

Electronic Supplementary Information (ESI) for Full Papers in New Journal of Chemistry

Carminic Acid bio-based carbon quantum dots synthesis with a keto-enol tautomerism strategy and its applications on Tetracycline detection

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1. Components analysis of Cochineal water extraction

Components of the water extraction of Cochineal mainly contain 50.1% weight of the Carminic Acid and some kinds of proteins, a little sugar and lipids. Further protein hydrolysis experiments showed that a total of 18 types of amino acids were detected in the hydrolysate, in which the content of arginine reached the largest part of 71.4% (**Figure S1**).

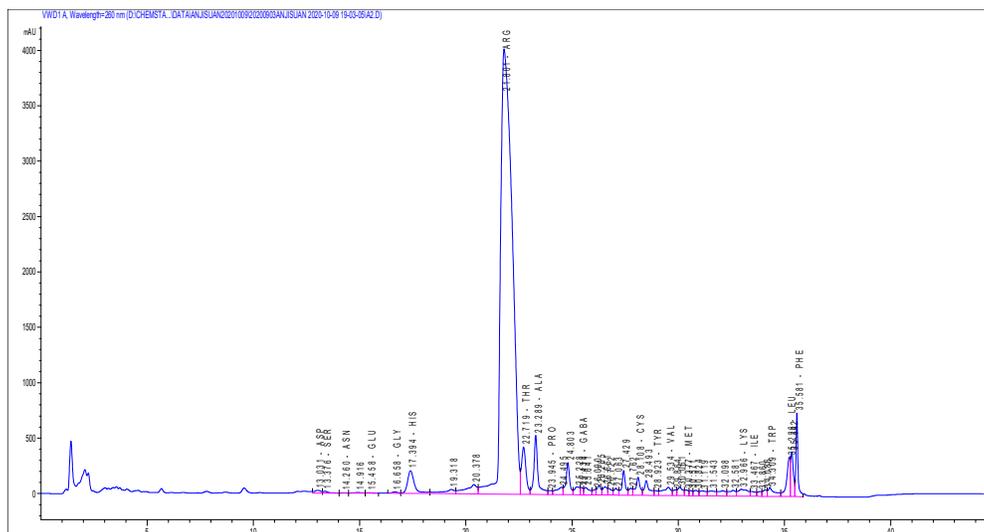


Figure S1. Chromatogram for the determination of hydrolyzed amino acids in Cochineal water extraction.

