Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supporting Information

Copper metal-organic polyhedra nanorods with high intrinsic peroxidase-like activity at physiological pH for bio-sensing

Yu Qin, Qin Zhang, Yande Li, Xiaolan Liu, Zhixiang Lu, Liyan Zheng, Shixi Liu,* Qiu-e Cao, Zhongtao Ding*

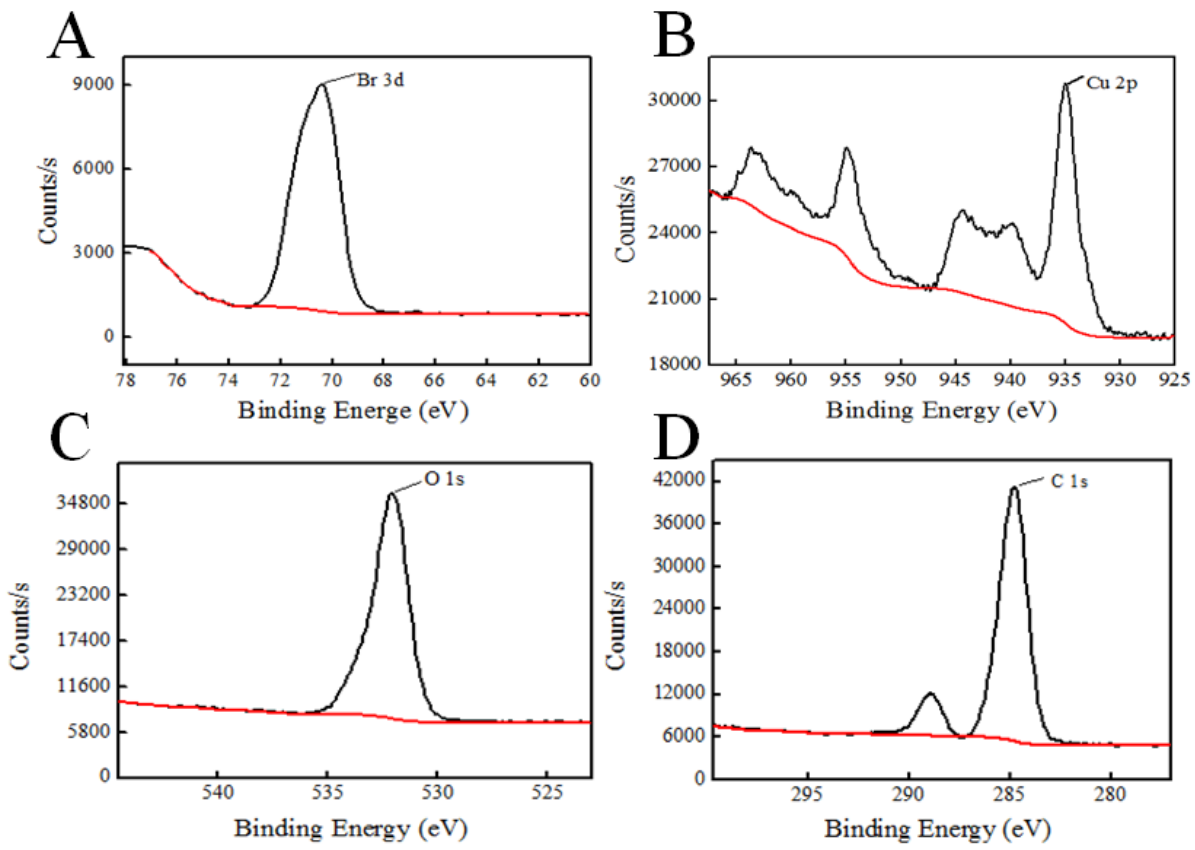

Figure S1. XPS spectra of Cu-MOP nanorods. (A) Br 3d peak. (B) Cu 2p peak. (C) O 1s peak. (D) C 1s peak.

