

Figure S1. Effect of Curcumin, curcumin-lysine and NDS27 on the DPPH° radical by optical spectroscopy in methanol at room temperature. Quercetin was used as antiradical reference. Results are the mean \pm SD of triplicate, with two independent assays (N = 2, n = 6).

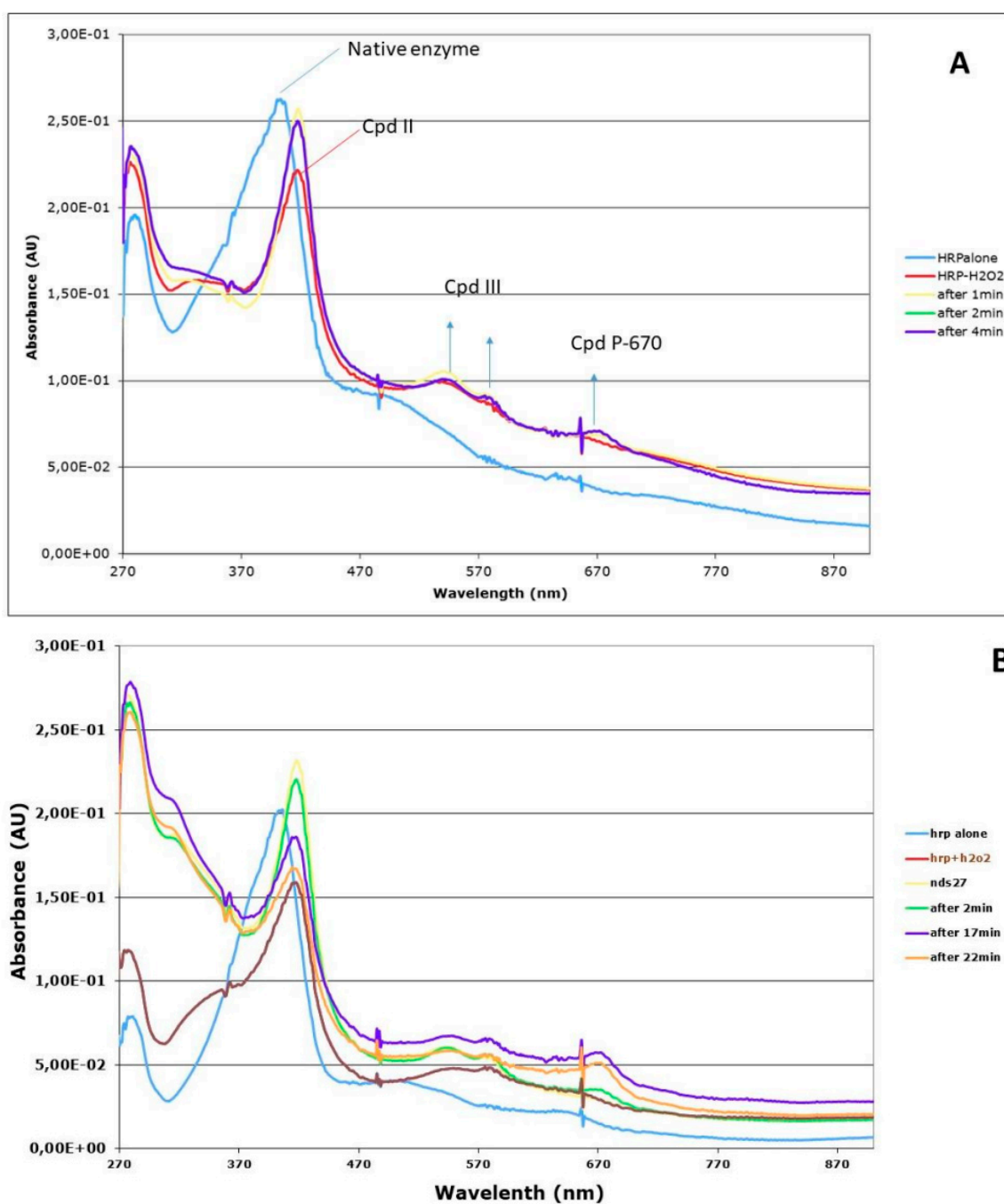


Figure S2. Optical measurements of the reactions of horseradish peroxidase (HRP) in the presence of H₂O₂ on the formation of different intermediates and the influence of NDS27 on the enzyme activity. The reaction was performed in phosphate buffer at room temperature.

