Supporting information

Green synthesis of gardenia seeds-based carbon dots for bacterial imaging and antioxidant activity in aqueous and oil samples

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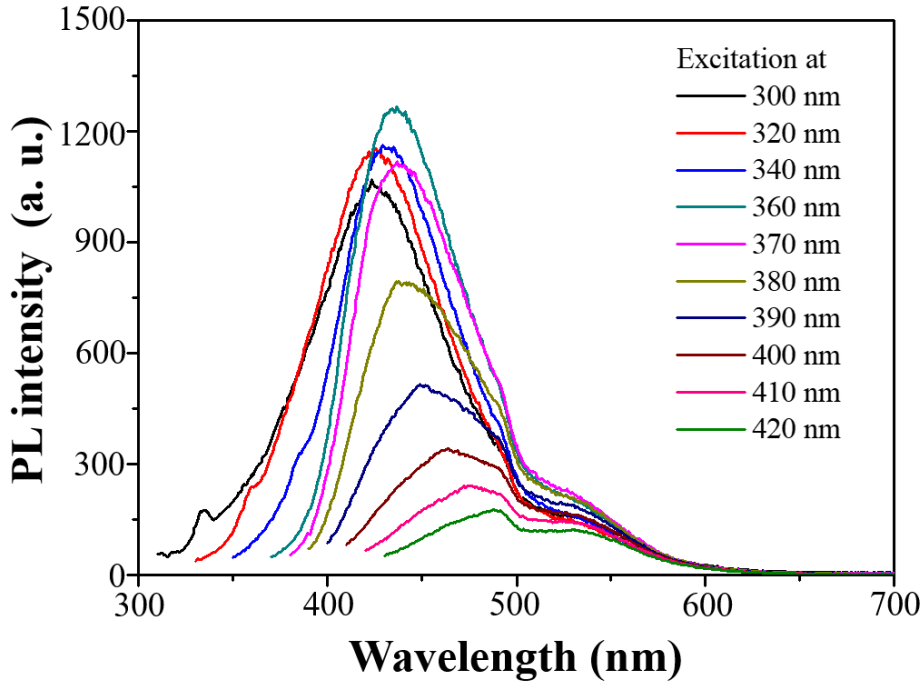

Figure S1. Excitation-dependent emissions spectra of GCDs-220.

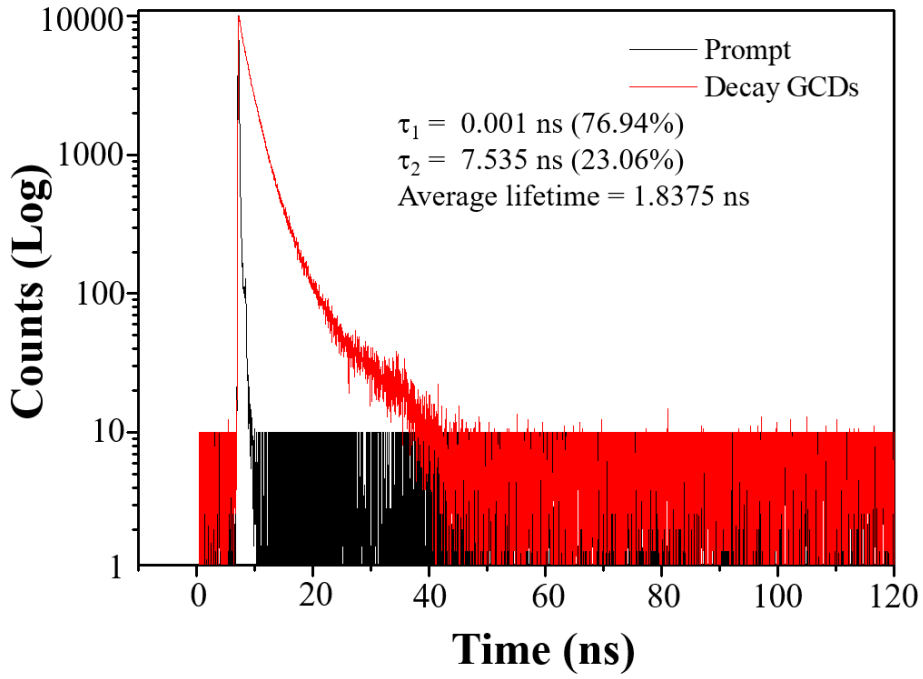

Figure S2. The decay curves of GCDs-220 in water were collected at 430 nm when excited at 375 nm.