2. Reaction conditions optimization for CA-CQDs synthesis

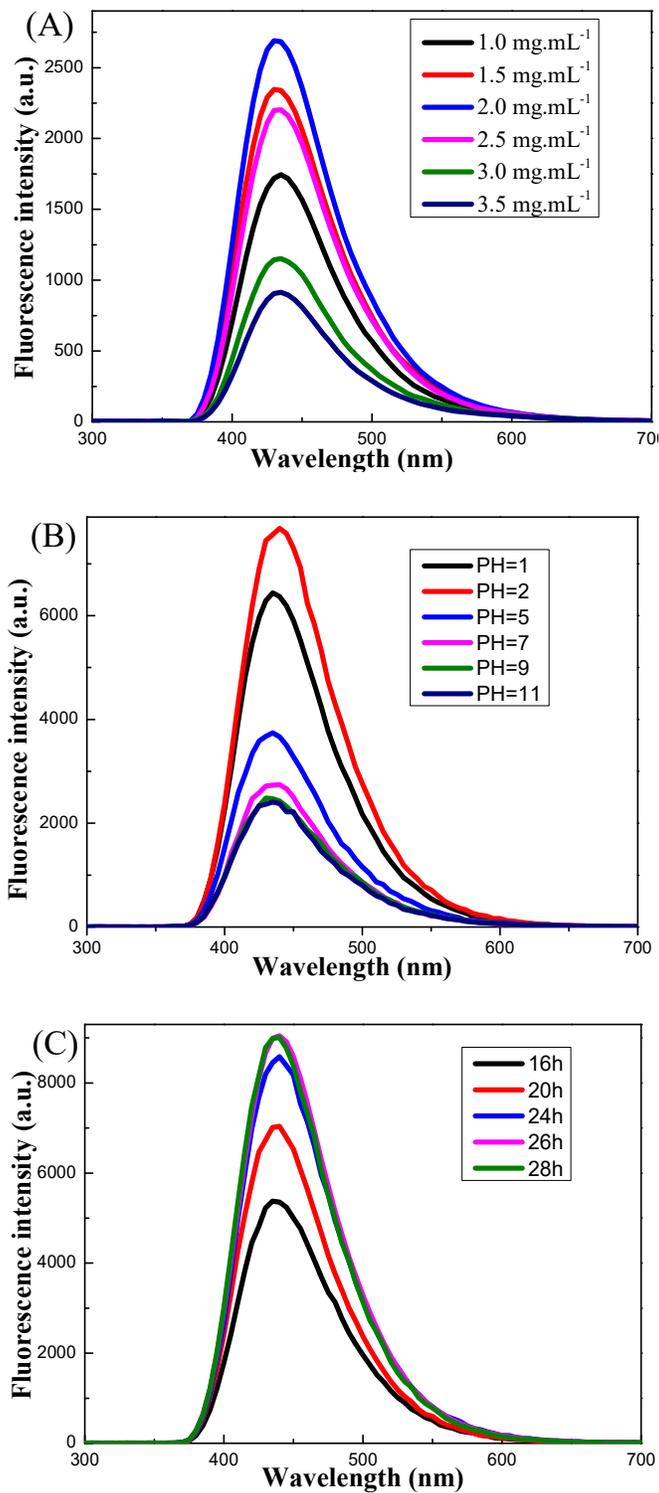


Figure S2. Fluorescence spectra of CA-CQDs prepared in (A) concentration of water extraction of Cochineal of 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 mg·mL⁻¹; (B) pH of 1, 2, 5, 7, 9, 11; (C) reaction time of 16, 20, 24, 26, 28 h.

3. Stability description map

In the stability experiment, with the condition of PMT at 680V, under the Ex wave at 370 nm, over an excitation time of 9000s, the fluorescence intensity of CA-CQDs solutions dropped slightly about 4.39%. This result indicated a good stability of CA-CQDs bio-probe.

