Electronic Supplementary Material (ESI) for Analyst.
This journal is © The Royal Society of Chemistry 2020

Electronic Supplementary Information

Borate Modified Carbon Dots as a Probe for Quercetin in Plants

Mei Gao [a], Man He [a], Rang Xing [a], Xuefei Wang *[a], Zhuo Wang *[b]

a. School of Chemistry Sciences, University of Chinese Academy of Sciences, Beijing, 100049, China.

b. State Key Laboratory of Chemical Resource Engineering, College of Science, Beijing Advanced Innovation Centre for Soft Matter Science and Engineering, Beijing University of Chemical Technology, Beijing, 100029, China.

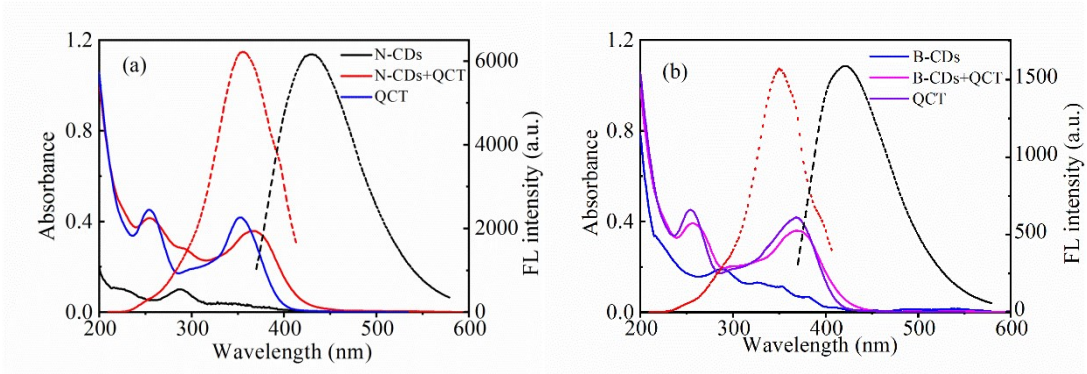

Fig. S1 Absorption spectrum, fluorescence excitation and emission spectra of (a) 20 μg mL^{-1} N-CDs (b, 20 μg mL^{-1} B-CDs), 15 μM quercetin and the mixture of N-CDs, (B-CDs) and quercetin. (All at excited at 350 nm, N-CDs monitored at 428 nm, B-CDs at 447 nm).

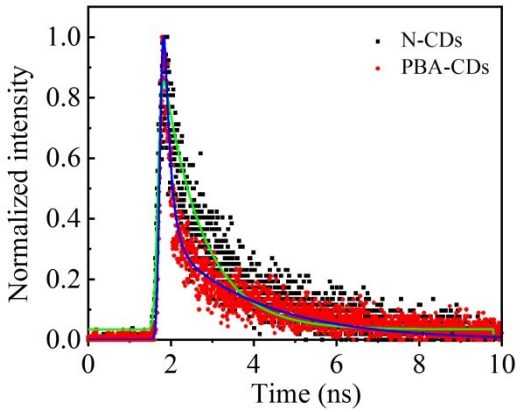

Fig. S2 The fluorescence decay of PBA-CDs and the N-CDs with excitation at 405 nm and emission at 430 nm.

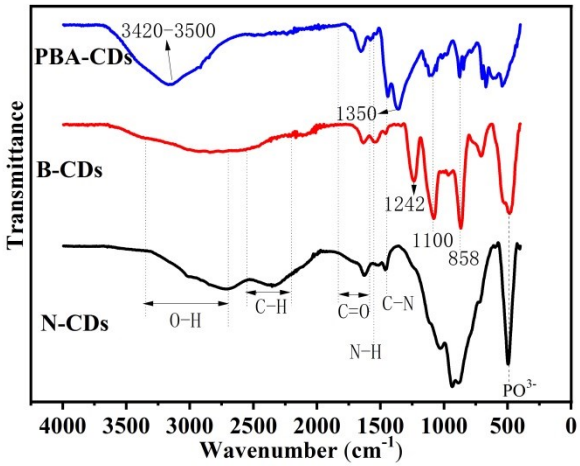

Fig. S3 FTIR spectra of PBA-CDs, B-CDs, N-CDs.

