Electronic Supplementary Material (ESI) for RSC Advances.
This journal is © The Royal Society of Chemistry 2016

Electronic Supporting Information

A fluorometric assay for tyrosinase activity and its inhibitors screening based on graphene quantum dots

Xian-En Zhao [a,b]*, Cuihua Lei [a], Yuhua Wang [a], Fei Qu [a], Shuyun Zhu [a]*, Hua Wang [a], Jinmao You [a,b]*

[a] Shandong Provincial Key Laboratory of Life-Organic Analysis, College of Chemistry and Chemical Engineering, Qufu Normal University, Qufu, Shandong, 273165, China.

[b] Key Laboratory of Tibetan Medicine Research, Northwest Institute of Plateau Biology, University of Chinese Academy of Sciences, Xining, Qinghai, 810001, China.

* To whom correspondence should be addressed. E-mail: xianenzhao@163.com (X. E. Zhao); shuyunzhu1981@163.com (S. Y. Zhu); jmyou6304@163.com (J. M. You).

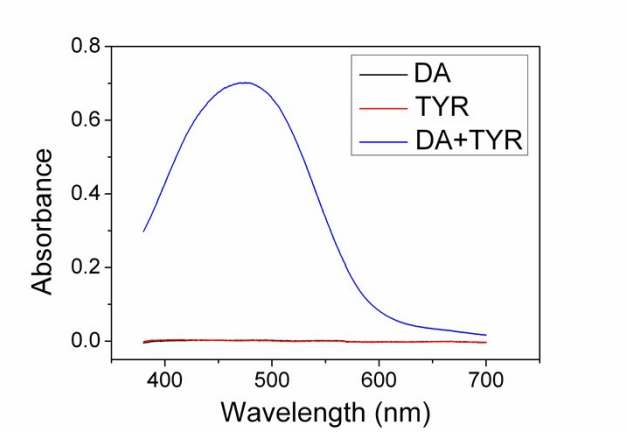

Fig. S1 UV-vis spectra of DA, TYR, and DA with TYR. [DA]=1 mM; [TYR]=10 U/mL.

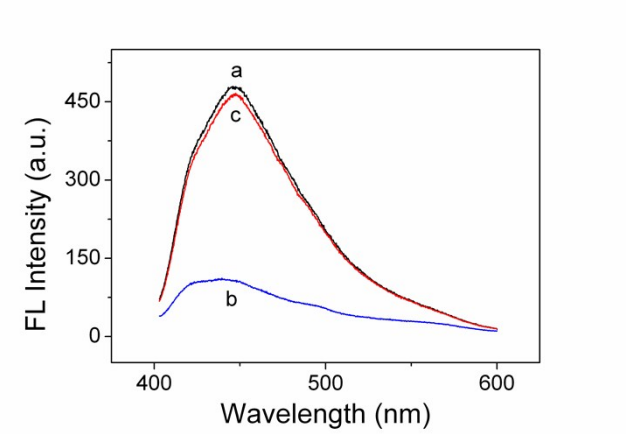

Fig. S2 Fluorescence emission spectra of GQDs under different conditions. (a) 0.1 mg/mL GQDs; (b) 0.1 mg/mL GQDs + 1.0 mM DA + 10 U/mL TYR; (c) 0.1 mg/mL GQDs + 1.0 mM DA + 10 U/mL TYR + 2 mM AA.

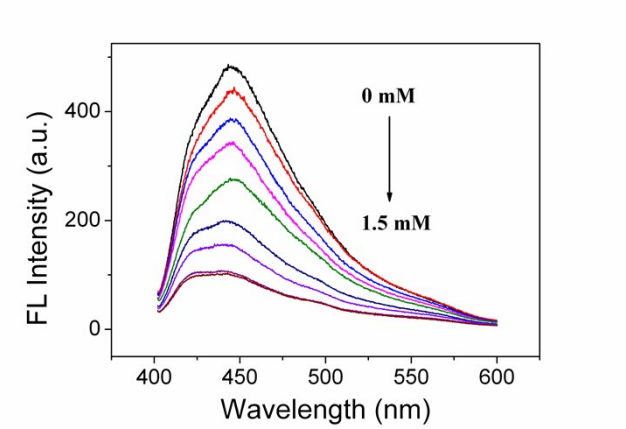

Fig. S3 Fluorescence emission spectra of GQDs containing 10 U/mL TYR and different concentrations of DA. From top to down, the concentration of DA is 0, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1.0 and 1.5 mM, respectively.