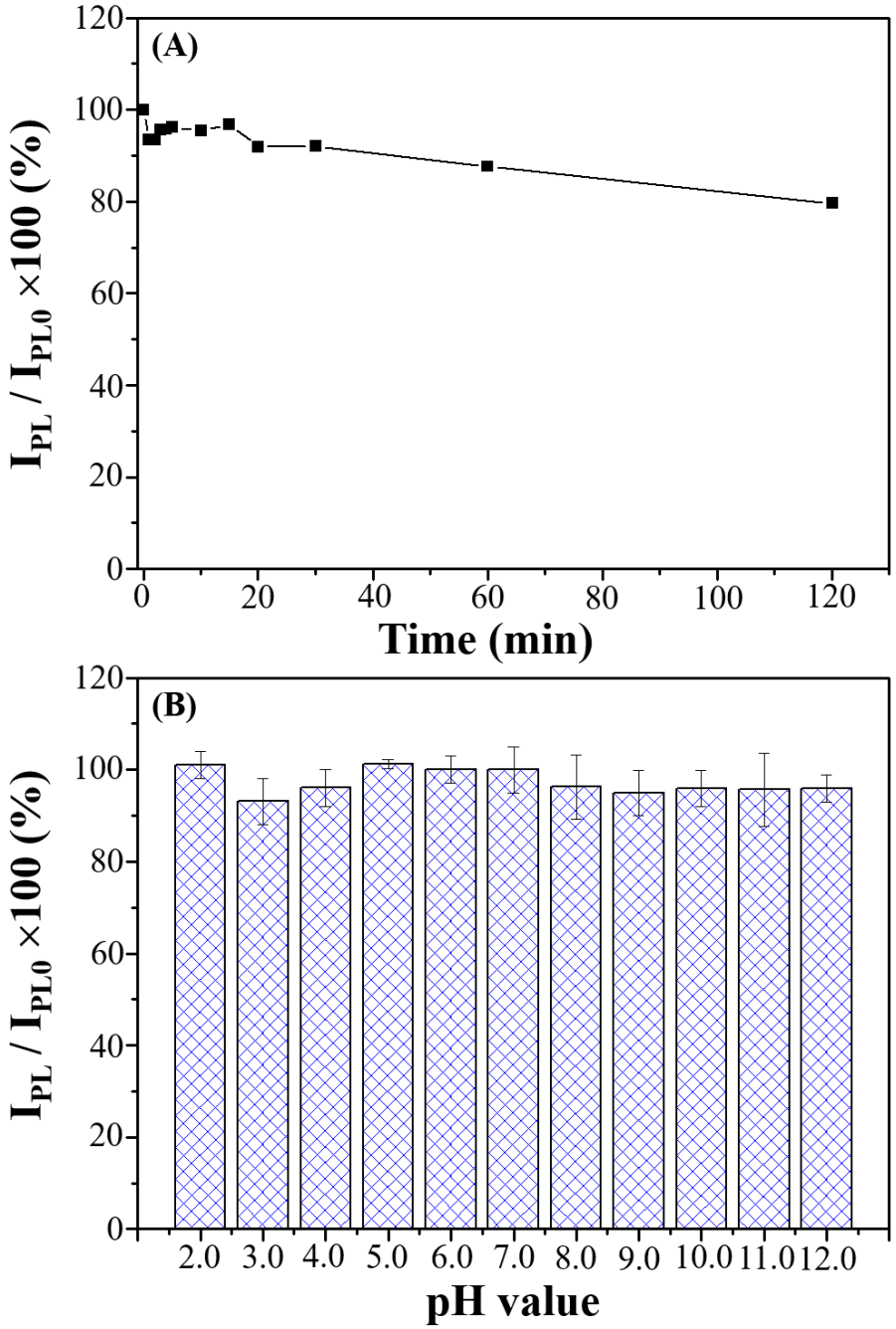

Figure S3. (A) The plot of the PL intensity at 450 nm of GCDs-220 under continuous irradiation of the 365 nm light with different time intervals. (B) pH dependence of PL response of GCDs-220 in various pH ranges.

