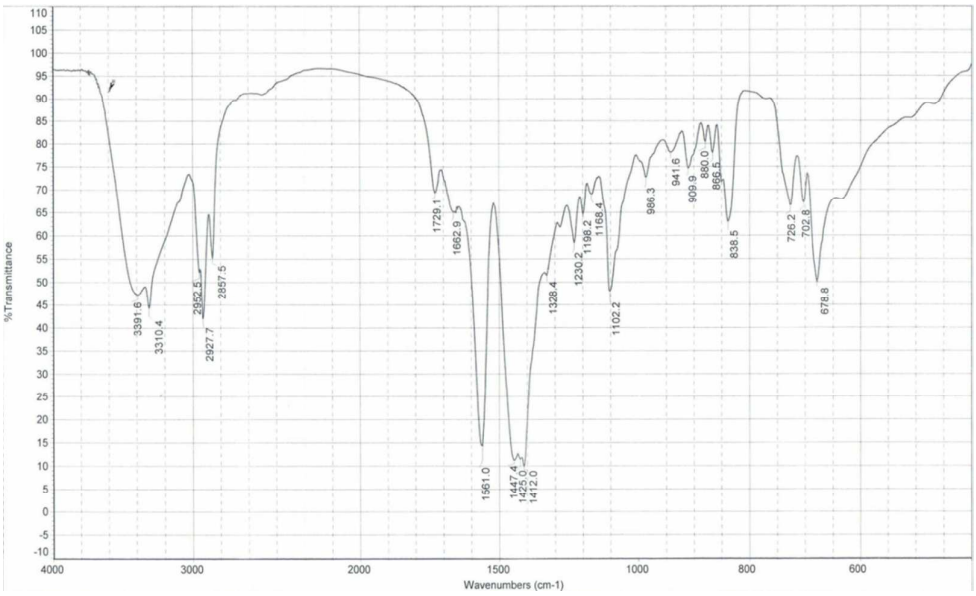

Figure S9. HPLC purity of protoporphyrin dimethyl ester.

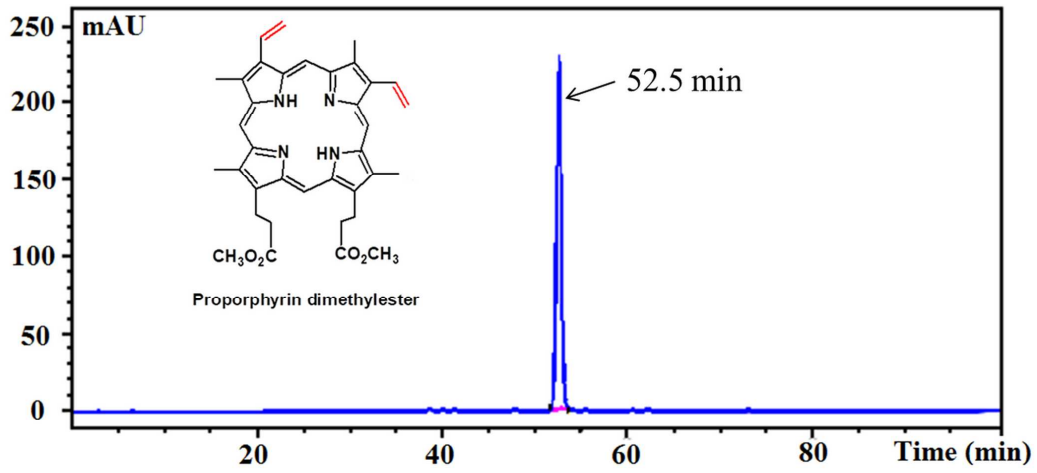

Figure S10. HPLC purity of 2 (4)-(1-hydroxyethyl)-6,7-bis [2-(methoxycarbonyl) ethyl] -1,3,5,8-tetramethyl -4 (2)-vinylporphyrin (HVD-1 and HVD-2).