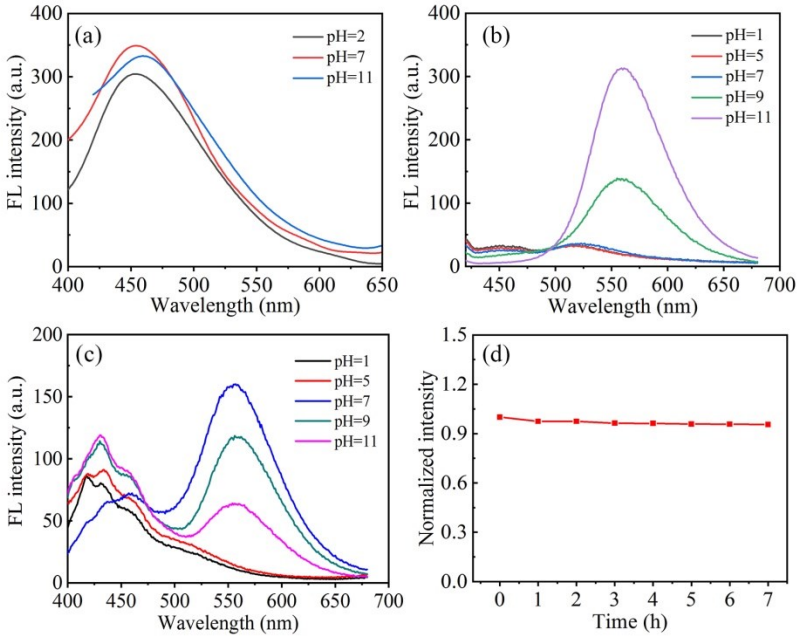

Fig. S4 (a) Emission spectra of 20 μg mL^{-1} PBA-CDs recorded at pH 2 (black), pH 7 (red) and pH 12 (blue). (b) Emission spectra of 20 μM QCT recorded at pH 1 (black), pH 5 (red), pH 7 (blue), pH 9 (green) and pH 11 (purple). (c) Emission spectra of the mix of 20 μg mL^{-1} PBA-CDs and 20 μM QCT recorded at pH 1 (black), pH 5 (red), pH 7 (blue), pH 9 (green) and pH 11 (purple). (d) Normalized fluorescence intensity of PBA-CDs versus time in the presence of 20 μM QCT at Ex: 350 nm, Em: 555 nm.

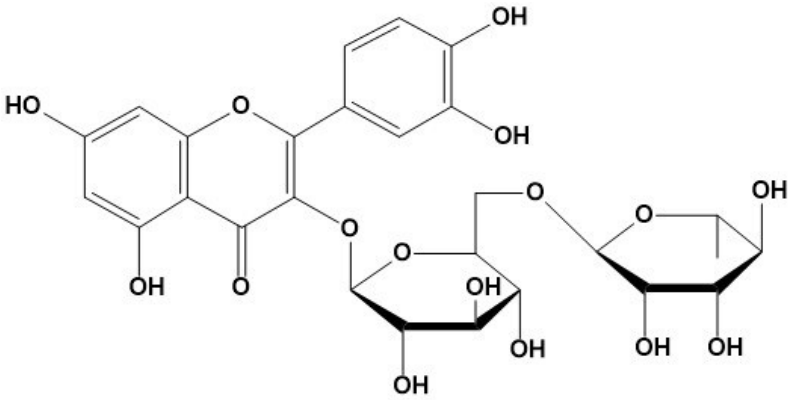

Fig. S5 The structural formula of rutin.