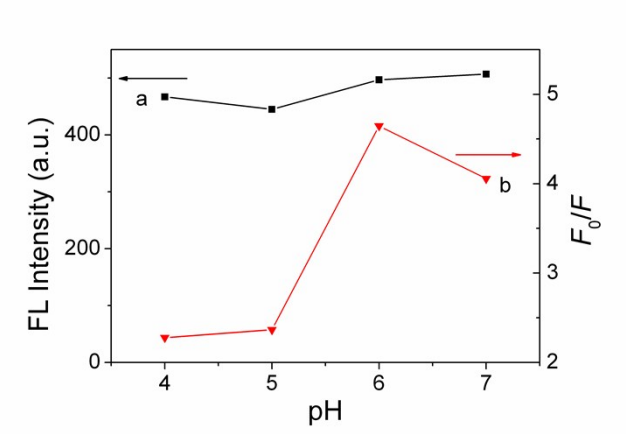

Fig. S4 (a) Fluorescence intensity of GQDs in the phosphate buffer solutions with different pH; (b) The effect of pH on the fluorescence quenching efficiency (F_0/F), where F_0 and F are the fluorescence intensity of GQDs in the absence and presence of both DA and TYR, respectively. [GQDs]=0.1 mg/mL; [DA]=1.0 mM; [TYR]=10 U/mL; pH=6.0.

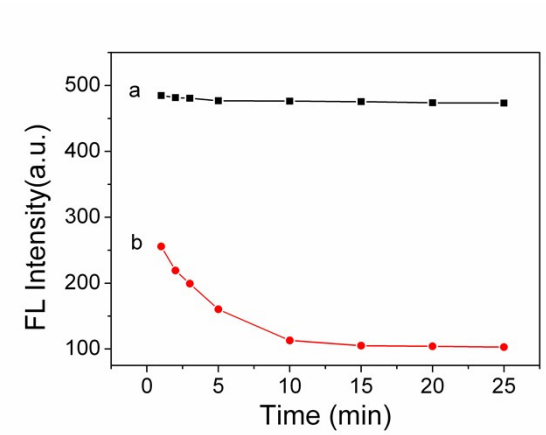

Fig. S5 (a) The effect of time on the fluorescence intensity of GQDs in the absence (a) presence of both DA and TYR (b). [GQDs]=0.1 mg/mL; [DA]=1.0 mM; [TYR]=10 U/mL; pH=6.0.

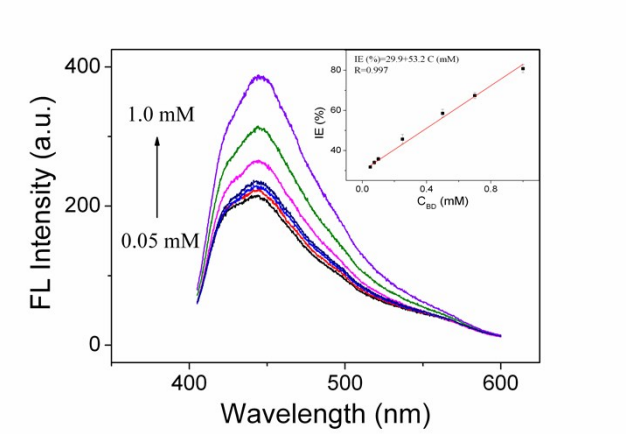

Fig. S6 Fluorescence emission spectra of GQDs-DA-TYR system with different concentrations of BD. The concentrations of BD were 0.05, 0.075, 0.1, 0.25, 0.5, 0.70 and 1.0 mM, respectively. The inset was the linear plot of inhibition efficiency versus the concentration of BD.

