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Reduced glutathione-activated antioxidant defence breaking for enhanced photodynamic therapy

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According to the previous reports, each Hg^{2+} can coordinate with two thymines to form a stable T-Hg-T complex. There are 8 thymine groups in ZnPc3. So, in theory, the mol ratio of ZnPc3 and Hg^{2+} in ZHNP should be 4:1. In our manuscript, we prepared ZHNP in following procedure. ZnPc3 (2.0 μM) and excess $HgSO_4$ (16.0 μM) were mixed in methanol and stirred for 30 min to form ZHNP. The result ZHNP was purified by dialysis the solution using a 12-14 kDa cut-off cellulose membrane for 24 h to remove the unchelate Hg^{2+}. We had studied the interaction ratio between ZnPc3 and Hg^{2+} by UV-visible spectra.

As showed in Figure S1A, the absorption peak of ZnPc3 at 685 nm gradually decreased and blue-shifted upon increasing the concentration of Hg^{2+}. The absorbance intensity was plotted against the molar ratio of $[Hg^{2+}]/[ZnPc3]$ (Figure S1B). Two straight lines of different slopes can be derived from the plot, and the molar ratio where the two lines cross reflects the composition of the complex. Y reaches the minimum at the molar fraction of ZnPc3 identical to that in the complex. So, Hg^{2+} forms 4:1 complexes with ZnPc3 (mol ratio).

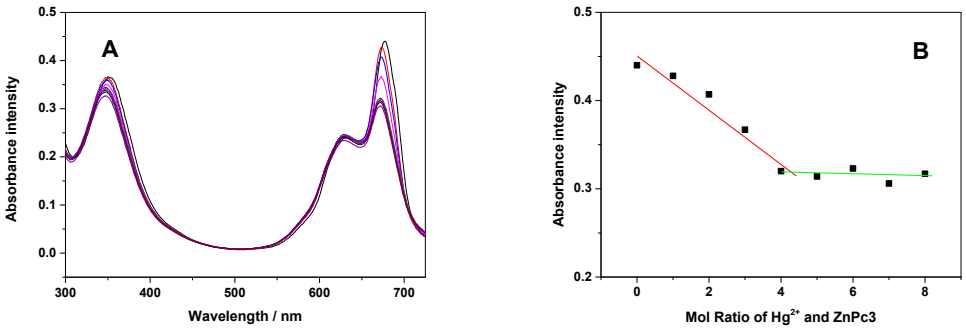

Figure S1. (A) Absorption spectra change of ZnPc3 by addition of Hg^{2+} ([ZnPc3] = 5 μM; $[Hg^{2+}]$ = 0, 5, 10, 15, 20, 25, 30, 35, 40 μM); (B) Obtained by plotting the maximum absorbance intensity as a function of the molar ratio of Hg^{2+} in A.