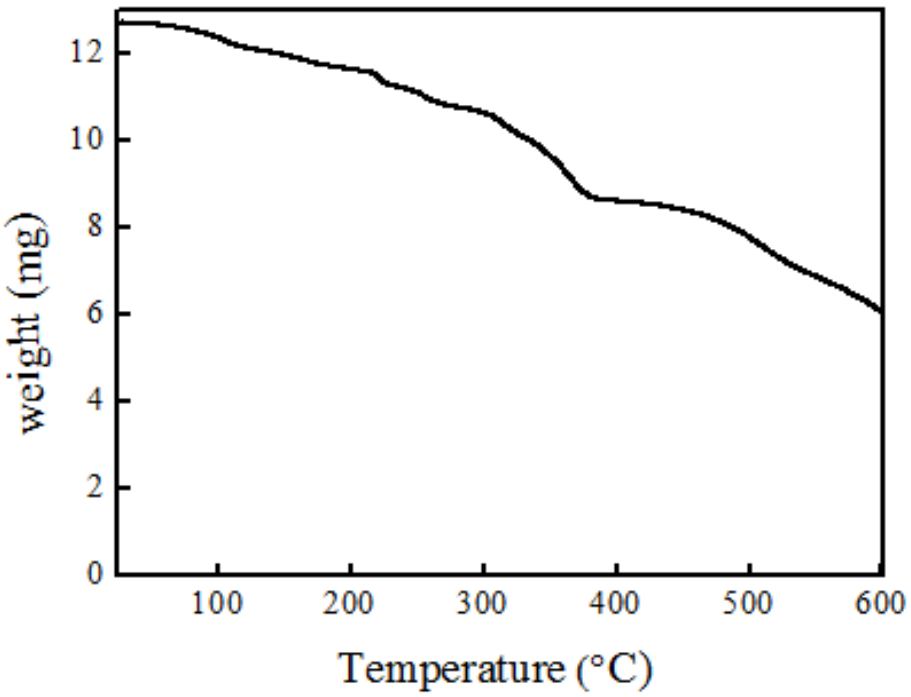

Figure S2. TGA spectrum of Cu-MOP nanorods.

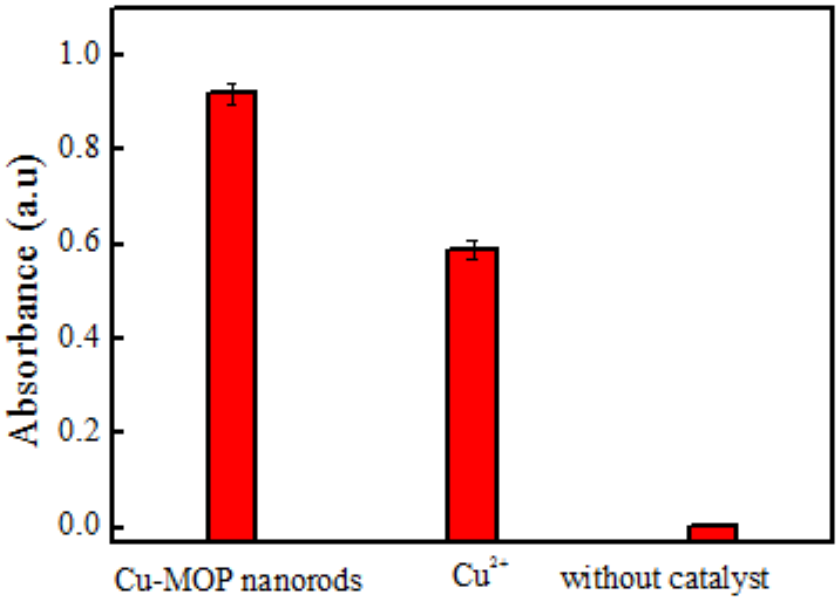

Figure S3. The degree of enhancement of reactions using the Cu-MOP nanorods.