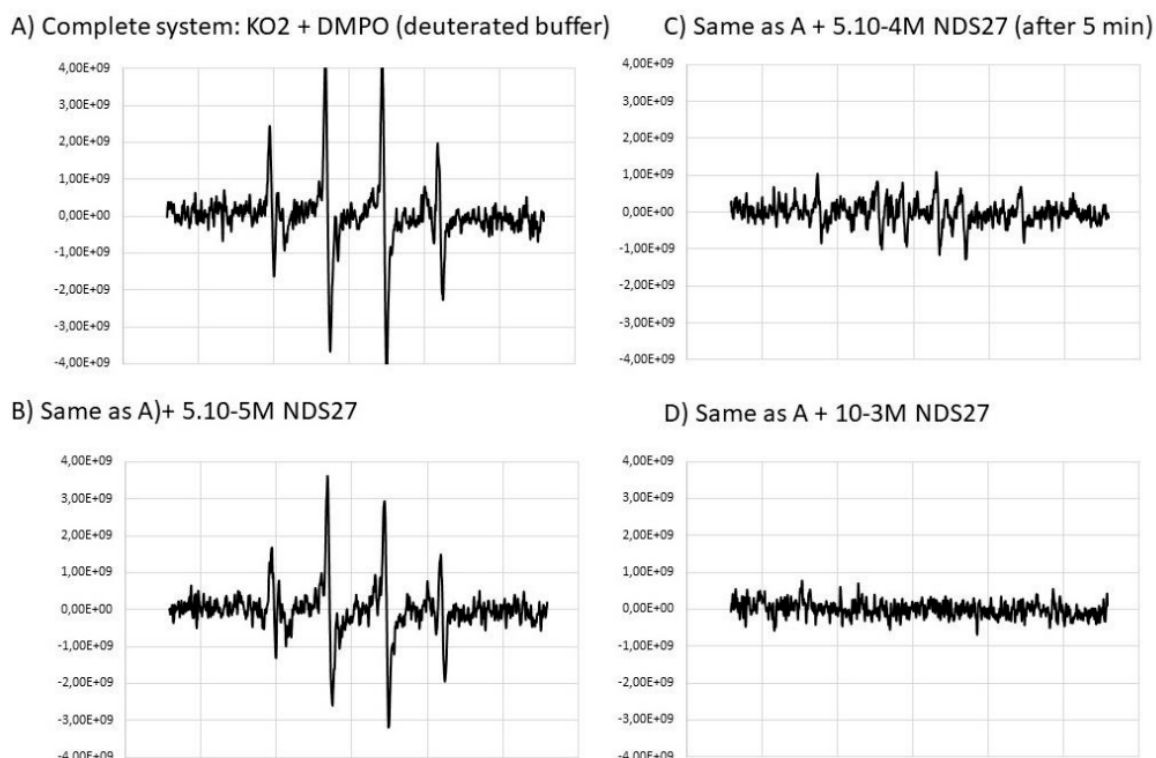


Figure S3. The EPR spectrum A of DMPO-OOH adduct obtained from the reaction of the superoxide anion radical produced by KO₂ decomposition in a mixture of deuterated water and phosphate buffer (pH 7.4). Spectra B–D are obtained in the presence of various concentrations of NDS27. DMPO was used at final concentration of 100 mM.