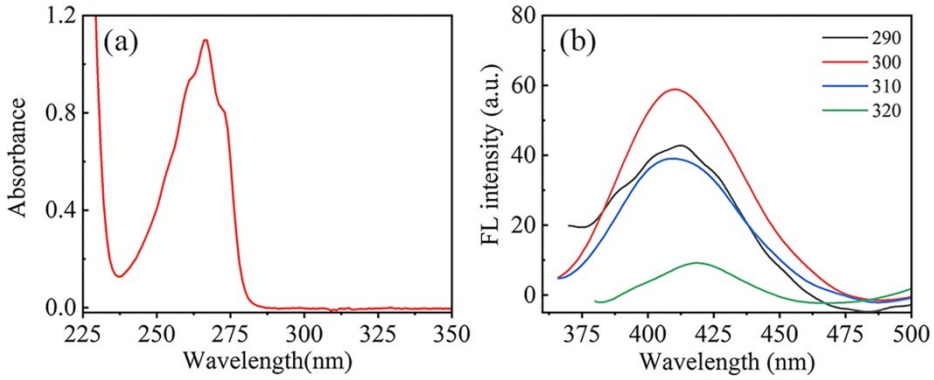

Fig. S6 (a) Absorption spectrum of PBA, (b) Fluorescence emission spectra of PBA at Ex 290 nm-320nm. (Exmax:300 nm, Emmax:410 nm).

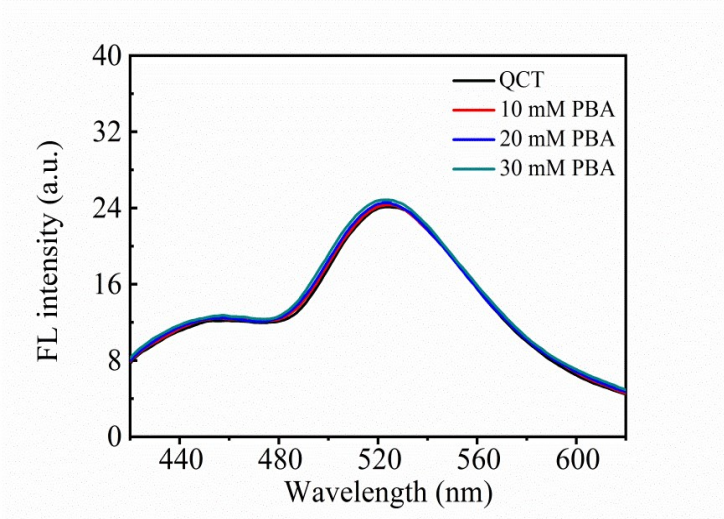

Fig. S7 The fluorescence emission spectra of quercetin (15μM) with different concentration of phenylboric acid (10 mM-30 mM).