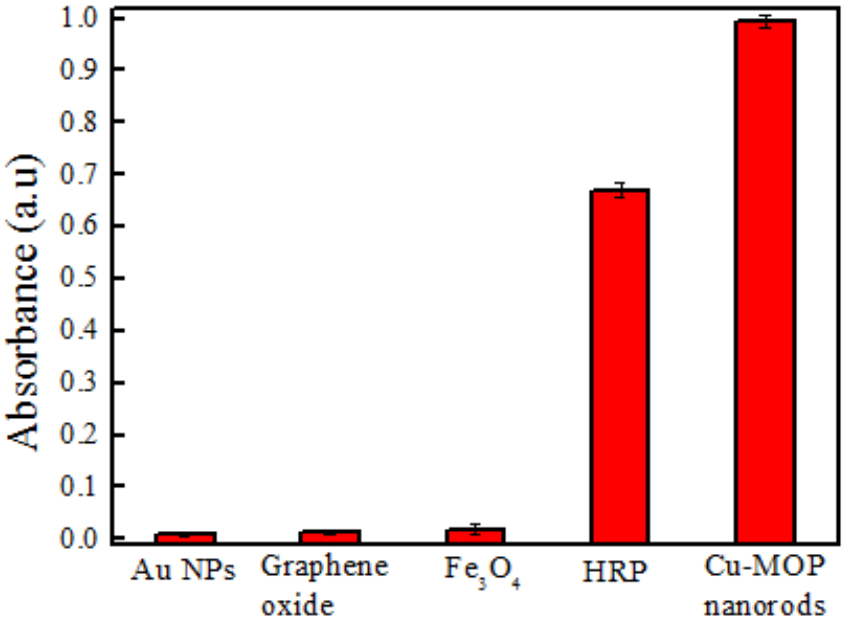

Figure S4. The catalytic effeciency of all nano-enzyme use the concentrations in reference.

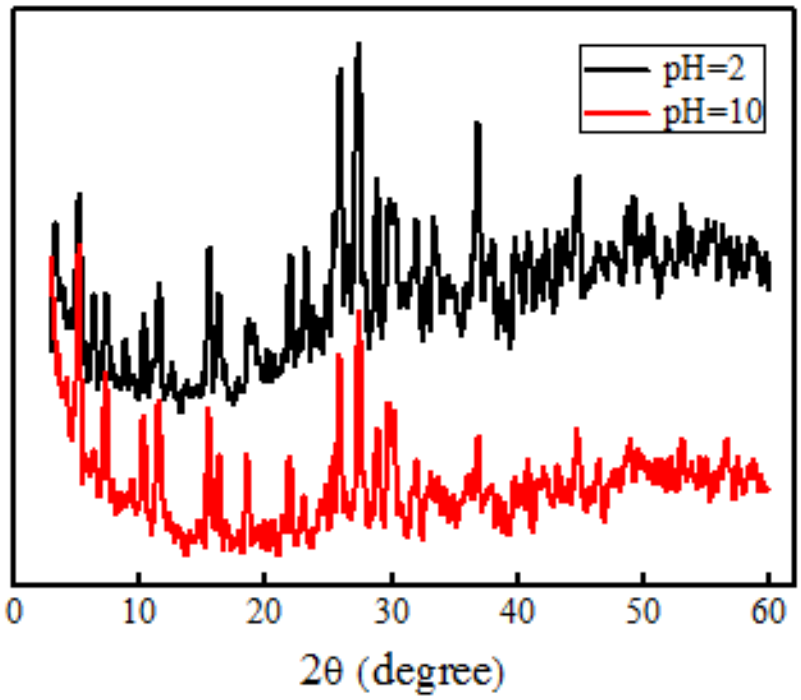

Figure S5. PXRD of Cu-MOP nanorods immersed in different pH value buffer solution for one day.