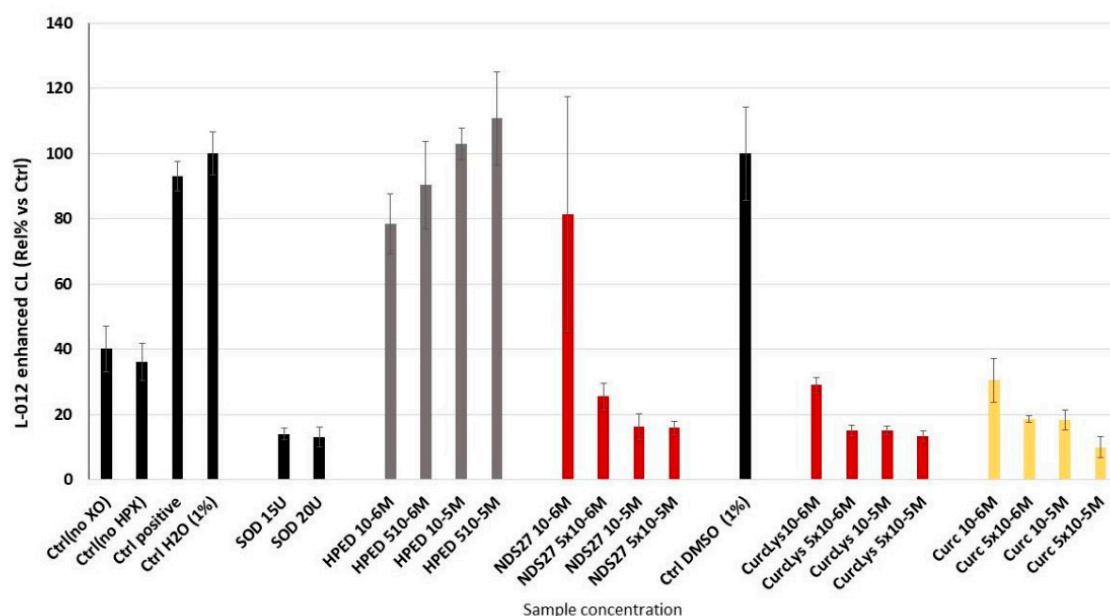
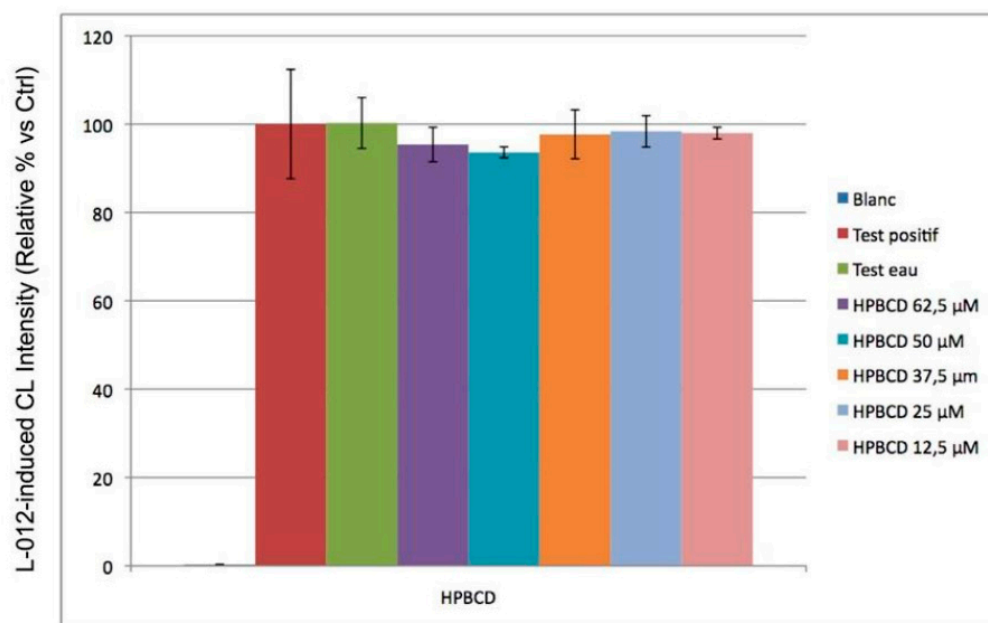


Figure S4. Effect of NDS27 on the L-012 enhanced chemiluminescence (CL) produced by superoxide anion (Hypoxanthine/Xanthine oxidase system) in phosphate buffer (pH 7.8) at room temperature. Results are mean \pm SD of triplicate of two independent experiments. Controls: the complete system = Ctrl positive with hypoxanthine (HP)/xanthine oxidase (XO); Ctrl positive + 1% solvents (Ctrl H₂O and Ctrl DMSO).