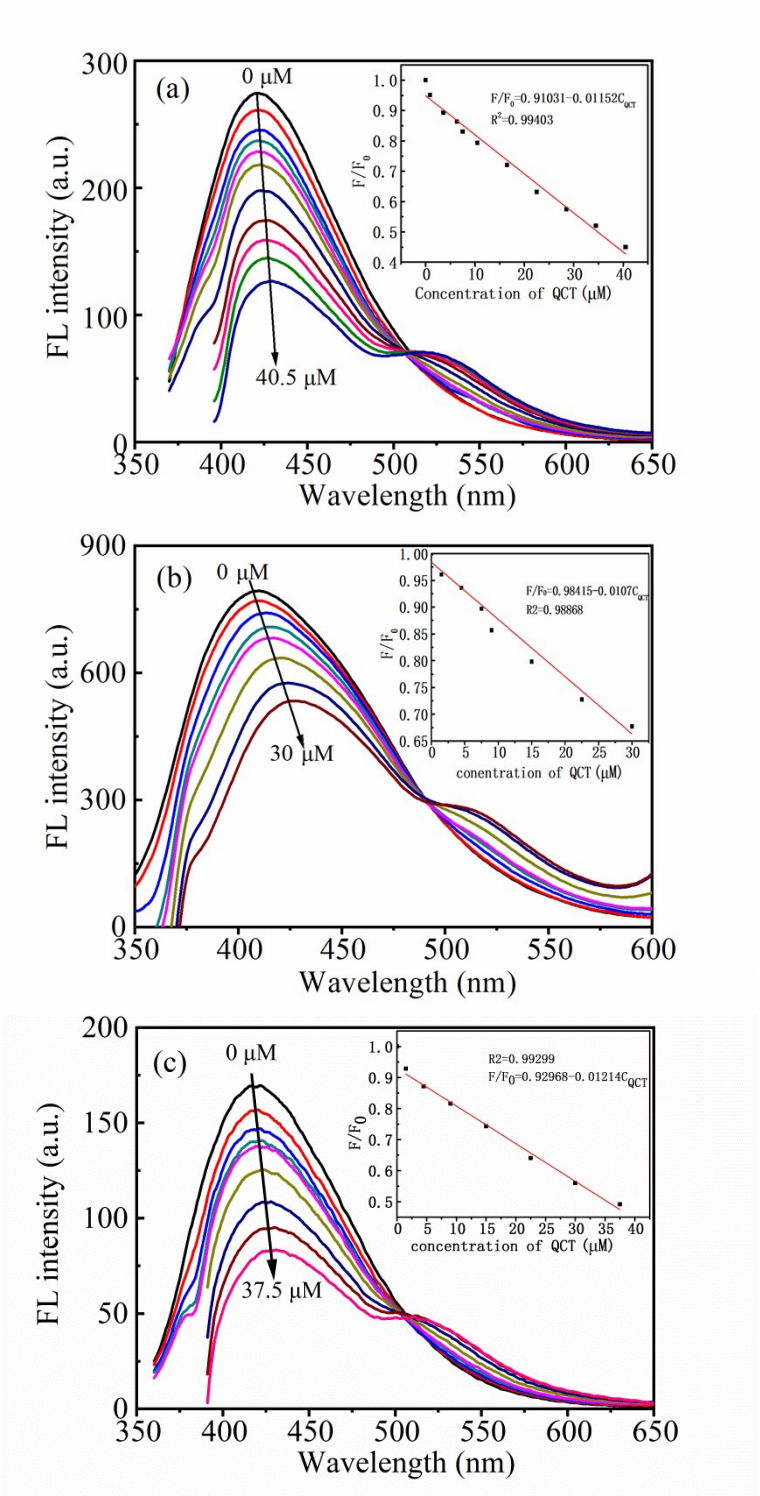

Fig. S8 Fluorescence spectra of (a) B-CDs, (b) O-CDs, (c) N-CDs after the addition of different concentration of quertin. Inset: The florescence intensities of (a) B-CDs, (b) O-CDs, (c) N-CDs as a function of QCT concentration. CDs concentrations were the same for all cases at 20 μg mL^{-1}.

