

## Supplementary Information

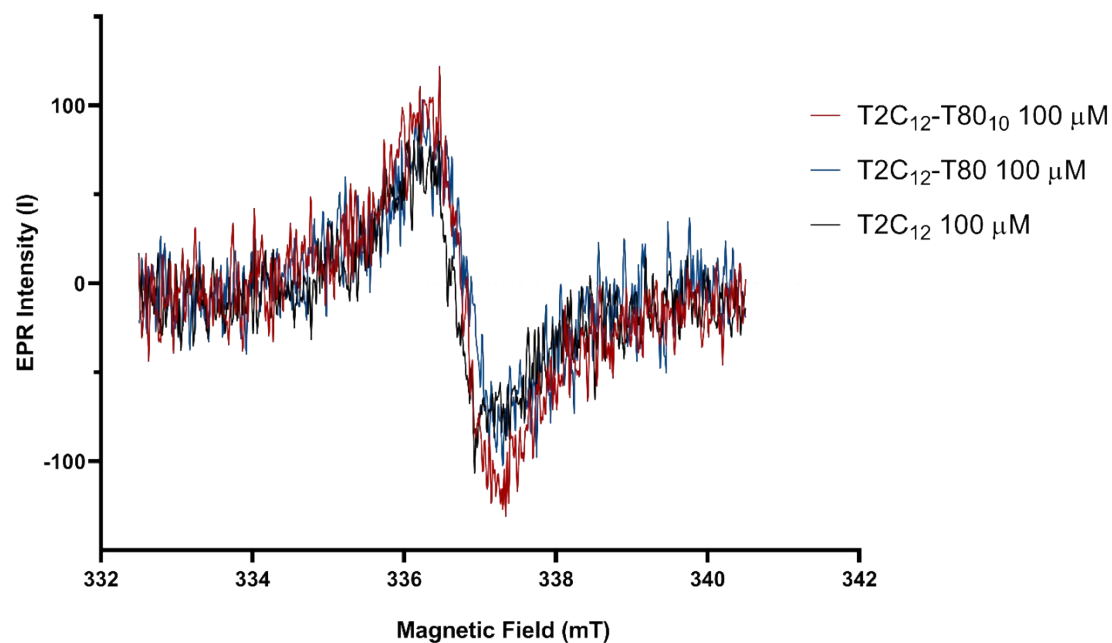


Figure S1. EPR spectra of T2C<sub>12</sub>, T2C<sub>12</sub>-T80<sub>10</sub> and T2C<sub>12</sub>-T80 (all at 100 μM) in micellar form in HEPES-Buffered saline solution at pH 7.4.