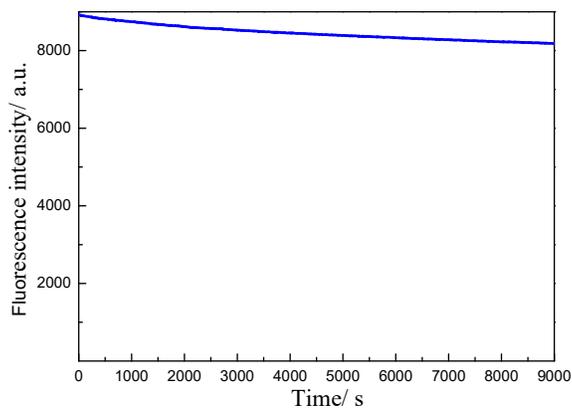


Figure S3. Fluorescence stability of CA-CQDs

4. Molecular structures of antibiotics tested in the CA-CQDs fluorescence detection section

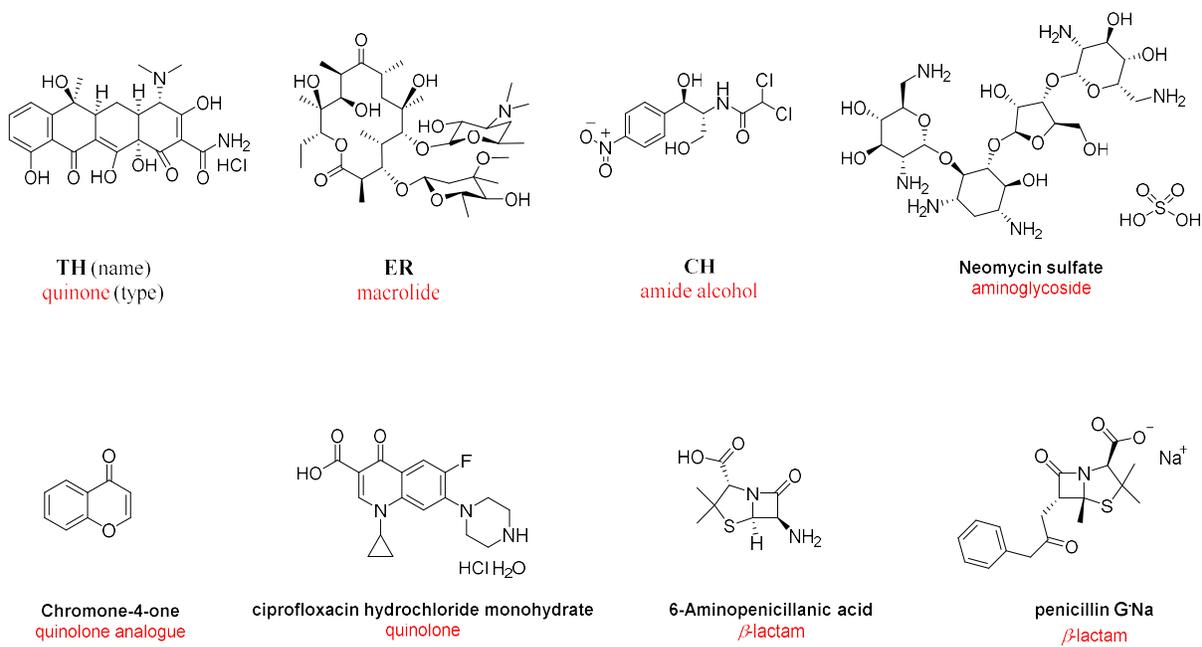


Figure S4. Antibiotics tested in the CA-CQDs fluorescence detection experiments

5. HPLC chromatograms of TH detection

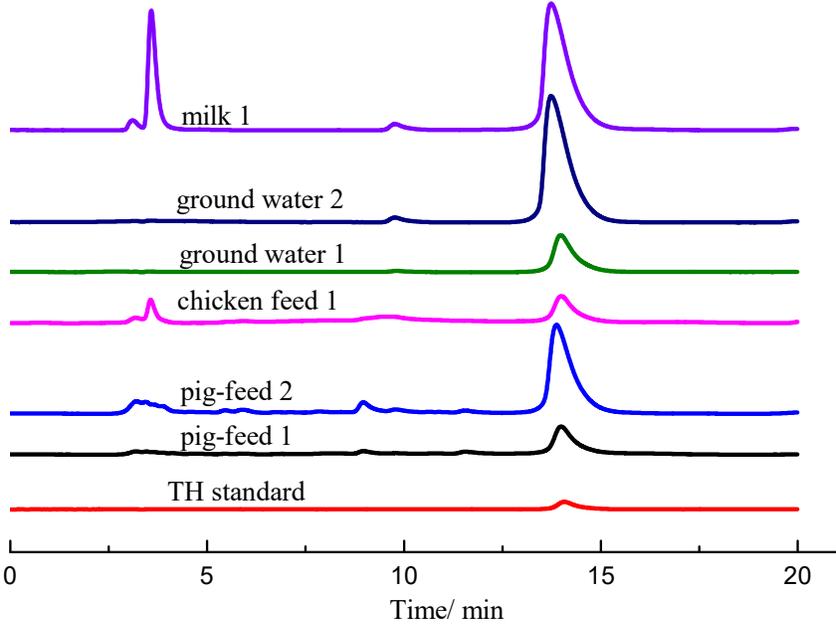


Figure S5. HPLC chromatograms of TH detection