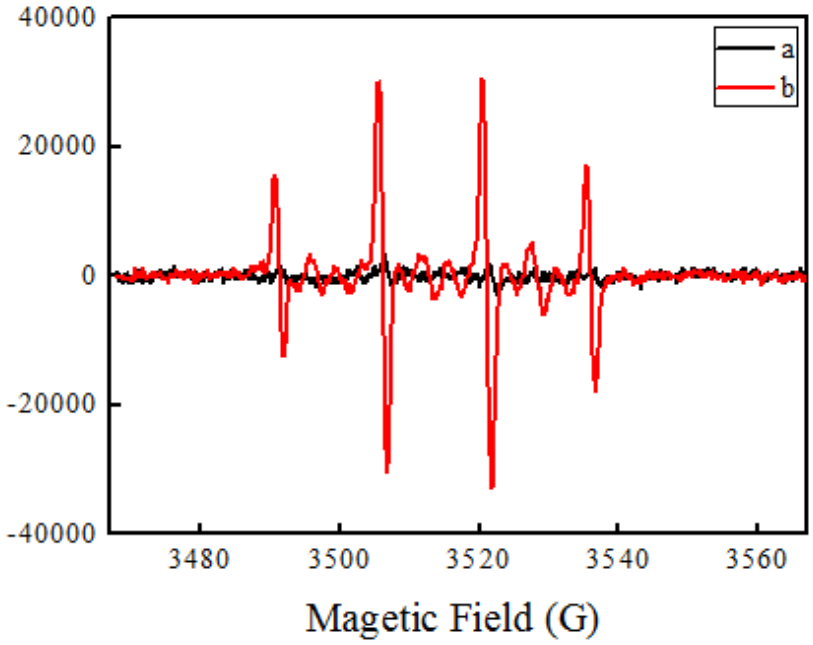

Figure S6. EPR spectra of DMPO-・OH adduct in the absence (a) and presence (b) of Cu-MOP nanorods.

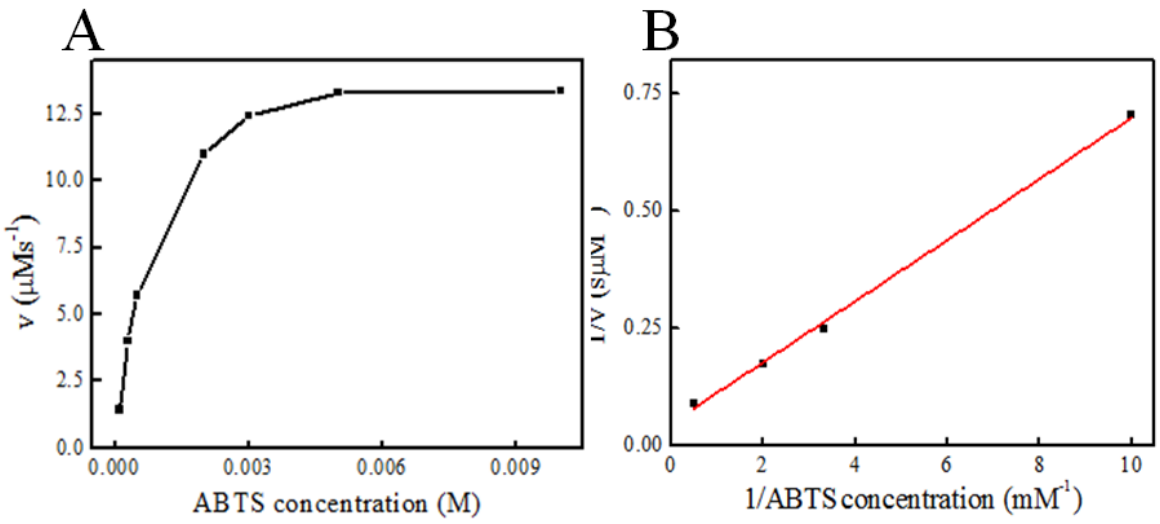

Figure S7. Steady-state kinetic assay and catalytic mechanism of HRP: The velocity (v) of the reaction was measured using 10 µL 10 mg/mL HRP in 364 µL acetate buffer solutions at pH 7.0 and 45 °C. (A and B). The concentration of ABTS was 0.01 M for HRP and the H_2O_2 concentration varied.