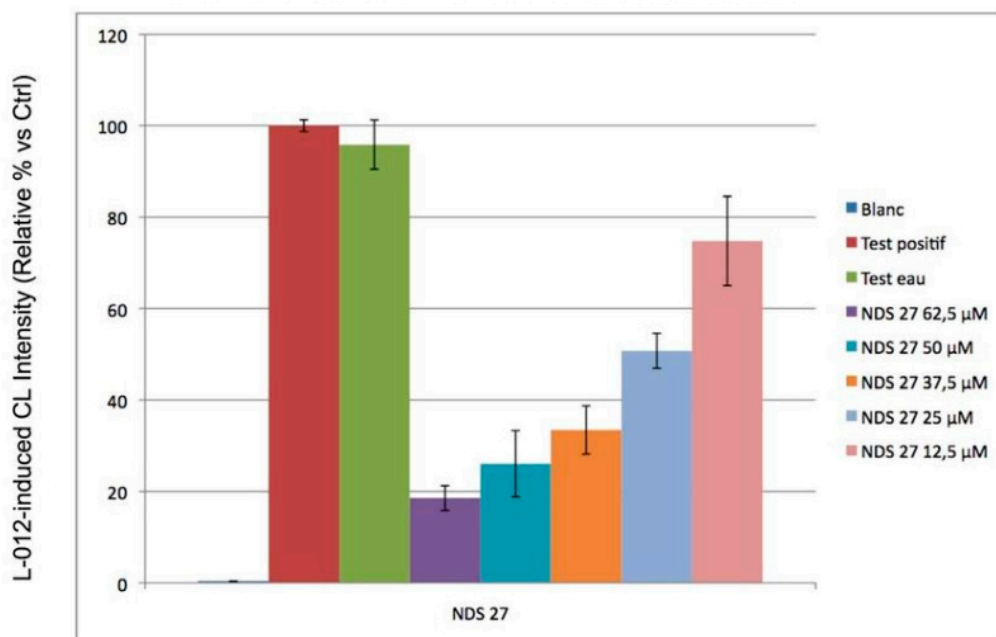
A

Effect of HP β CD on L-012-induced CL



B

Effect of NDS27* on L-012-induced CL