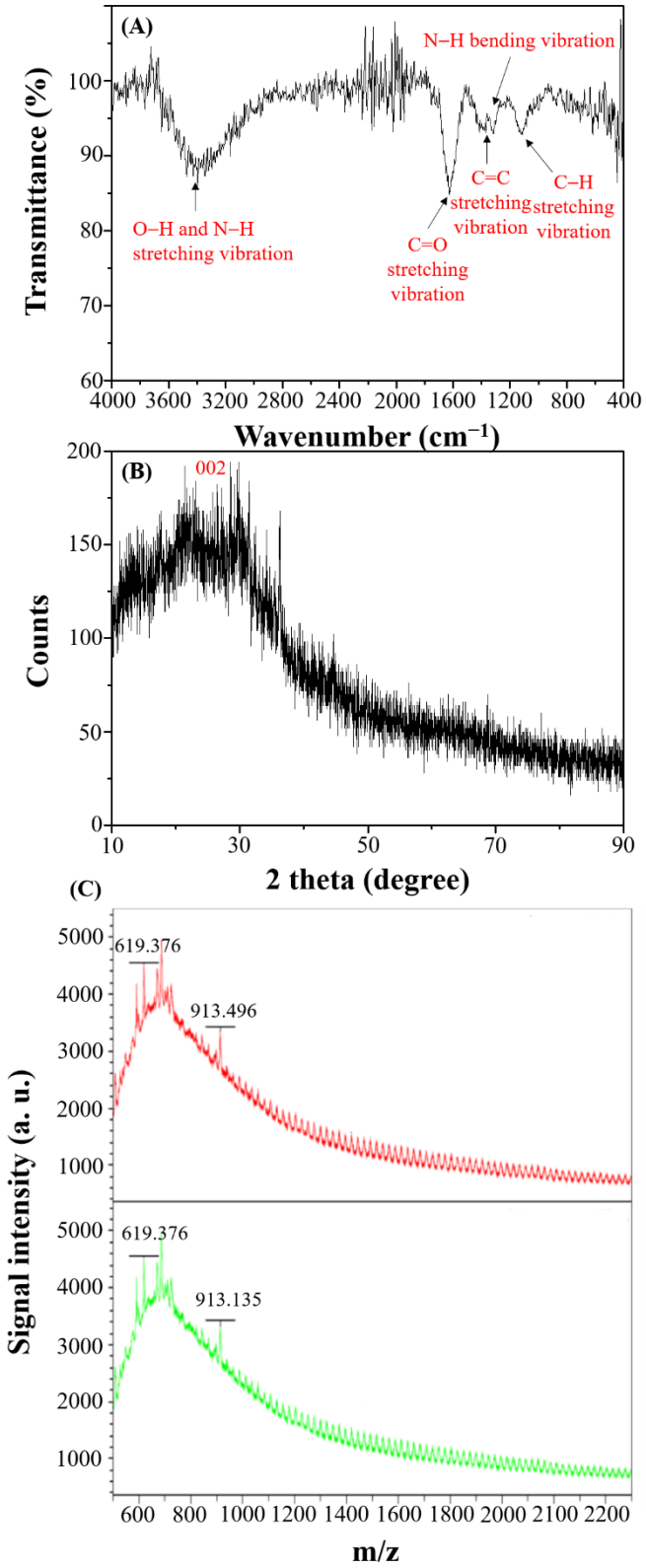

Figure S4. (A) FT-IR spectrum, (B) XRD pattern and (C) MS spectra (red: CHCA matrix, green: TFA matrix) of GCDs-220.