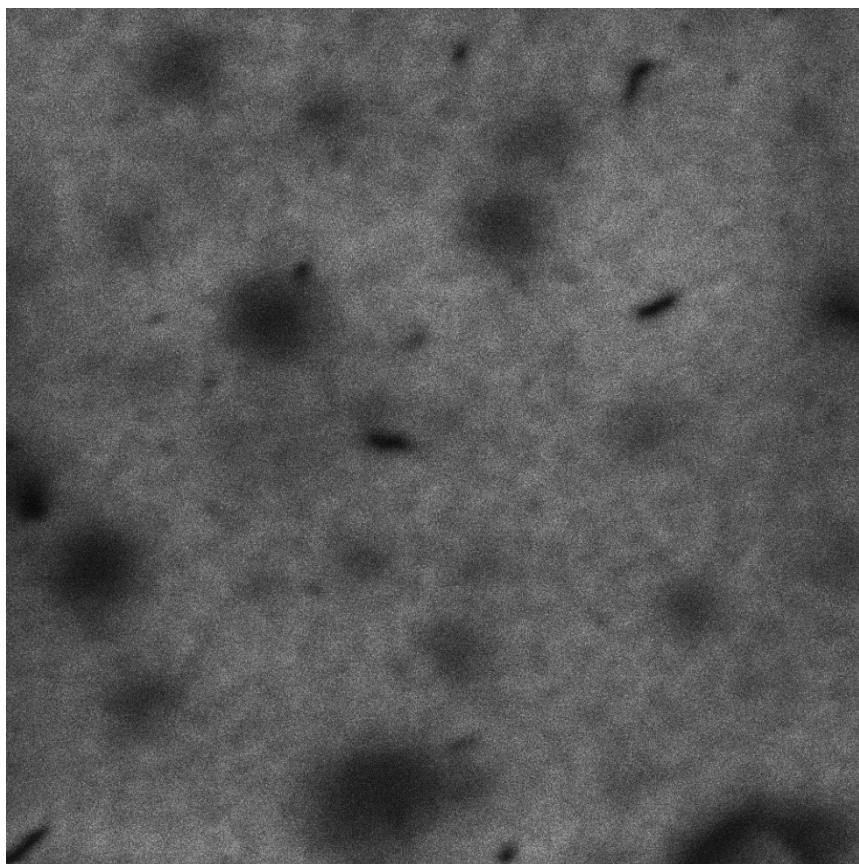


Figure S2. Field Emission Scanning Electron Microscopy (FESEM) image of T2C<sub>12</sub>-T80 100 μM acquired with a Magnification of 323k x, 5 keV of energy and 100 pA of probe current using a Tescan FEG-SEM S9000.

Measurements are acquired with a Schottky emitter, the probe set at 100 pA and the electron beam energy at 5 keV. The analysis was performed with an in-beam SE detector. Microanalysis was performed using OXFORD - Ultim Max detector - AZTEC software.

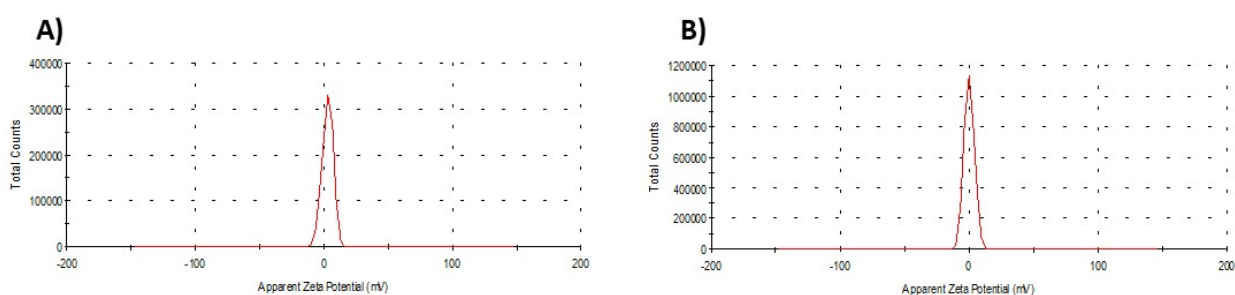


Figure S3. Zeta-Potential graphs of T2C<sub>12</sub>-T80<sub>10</sub> 100 μM (A) and T2C<sub>12</sub>-T80 100 μM (B) measured by DLS.