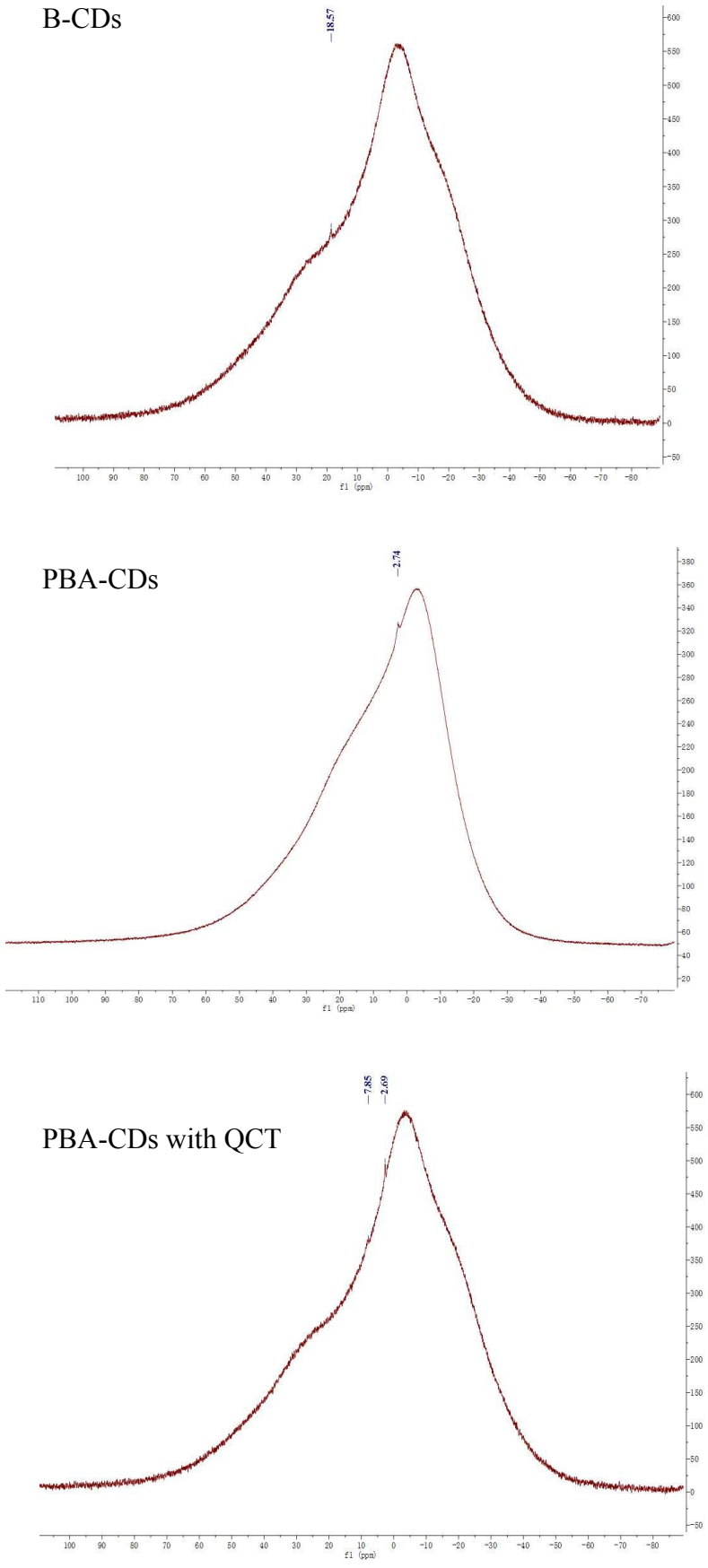

Fig. S9 ^{11}B NMR of B-CDs, PBA-CDs and the mix of PBA-CDs and quercetin in CD_4O：D_2O=20:1(V:V).

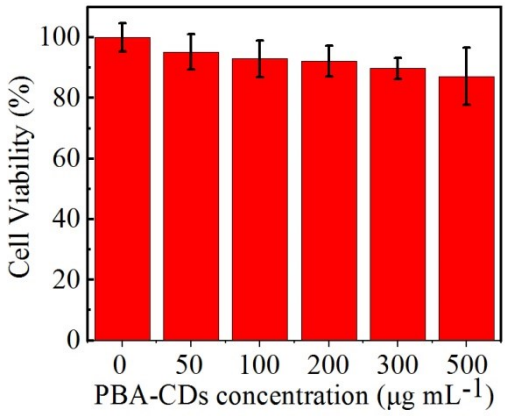

Fig. S10 Cellular cytotoxicity assessment of the PBA-CDs using the standard MTT assay toward Hela cells.

Table S1. Results for the determination of quercetin from Ginkgo biloba using the PBA-CDs sensor

Sample	Add (μM)	Found (μM)	Recovery (%)
ginkgo biloba	0	1.400	-
	1.5	2.788	92.5
	3.0	4.427	100.9