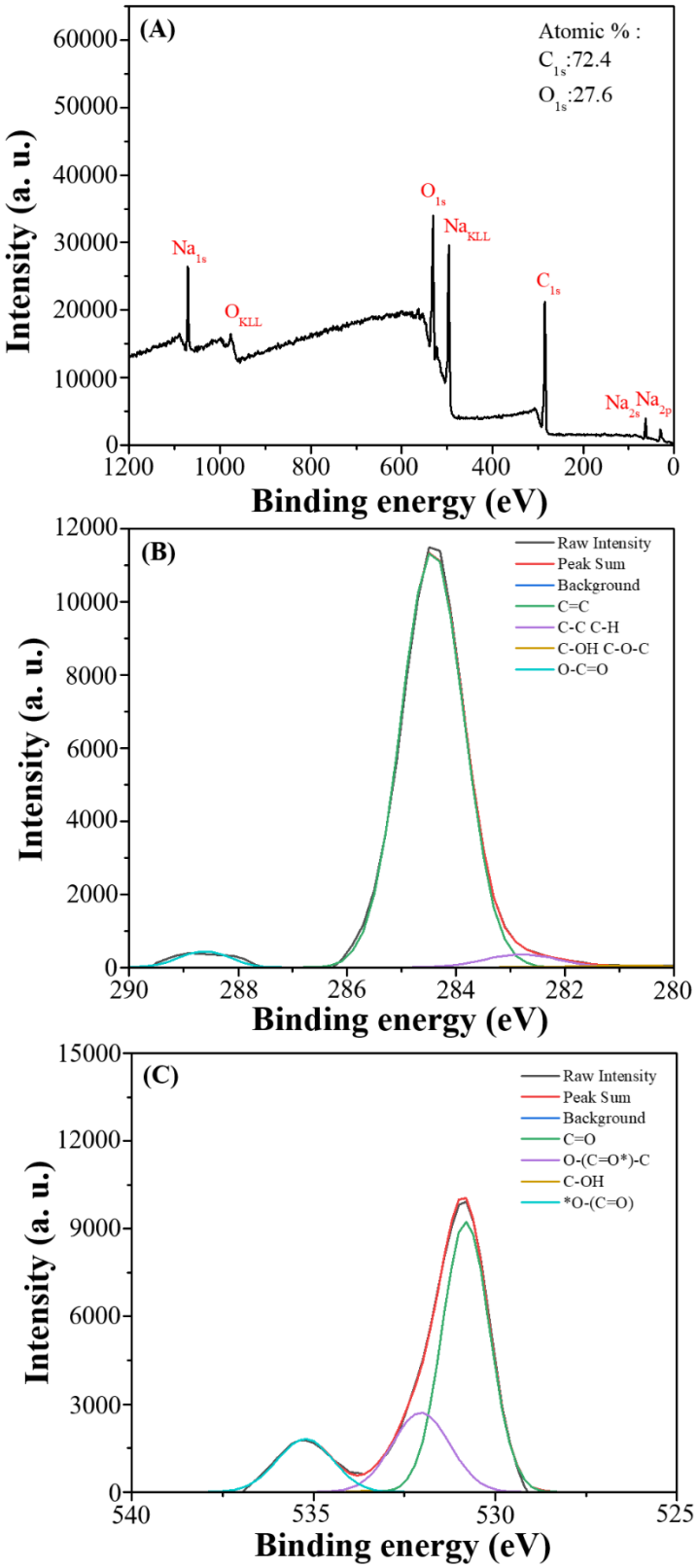

Figure S5. (A) Full range XPS analysis of GCDs-220. High-resolution XPS spectrum of the (B) C_{1s} and (C) O_{1s} region of GCDs-220.