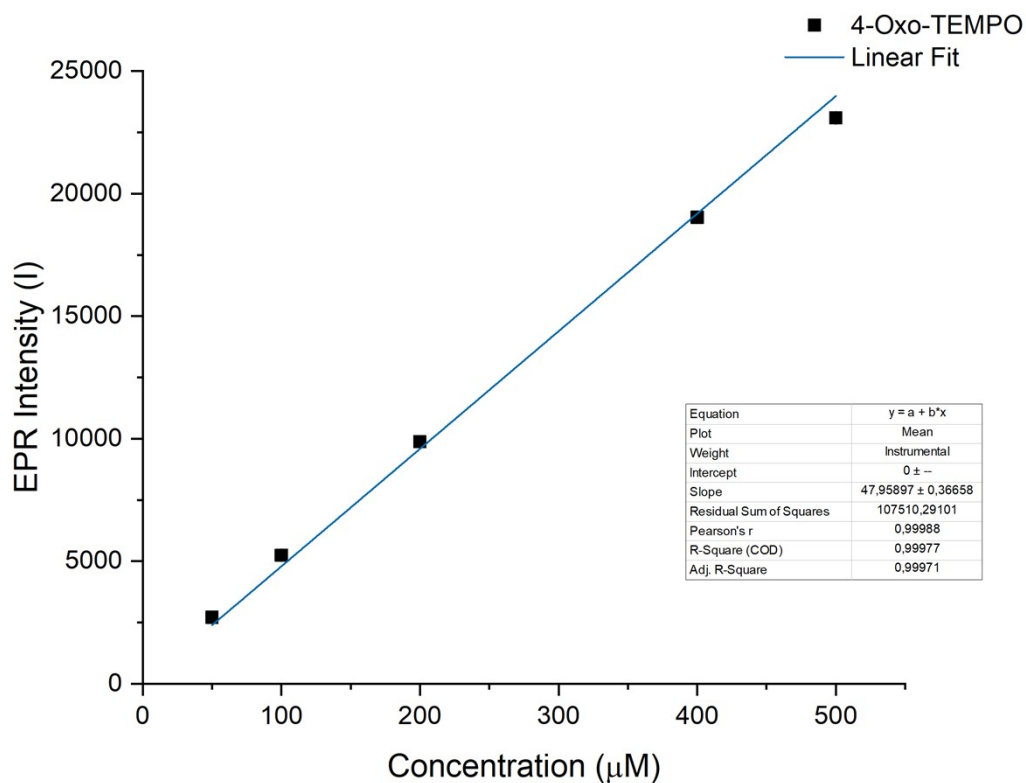


Figure S4. Calibration curve obtained using different concentrations of 4-Oxo-TEMPO in HEPES-Buffered saline solution. The measurements were fitted with a linear fit function ( $y = a + b \cdot x$ ) using OriginPro 2018.

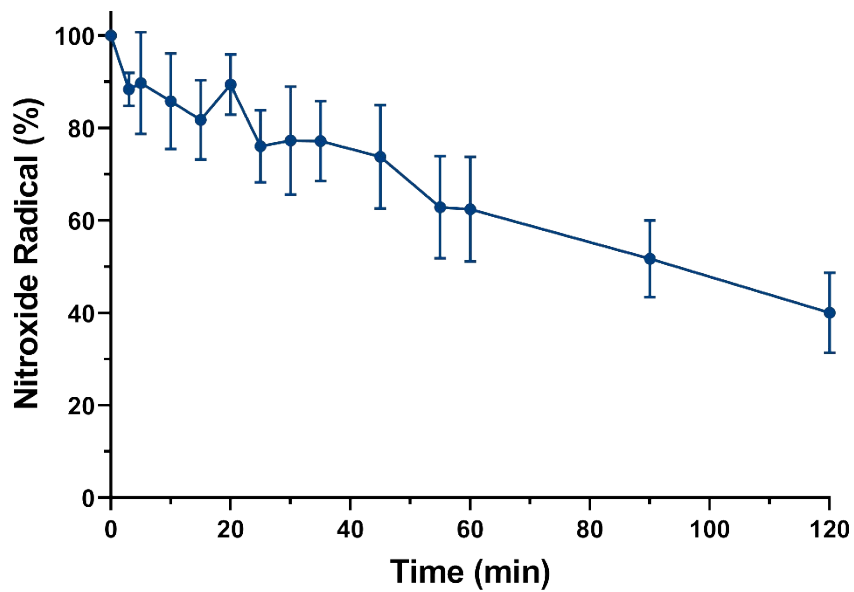


Figure S5. Residual nitroxide radical (%) of T2C<sub>12</sub>-T80 micelle (100 μM) in the presence of Ascorbic Acid 1mM at room temperature over 120 min.

