Electronic Supplementary Material (ESI) for Analyst.

Supporting Information

A self-ratiometric and selective electrochemical sensor for detection of tyrosinase in mouse brain homogenate

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Contents

1. NMR spectra and HR-MS data

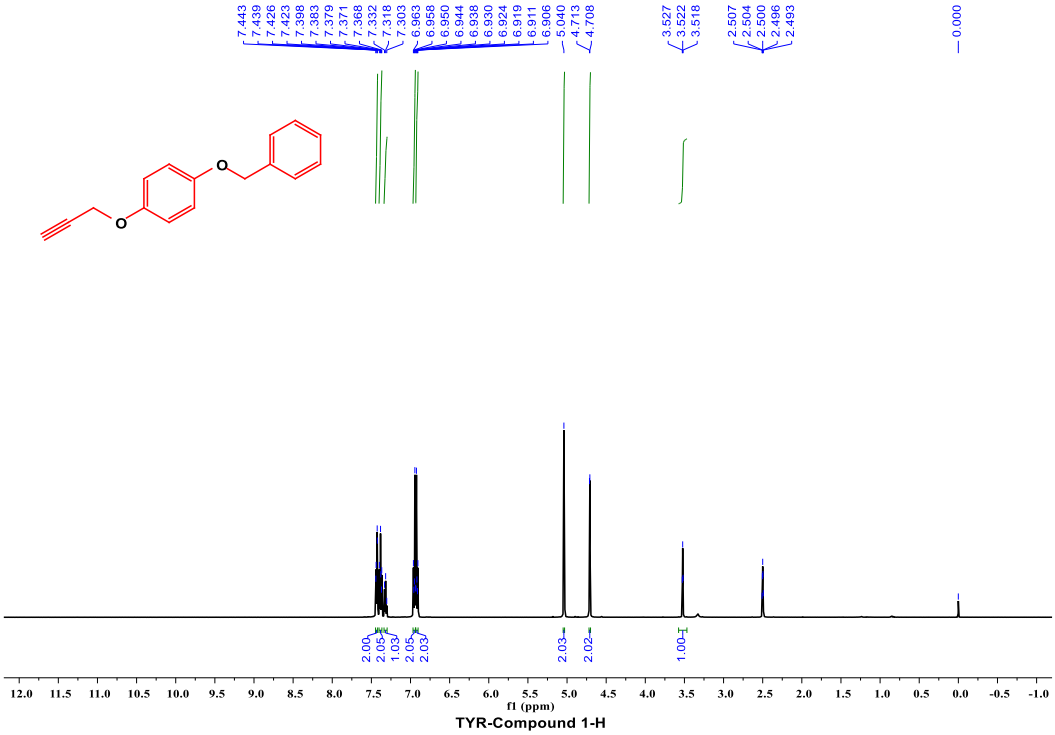

Figure S1. ^{1}H NMR spectrum of Compound 1.

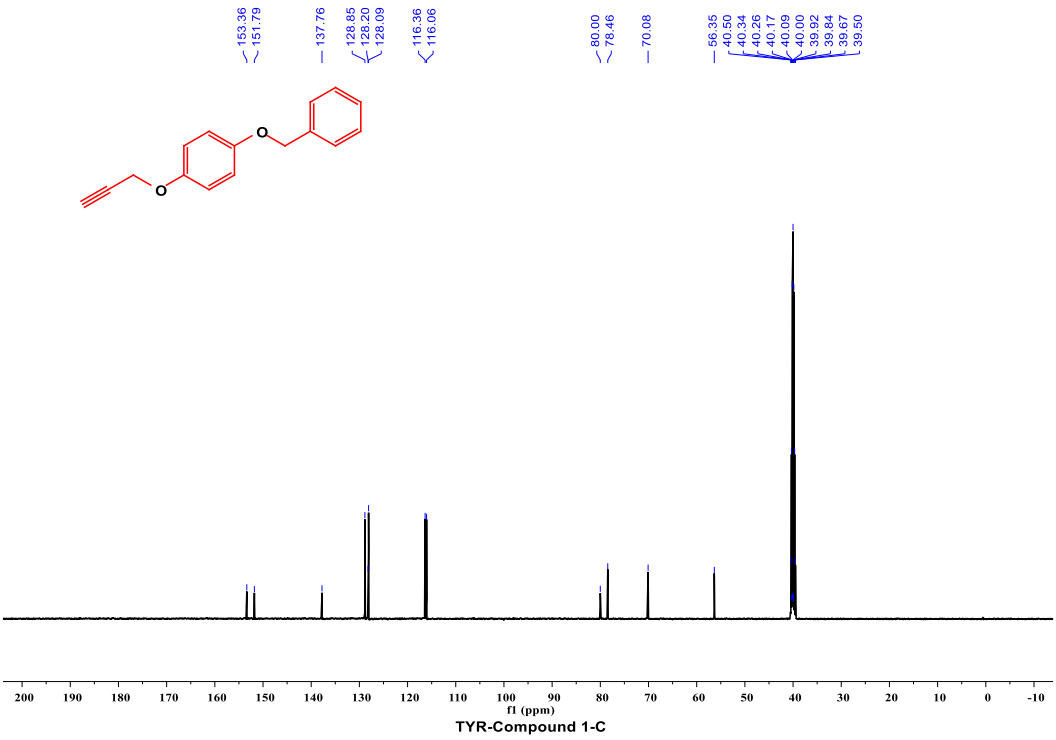

Figure S2. ^{13}C NMR spectrum of Compound 1.

