Electronic Supplementary Information

1. Characterization of DEHB and EHB

DEHB: ^{1}H-NMR (400 MHz, $CDCl_3$, δ, ppm): 16.00 (s, 1H, exchangeable with D_2O, phenolic OH), 15.92 (s, 1H, exchangeable with D_2O, phenolic OH), 6.60 (s, 1H, ArH), 4.2-3.75 (m, 14H), , 3.54 (m, 2H), 3.03(m, 2H), 2.37 (s, 6H), 2.36 (s, 3H), 1.86 (s, 3H). MALDI-TOF MS: 632.2 (M+1).

EHB: ^{1}H-NMR (400 MHz, $CDCl_3$, δ, ppm): 16.00 (s, 1H, exchangeable with D_2O, phenolic OH), 15.92 (s, 1H, exchangeable with D_2O, phenolic OH), 6.60 (s, 1H, ArH), 4.2-3.75 (m, 14H), 3.64 (m, 2H) 2.36 (s, 3H), 1.86 (s, 3H), , 1.81 (t, 2H, J = 6.91 Hz). MALDI-TOF MS: 589.2 (M+1))

2. Generation of $^1O_2$

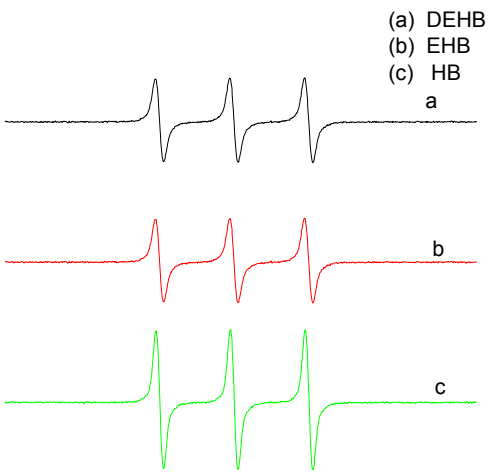

Figure 1S. The TEMPO signals obtained upon 1 minutes of irradiation of oxygen-saturated DMSO solutions of (a) DEHB, (b) EHB, and (c) HB (300 μM) with 532 nm laser in the presence of TEMP (3 mM).

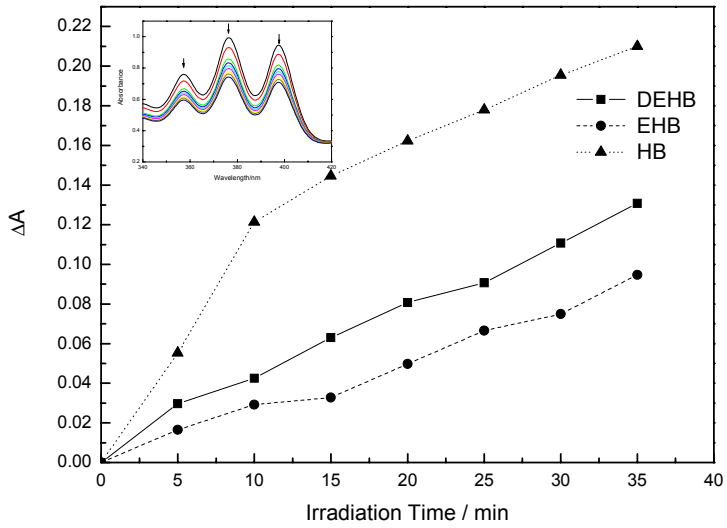

Figure 2S. 9,10-diphenylanthracene (DPA) bleaching at 374 nm as the function of irradiation time in oxygen-saturated DMSO solutions containing 30 μM of photosensitizer and 100 μM of DPA. Inset: absorption spectra of DPA bleaching system at varied irradiation time. The arrow indicates the direction of changes.

3. Generation of $O_2^{-\cdot}$

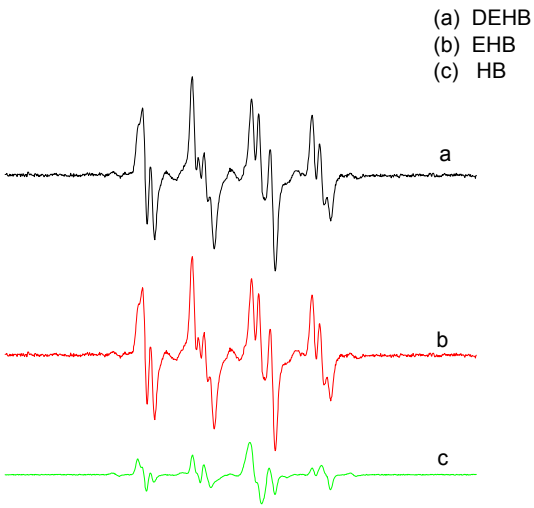

Figure 3S. The ESR signals of DMPO-$O_2^{-\cdot}$ adduct obtained upon 1 minutes of irradiation of air-saturated DMSO solutions of (a) DEHB, (b) EHB, and (c) HB (300 μM) with 532 nm laser in the presence of TEMP (3 mM).

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4. Generation of semiquinone anion radical

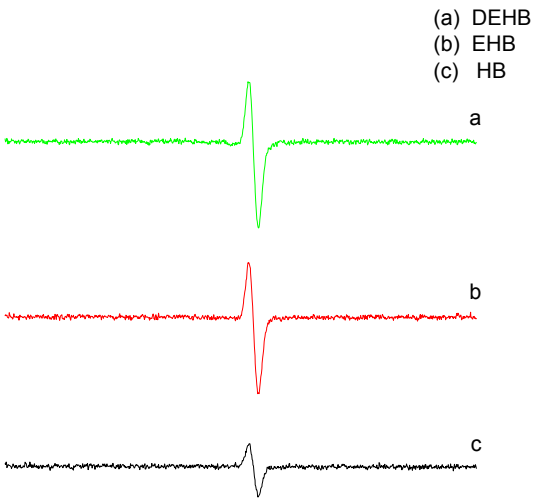

Figure 4S. The ESR signals obtained upon 1 minutes of irradiation of argon-saturated DMSO solutions of (a) DEHB, (b) EHB, and (c) HB (300 μM) with 532 nm laser.