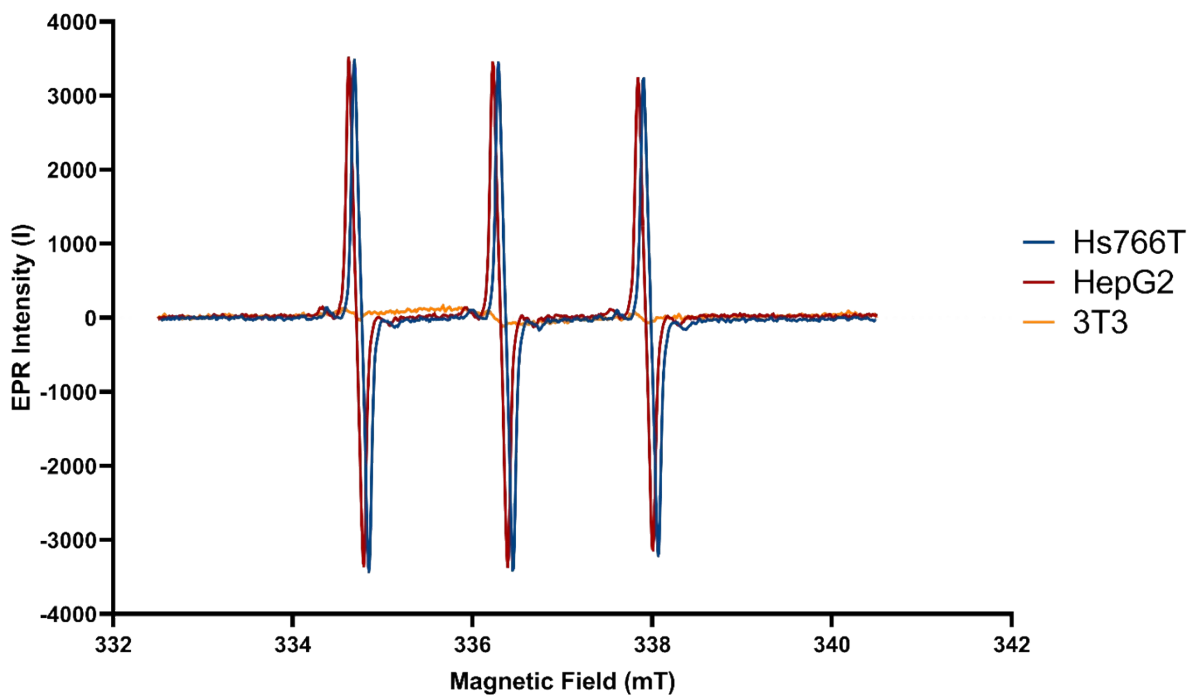


Figure S6. EPR spectra of T2C<sub>12</sub>-T80 100 μM after 3 hours of incubation with 3T3, Hs766T, and HepG2 cells lysates obtained from 250 x 10<sup>3</sup> cells each.

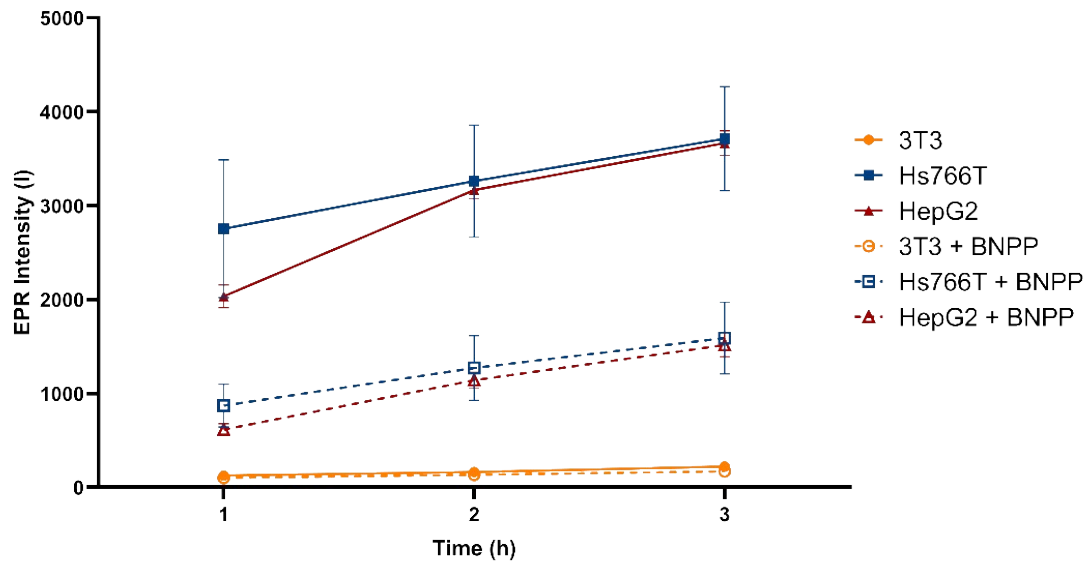


Figure S7. EPR Intensity of T2C<sub>12</sub>-T80 100  $\mu$ M incubated, at 37°C and under stirring at 400 rpm, with cytosolic extracts of 3T3, Hs766T, and HepG2 cells, obtained from 250 x 10<sup>3</sup> cells, with and without the addition of BNPP 600  $\mu$ M.