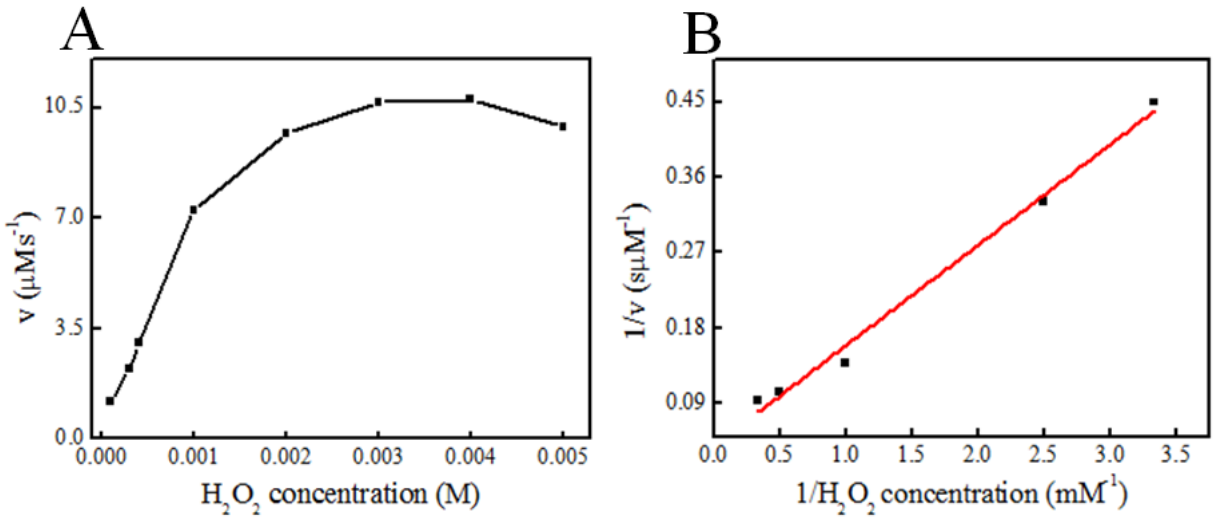

Figure S8. Steady-state kinetic assay and catalytic mechanism of HRP: The velocity (v) of the reaction was measured using 10 µL 10 mg/mL HRP in 364 µL acetate buffer solutions at pH 7.0 and 45 °C. (A and B) The concentration of H_2O_2 was 0.005 M for HRP and the ABTS concentration varied.