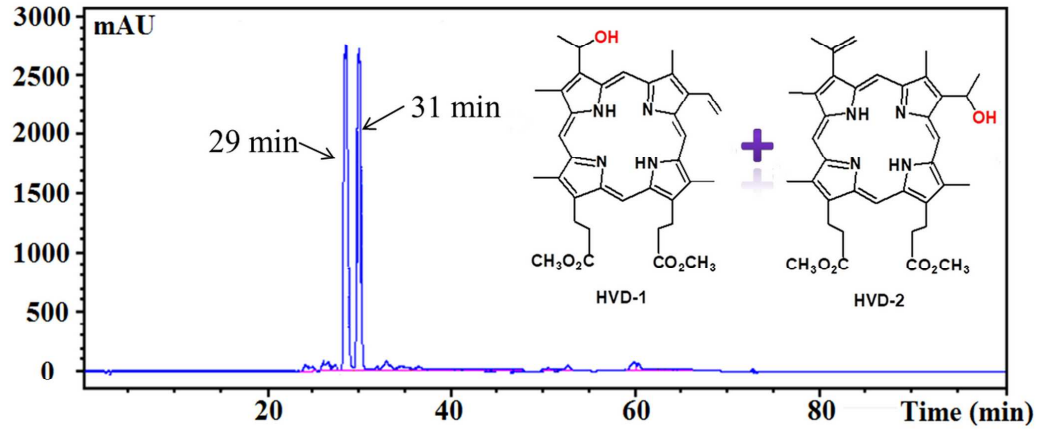

Figure S11. HPLC purity of 2 - (1- hydroxyethyl)-6,7- bis [2-(methoxycarbonyl) ethyl]- 1,3,5,8- tetramethyl -4 - vinylporphyrin (HVD-1).

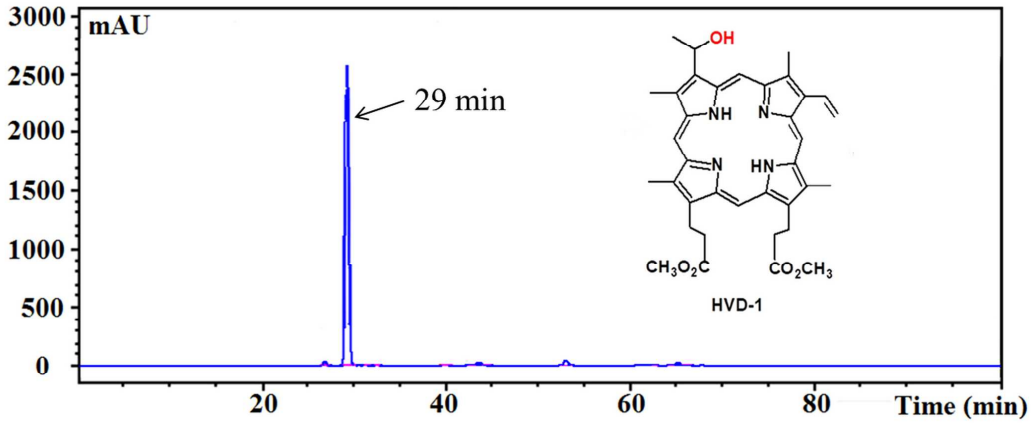

Figure S12. HPLC purity of 4- (1- hydroxyethyl) -6,7- bis [2- (methoxycarbonyl) ethyl]- 1,3,5,8- tetramethyl -2- vinylporphyrin (HVD-2).

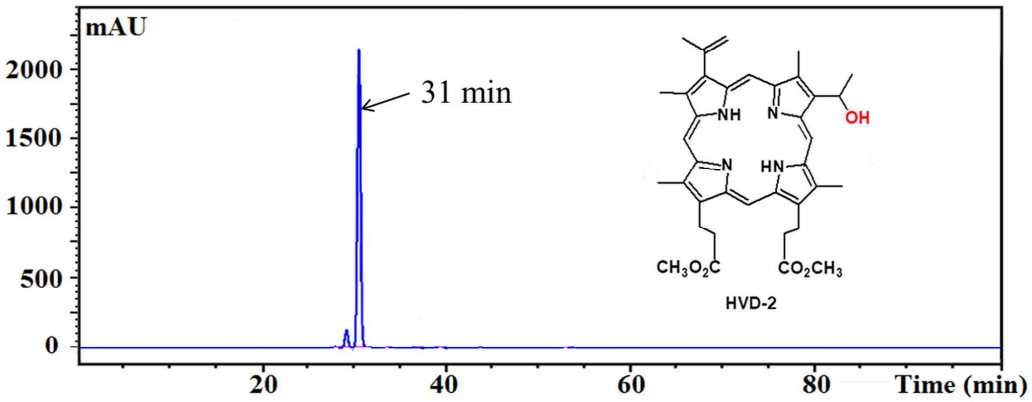

Figure S13. HPLC purity of 2- (1-hexyloxyethyl) -6,7- bis [2- (methoxycarbonyl) ethyl]- 1,3,5,8- tetramethyl -4- vinylporphyrin.