*NDS27: Lysinate Curcumin + HP β CD

Effect of pure curcumin on L-012-induced CL

C

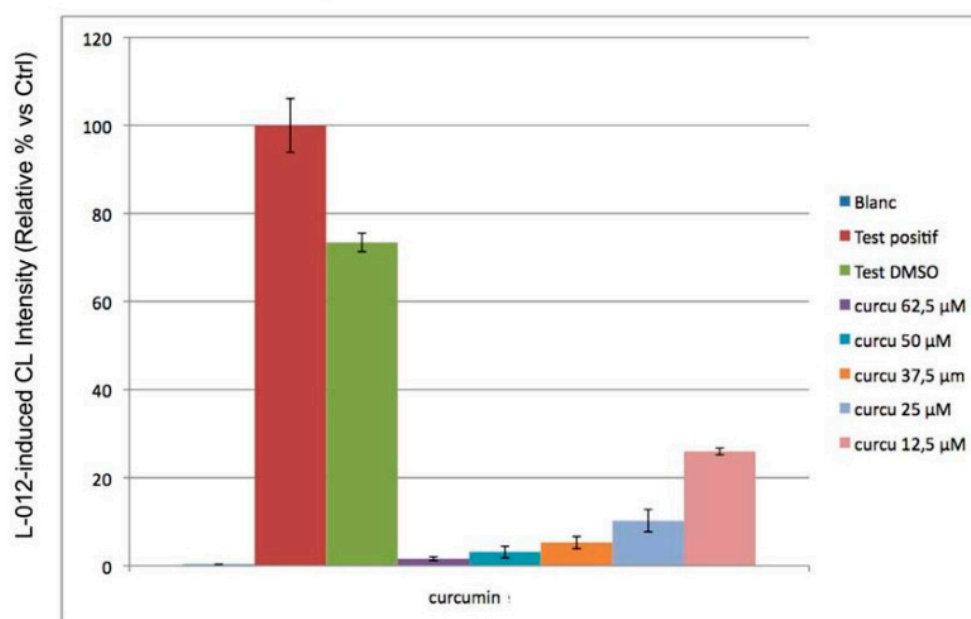
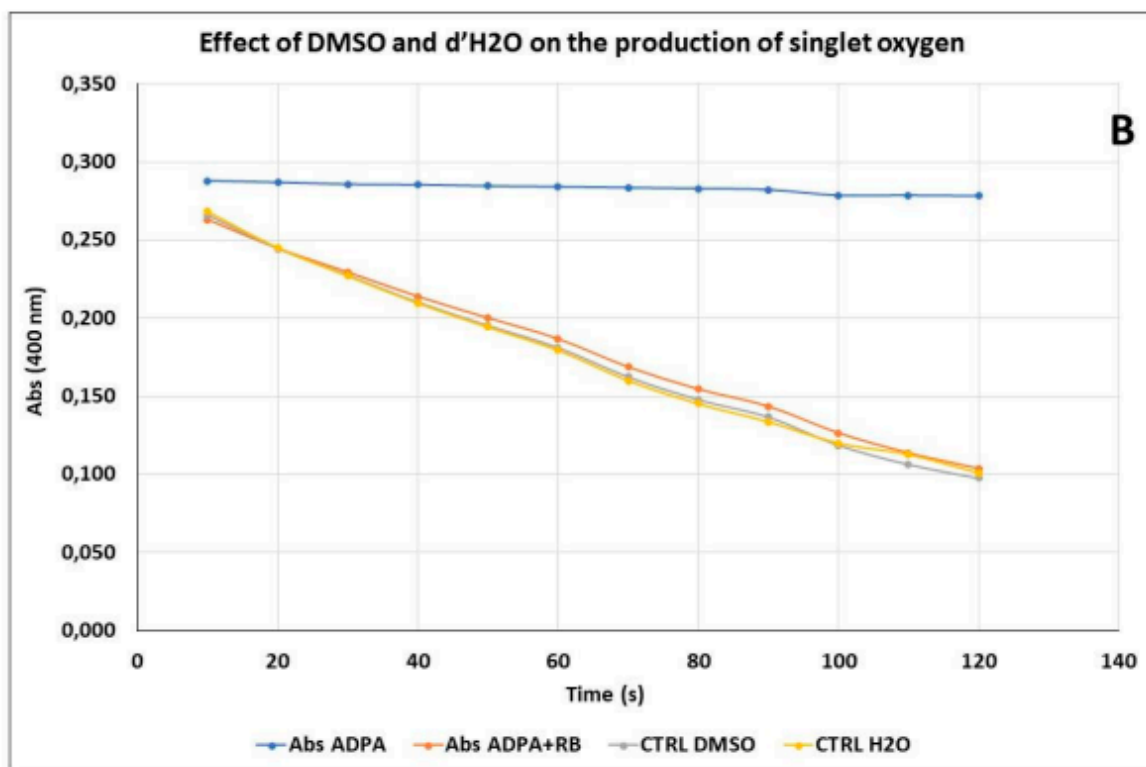