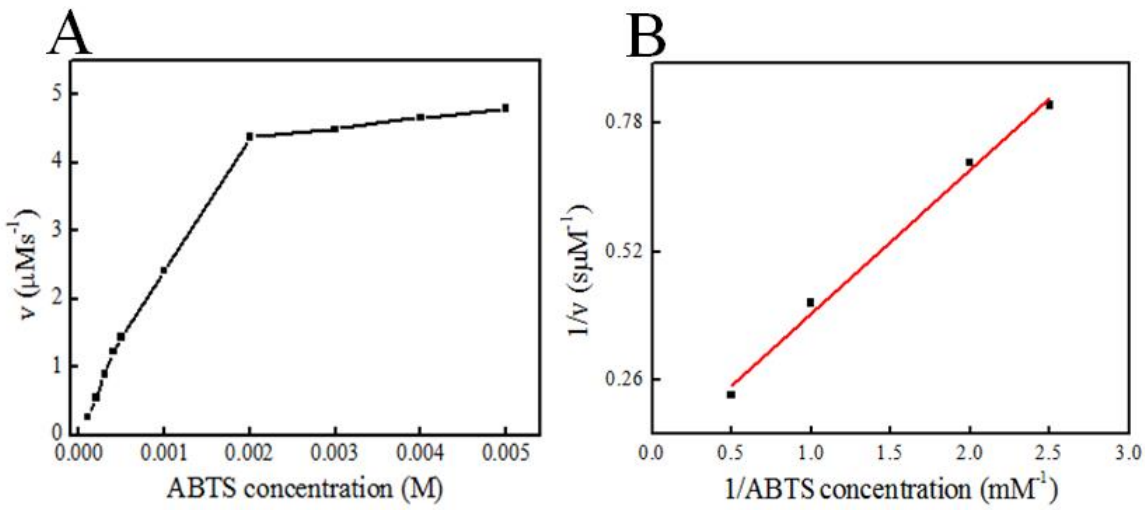

Figure S9. Steady-state kinetic assay and catalytic mechanism of Cu-MOP nanorods: The velocity (v) of the reaction was measured using 10 µL 6.7 mg/mL Cu^{2+}-ligand in 364 µL acetate buffer solutions at pH 7.0 and 45 °C. (A and B)The concentration of ABTS was 0.01 M for Cu-MOP nanorods and the H_2O_2 concentration varied.

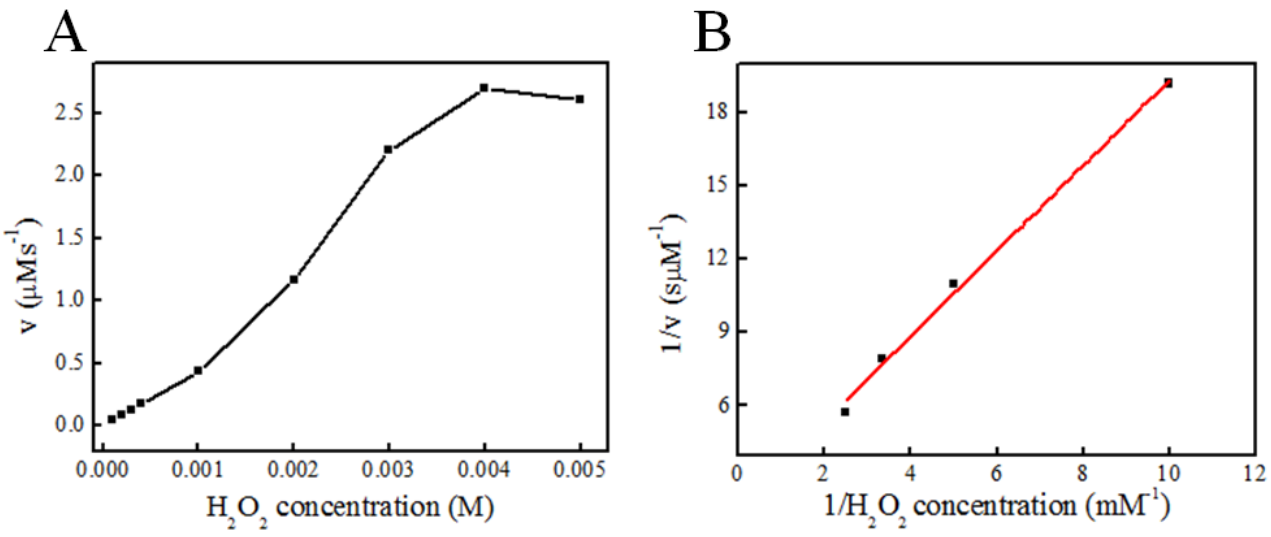

Figure S10. Steady-state kinetic assay and catalytic mechanism of Cu-MOP nanorods: The velocity (v) of the reaction was measured using 10 µL 6.7 mg/mL Cu^{2+}-ligand in 364 µL acetate buffer solutions at pH 7.0 and 45 °C. (A and B) The concentration of H_2O_2 was 0.005 M for Cu-MOP nanorods and the ABTS concentration varied.