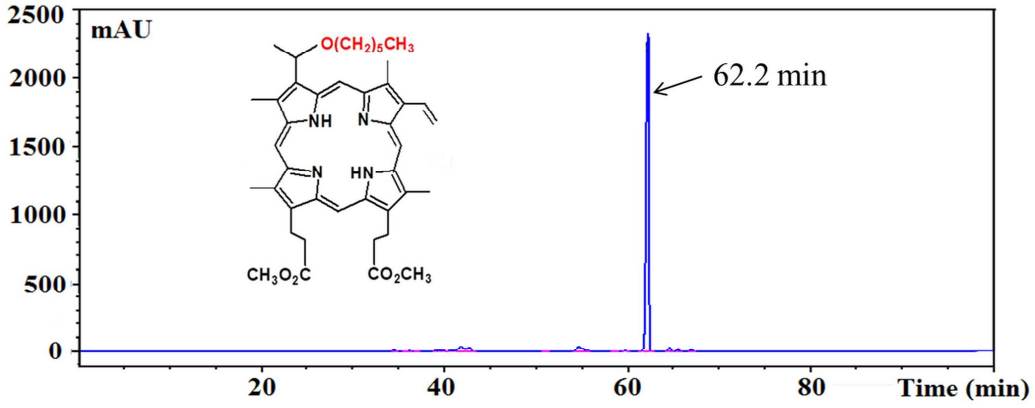

Figure S14. HPLC purity of 4- (1-hexyloxyethyl) -6,7- bis [2- (methoxycarbonyl) ethyl]- 1,3,5,8- tetramethyl -2- vinylporphyrin.

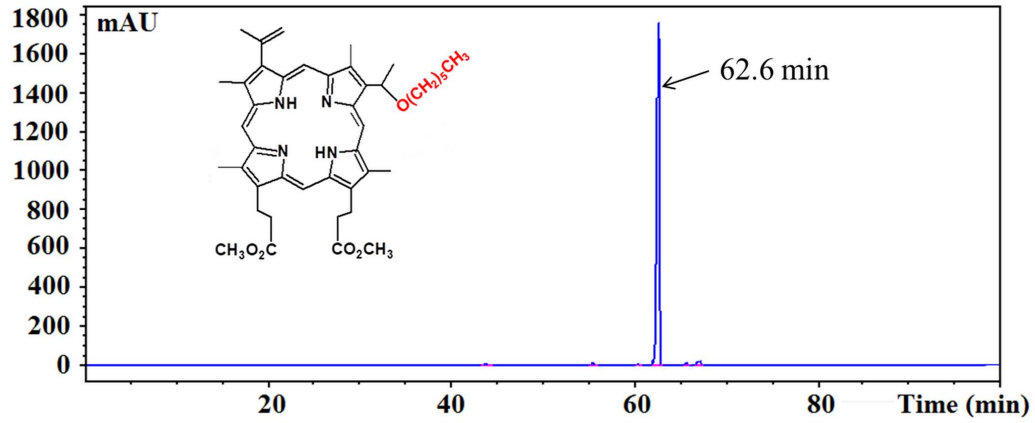

Figure S15. The chemical structure of P-1 (A), P-2 (B), and HMME (C).