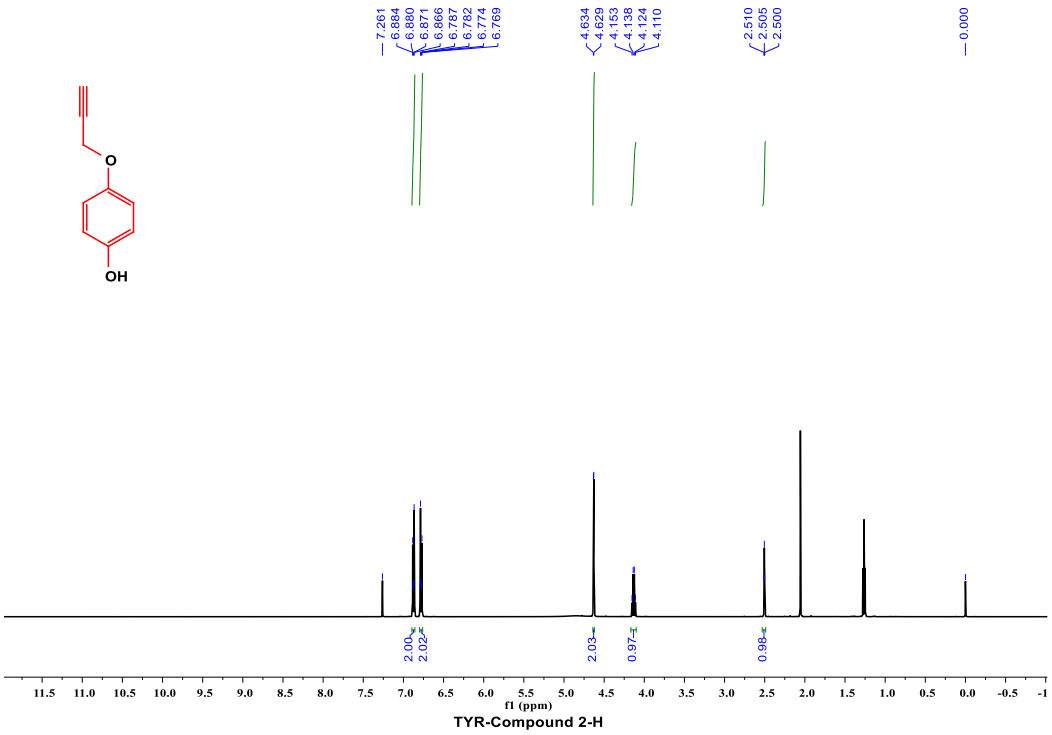

Figure S3. ^{1}H NMR spectrum of Pyyp.