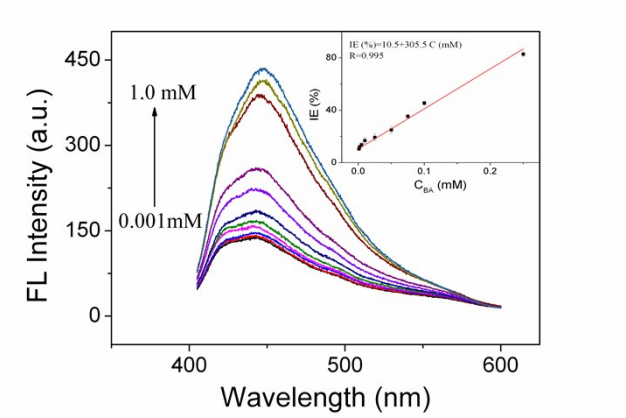

Fig. S7 Fluorescence emission spectra of GQDs-DA-TYR system with different concentrations of BA. The concentrations of BA were 0.001, 0.002, 0.005, 0.01, 0.025, 0.05, 0.075, 0.1, 0.25, 0.5, 0.75, and 1.0 mM, respectively. The inset was the linear plot of inhibition efficiency versus the concentration of BA.

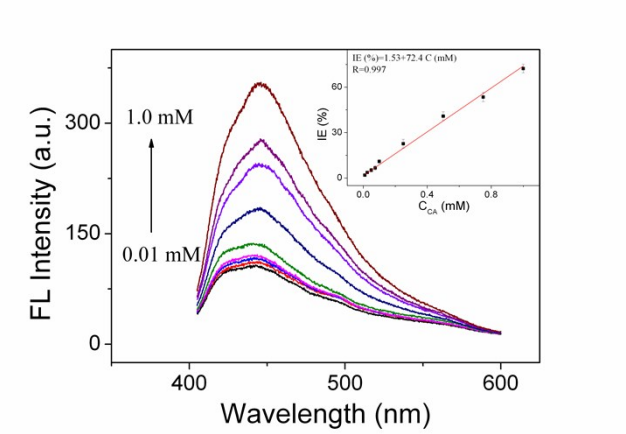

Fig. S8 Fluorescence emission spectra of GQDs-DA-TYR system with different concentrations of CA. The concentrations of CA were 0.01, 0.025, 0.05, 0.075, 0.1, 0.25, 0.5, 0.75, and 1.0 mM, respectively. The inset was the linear plot of inhibition efficiency versus the concentration of CA.

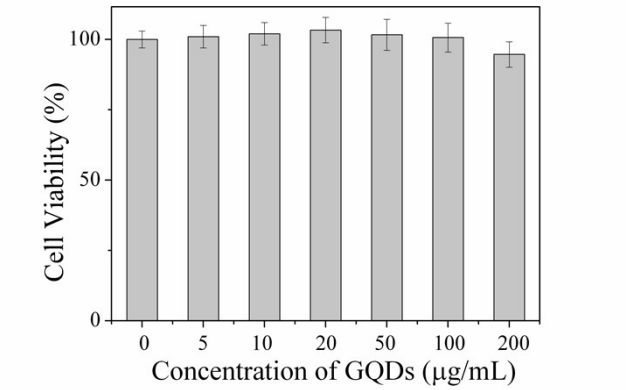

Fig. S9 Effect of GQDs probe on human HeLa cells.

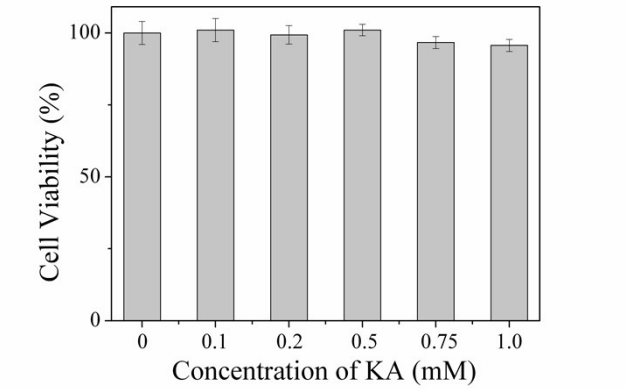

Fig. S10 Effect of KA on human HeLa cells.