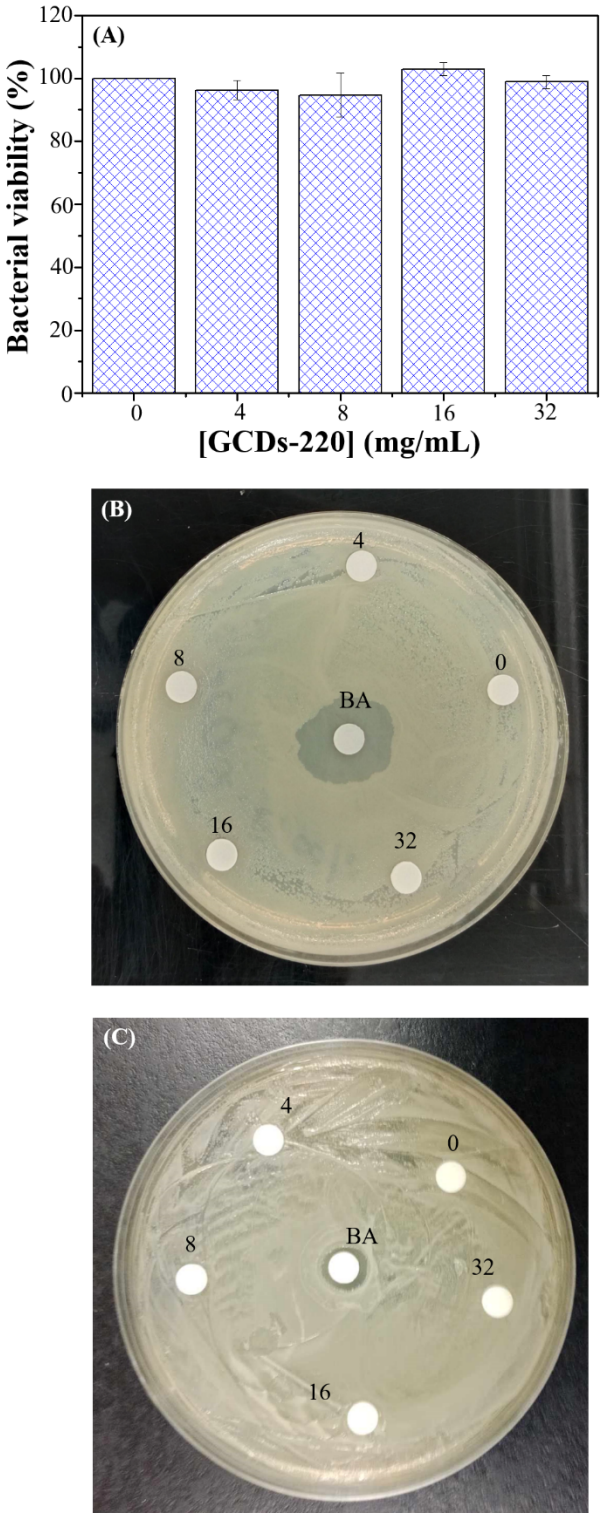

Figure S6. (A) Bacterial viability (%) of *E. coli* and photograph images of the inhibition zone of GCDs-220 (0, 4, 8, 16, and 32 mg/mL) and BA (32 mg/mL) against (B) *E. coli and* (C) *Staphylococcus aureus*.