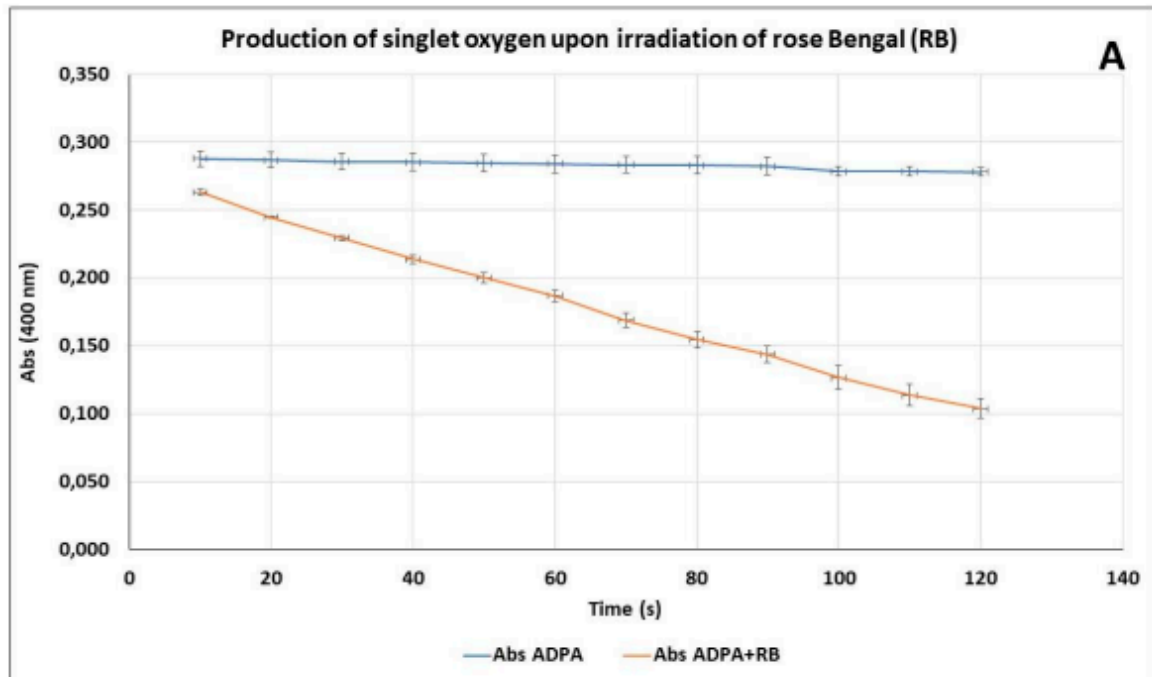
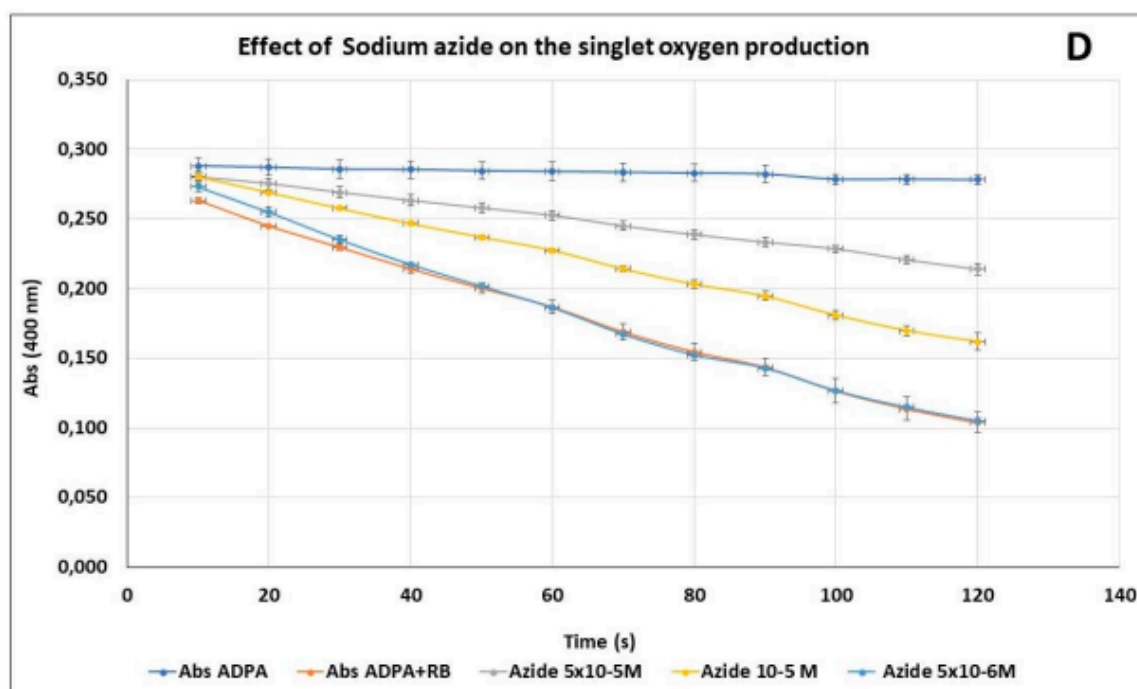
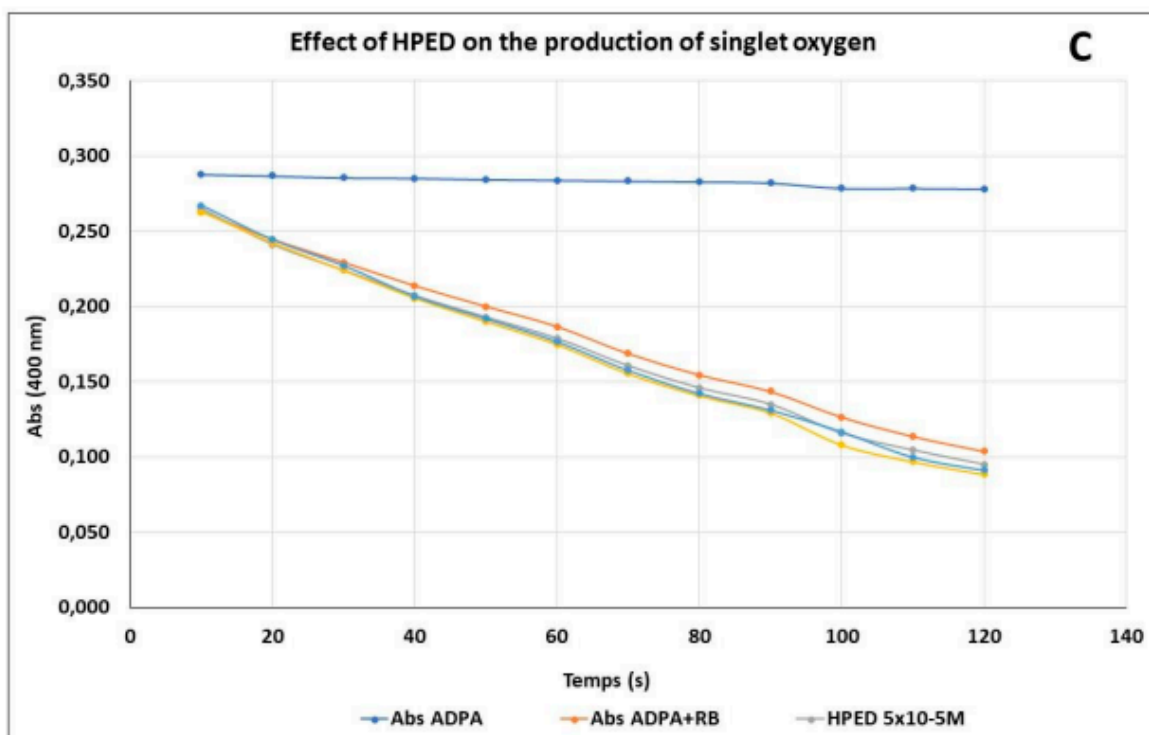