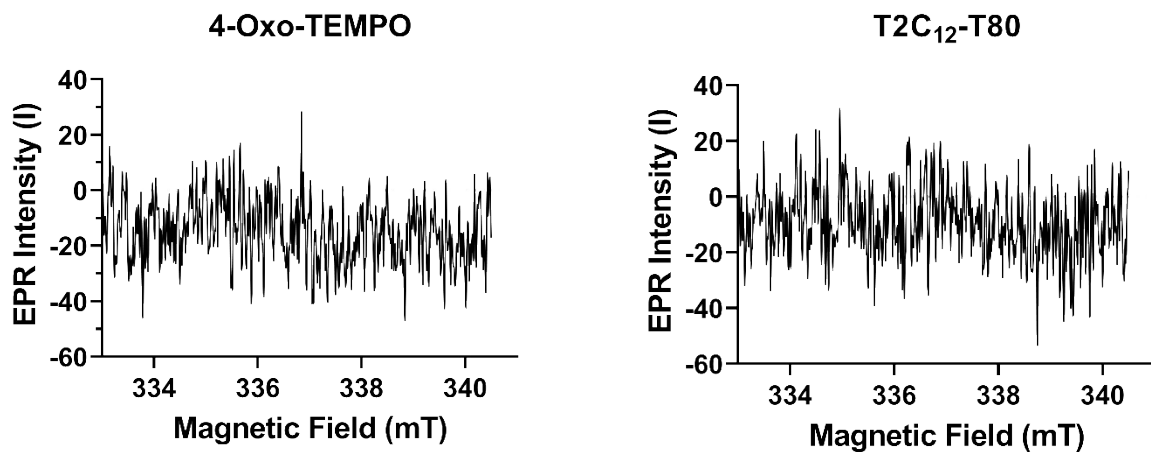


Figure S8. EPR spectra of Hs766T cells pellet incubated with 4-Oxo-TEMPO 100  $\mu$ M and T2C<sub>12</sub>-T80 100  $\mu$ M for 24 hours.

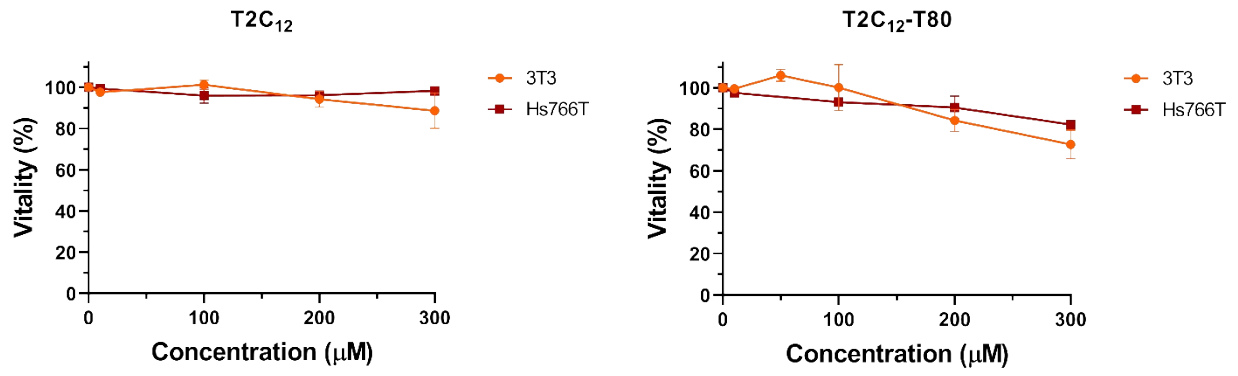


Figure S9. Vitality percentage (measured by MTT assay) of Hs766T and 3T3 cell lines, measured after 24 h of incubation at different concentrations of T2C<sub>12</sub> (left) and T2C<sub>12</sub>-T80 (right). Graphs show the mean  $\pm$  SD of % vitality evaluated on 3 independent experiments.