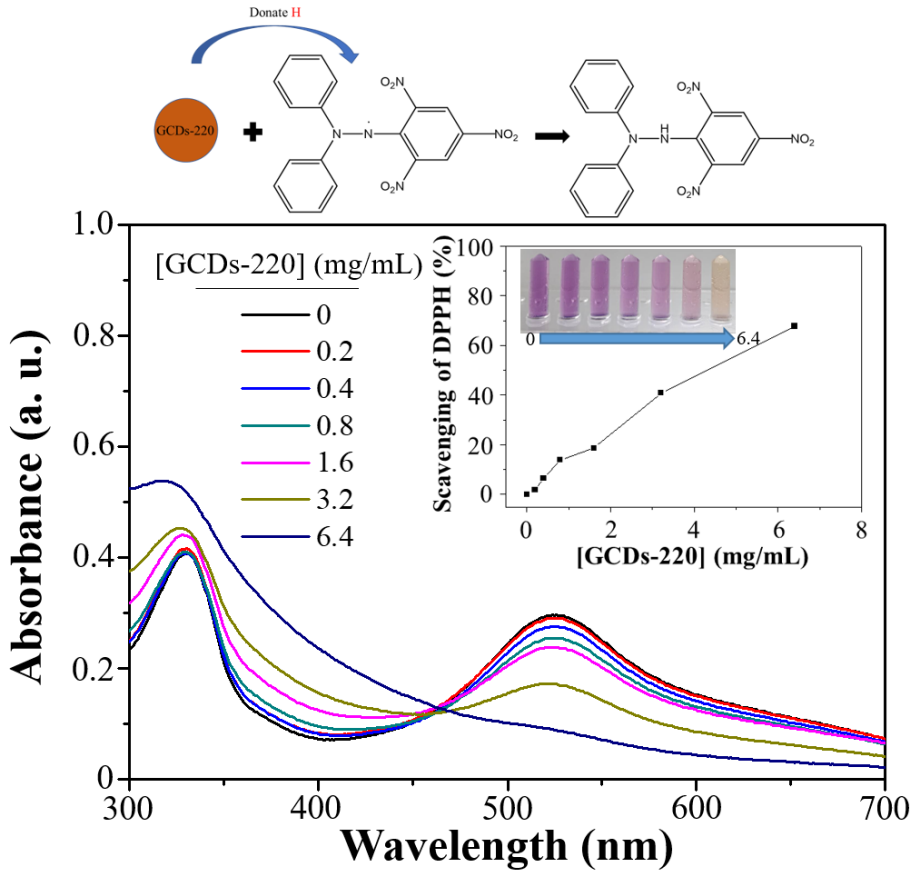

Figure S7. UV-Vis spectra of GCDs-220 (0, 0.2, 0.4, 0.8, 1.6, 3.2, and 6.4 mg/mL) in the presence of 0.1 mM DPPH (insets: antioxidant activity of GCDs-220 against DPPH· radicals and color changes of mixture solutions at various concentration of GCDs-220) and possible reaction mechanisms.