Figure S5. Effect of NDS27 compared to curcumin and curcumin-lysine on the chemiluminescence (CL) produced by the enzymatic system (HRP/H₂O₂) in the presence of L-012 as probe. (A) HPβCD, (B) NDS27, (C) Curcumin and . The results are mean +/- SD of triplicate, with two independent assays (N = 2, n = 6).





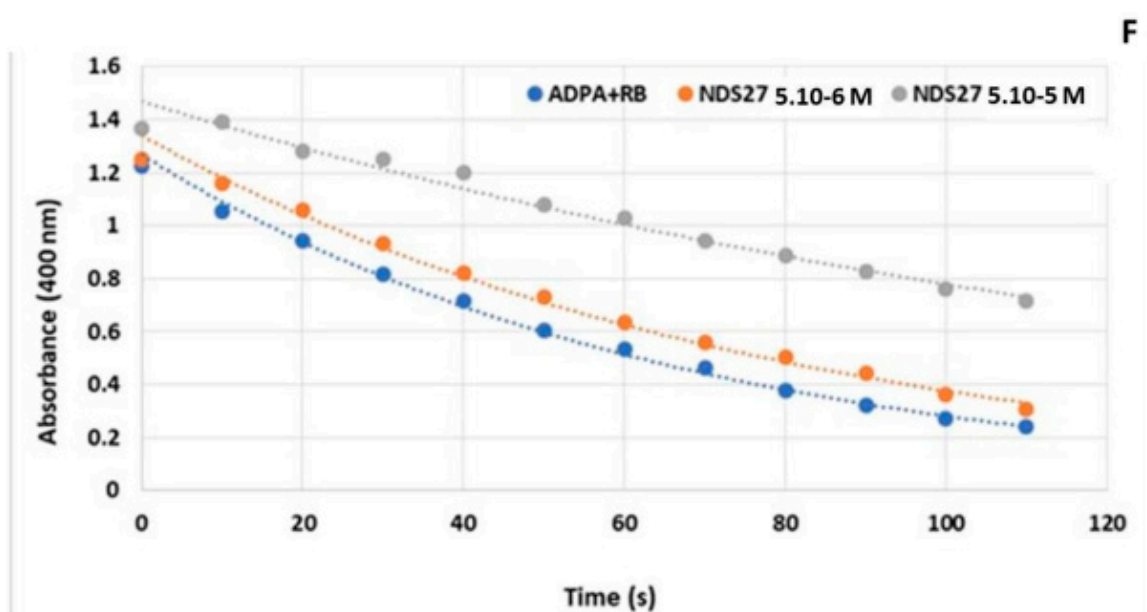
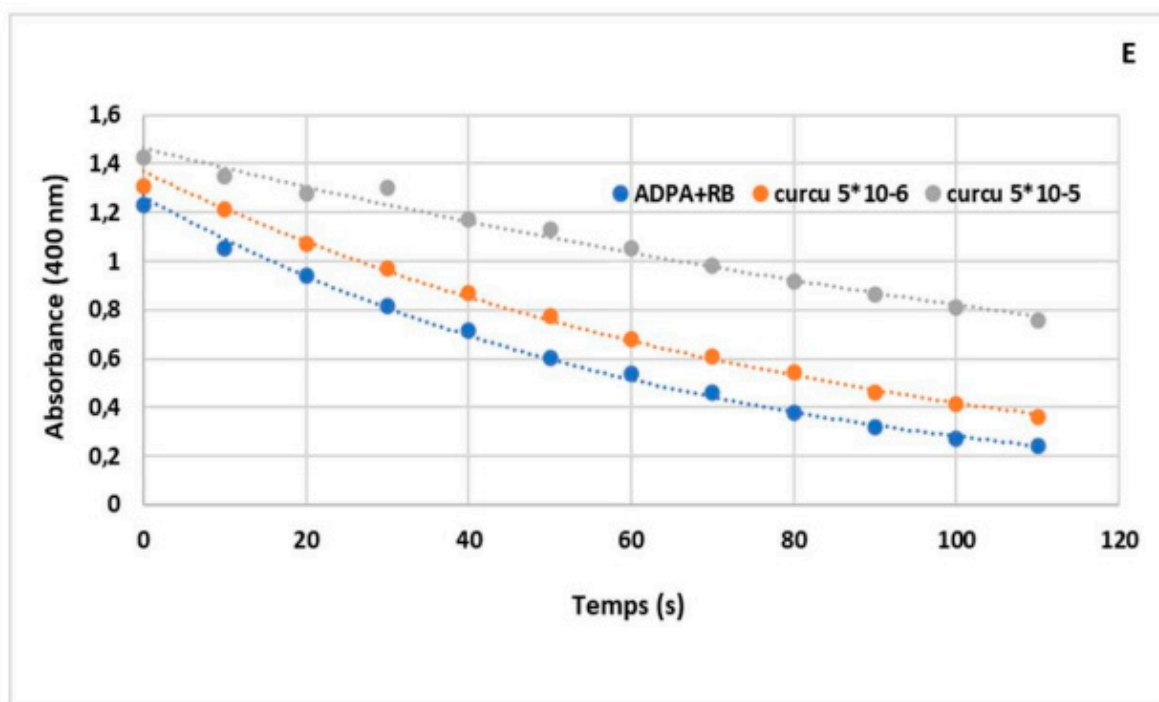
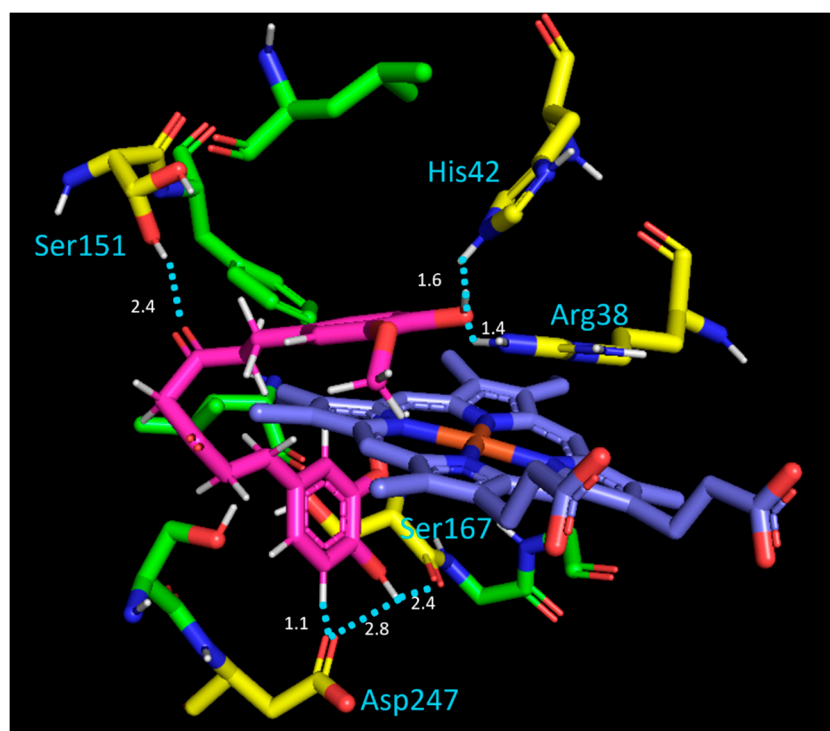
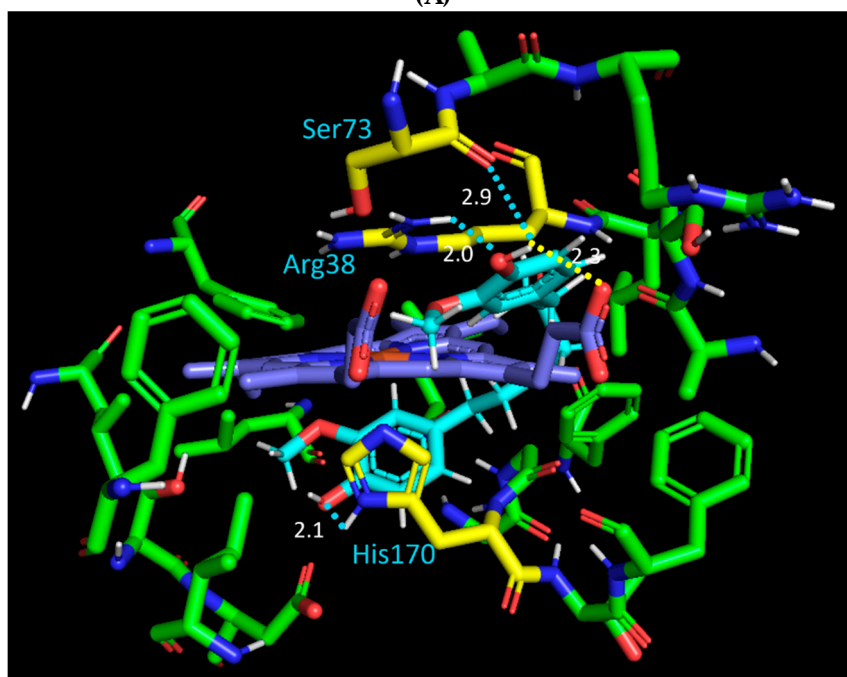


Figure S6. Optical study of the singlet oxygen quenching effect of azide (NaN_3) taken as reference in comparison with solvents used water-soluble complex (NDS27) in comparison with sodium azide. The $^1\text{O}_2$ was produced by irradiation of Rose Bengal (RB) in the presence of anthracene derivative (ADPA) in phosphate buffer pH (7.4) at room temperature. (A) Positive CTRL: RB + ADPA; (B) same as A + dH_2O and DMSO; (C) same as A + The excipient HPED; (D) Same as A + increasing concentrations of azide; (E) same A + curcumin ($5 \cdot 10^{-6}$ M and $5 \cdot 10^{-5}$ M); (F) same as A + NDS27 ($5 \cdot 10^{-6}$ M and $5 \cdot 10^{-5}$ M).



(A)



(B)

Figure S7. (A). Interaction of the “E” position of curcumin (in magenta) with residues. Interacting residues are colored in yellow, the heme in blue and the contact in dashed light blue line. The values of the interaction distance in Å are presented. (B). Interaction of the “I” position of curcumin (in cyan) with residues. Interacting residues are colored in yellow, the heme in blue, the contact in dashed light blue line and interaction with the heme in dashed yellow line. The values of the interaction distance in Å are presented.