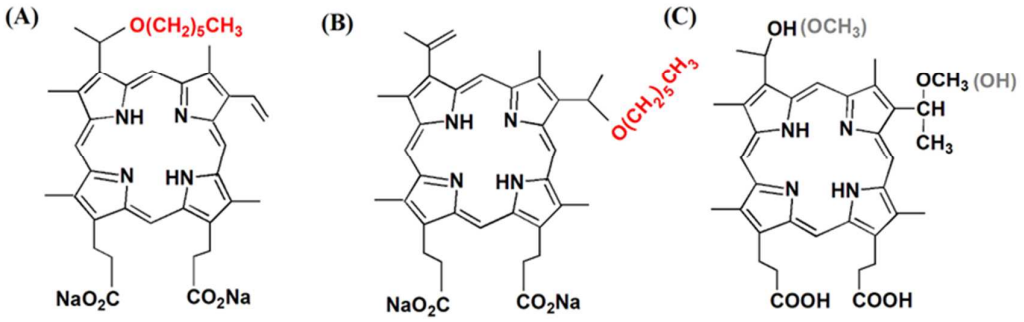

Table S1. Cytotoxicity for P-1, P-2, and HMME against MDA-MB-231 cells using MTT Assay.

Compounds	Dark toxicity (IC_{50}, μM)	Phototoxicity (IC_{50}, μM)	Ratio
P-1	99.51	1.66	59.95
P-2	115.83	0.72	160.88
HMME	98.87	5.27	18.76

Table S2. Cytotoxicity for P-1, P-2, and HMME against 4T1 cells using MTT Assay.

Compounds	Dark toxicity (IC_{50}, μM)	Phototoxicity (IC_{50}, μM)	Ratio
P-1	84.53	3.89	21.73
P-2	91.09	1.33	68.49
HMME	81.56	6.82	11.96

Table S3. Cytotoxicity for P-1, P-2, and HMME against MCF-7 cells using MTT Assay.

Compounds	Dark toxicity (IC_{50}, μM)	Phototoxicity (IC_{50}, μM)	Ratio
P-1	81.27	3.36	24.19
P-2	97.13	1.07	90.78
HMME	87.54	5.21	16.80
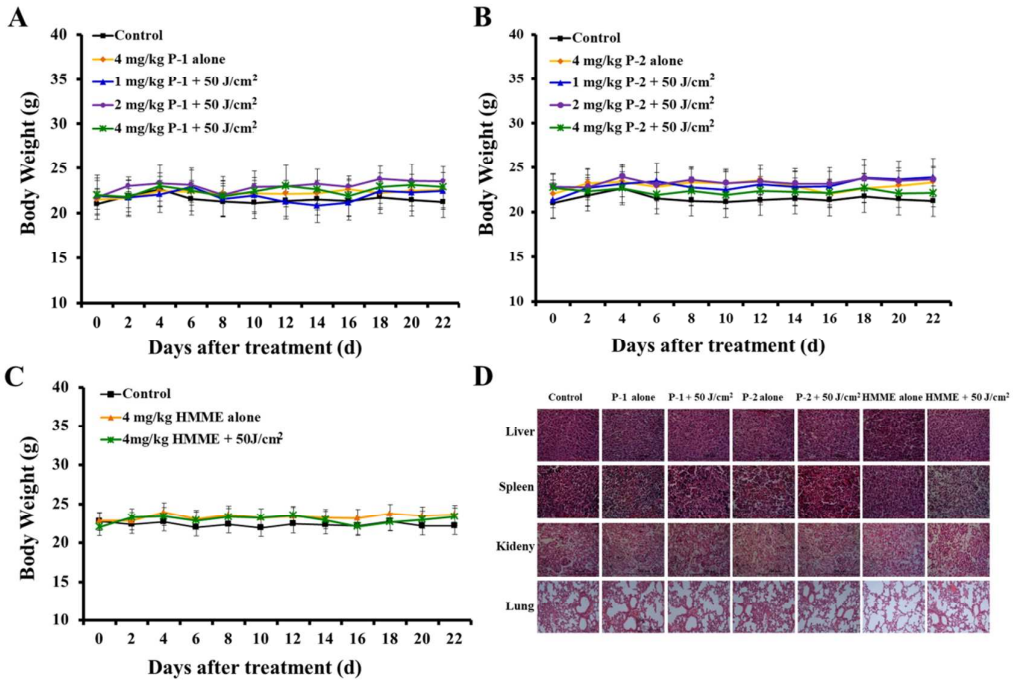
Figure S16. Evaluation of side effects using P-1/P-2/HMME combined with PDT. Body weight curve of 4T1 tumor-bearing mice after treated by P-1 (**A**), P-2 (**B**) and HMME (**C**) with or without PDT. **D,** H&E stained images of liver, spleen, kidney and lung.