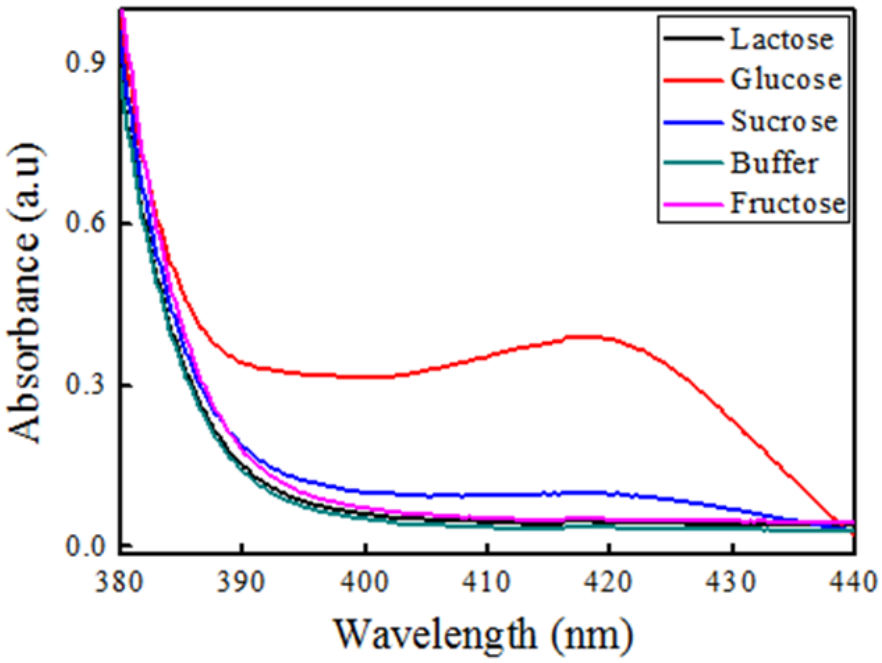

Figure S11. Typical absorption profiles for glucose detection with the colorimetric method developed using GOx and the as-prepared Cu-MOP nanorods (black line, 0.01 M lactose; red line, 0.001 M glucose; green line, buffer; blue line, 0.01 M sucrose; and pink line, 0.01 M fructose).

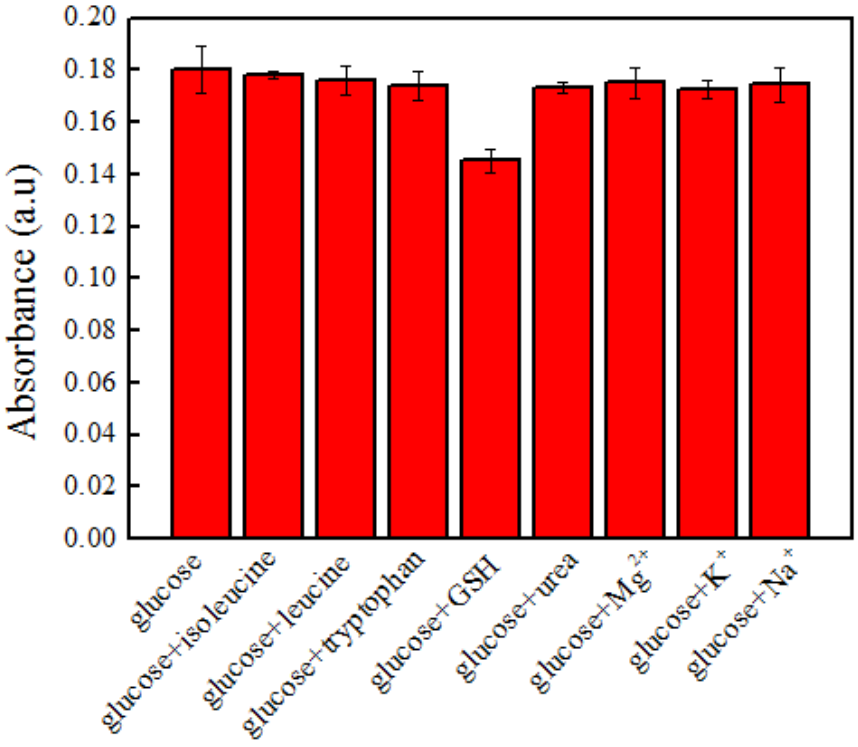

Figure S12. The interference experiment in serum. The concentrations of Na^+, K^+, Mg^{2+} and urea are 10 times of glucose. The concentrations of isoleucine, leucine, tryptophan and GSH are 50μM, 50μM, 0.8μg/mL and 0.4 mM which are the same with their concentrations in serum. The concentration of glucose is 1mM.