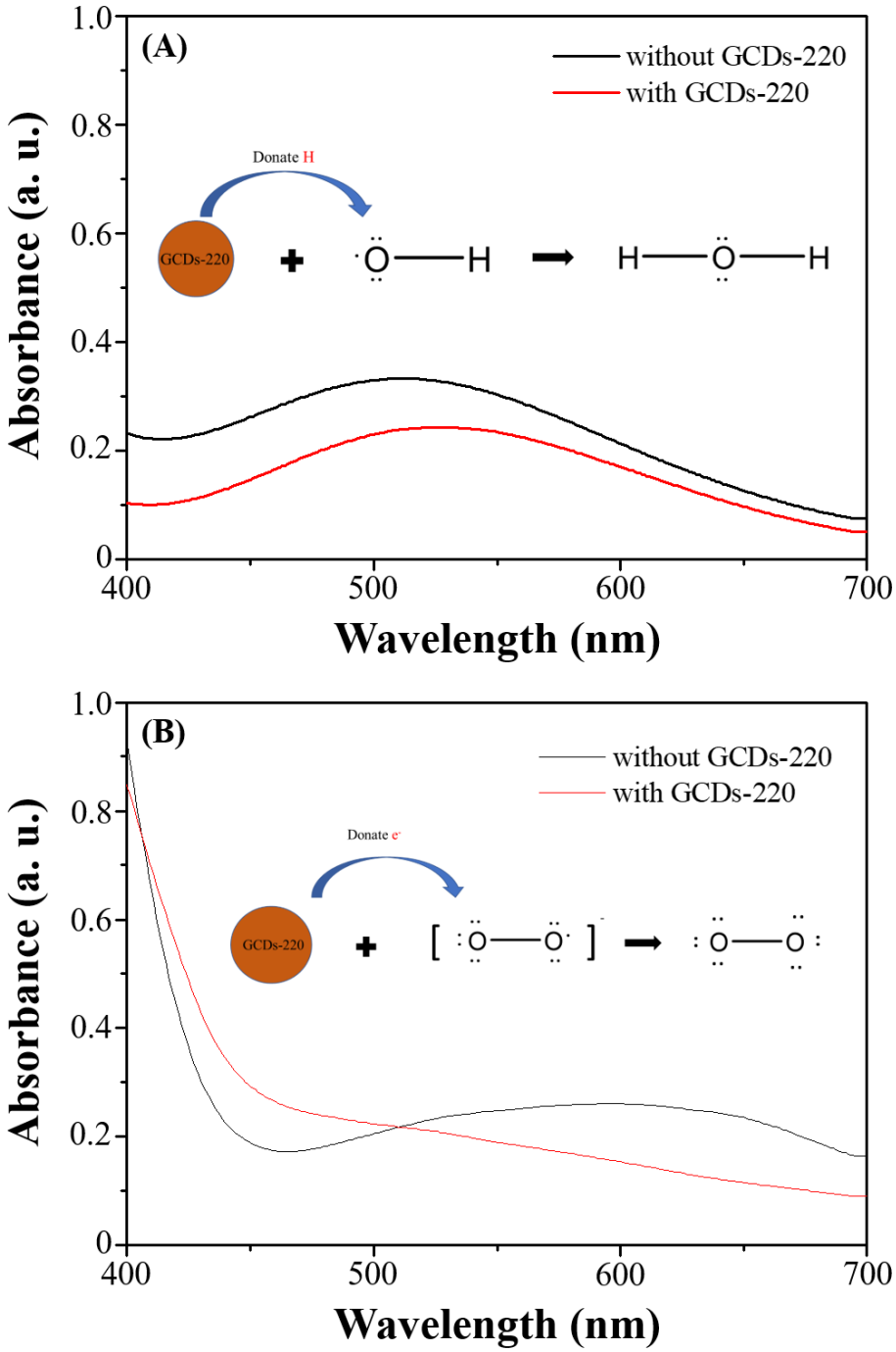

Figure S8. Antioxidant activities of GCD-220 against (A)•OH and (B)•O_2^- free radicals and possible reaction mechanism.

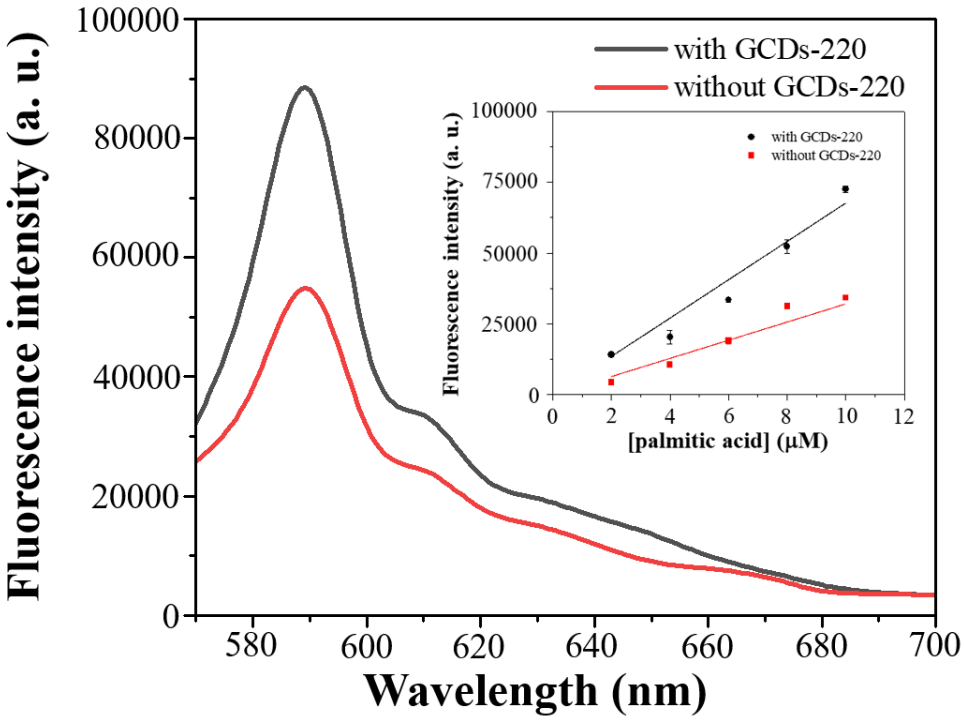

Figure S9. Fluorescence intensity of palmitic acid by a free fatty acid quantitation kit with/without GCDs-220 (1.28 mg/mL). Inset: the linear variation of fluorescence intensity of different palmitic acid concentrations by a free fatty acid quantitation kit with/without GCDs-220.