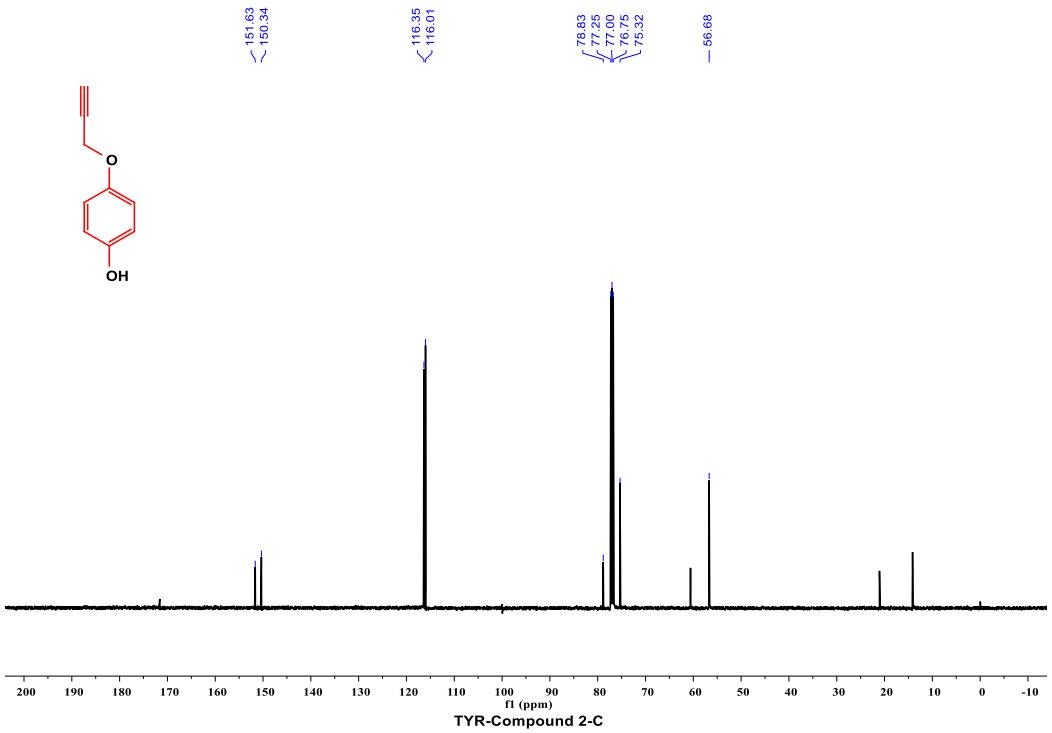

Figure S4. ^{13}C NMR spectrum of Pyyp.

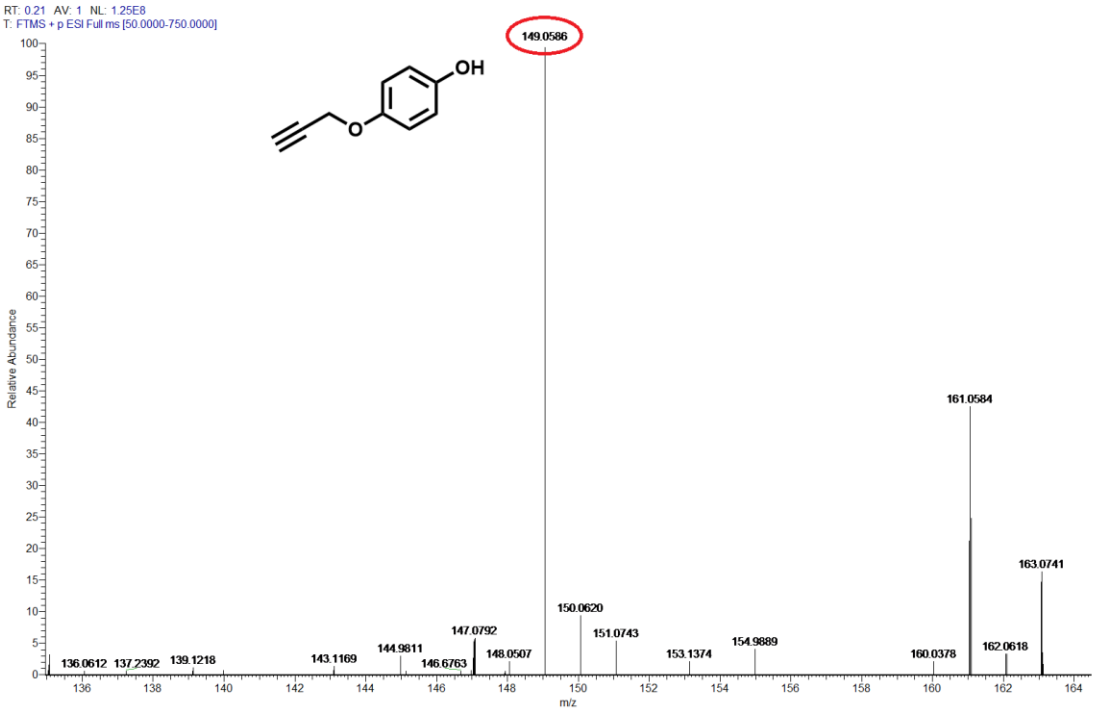

Figure S5. HR-MS spectrum of Pyyp.

2. HPLC-MS spectra of the reaction system

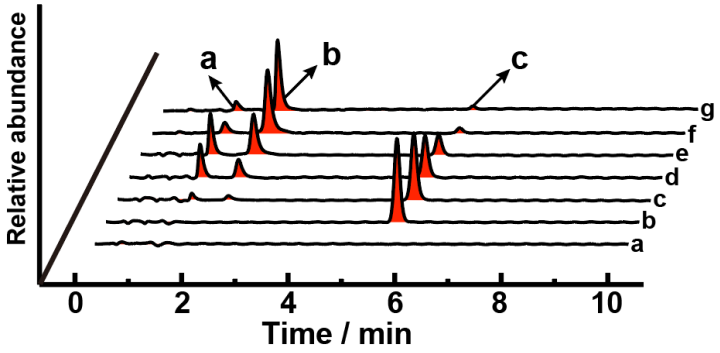

Figure S6. HPLC kinetic profiles of Pyyp molecules (5 mM) reacting with 10 U mL^{-1} Tyr. a) Blank; b) Pyyp molecules; c-g) the reaction between Pyyp molecules and Tyr for 20, 40, 60, 80, 100 min, respectively.

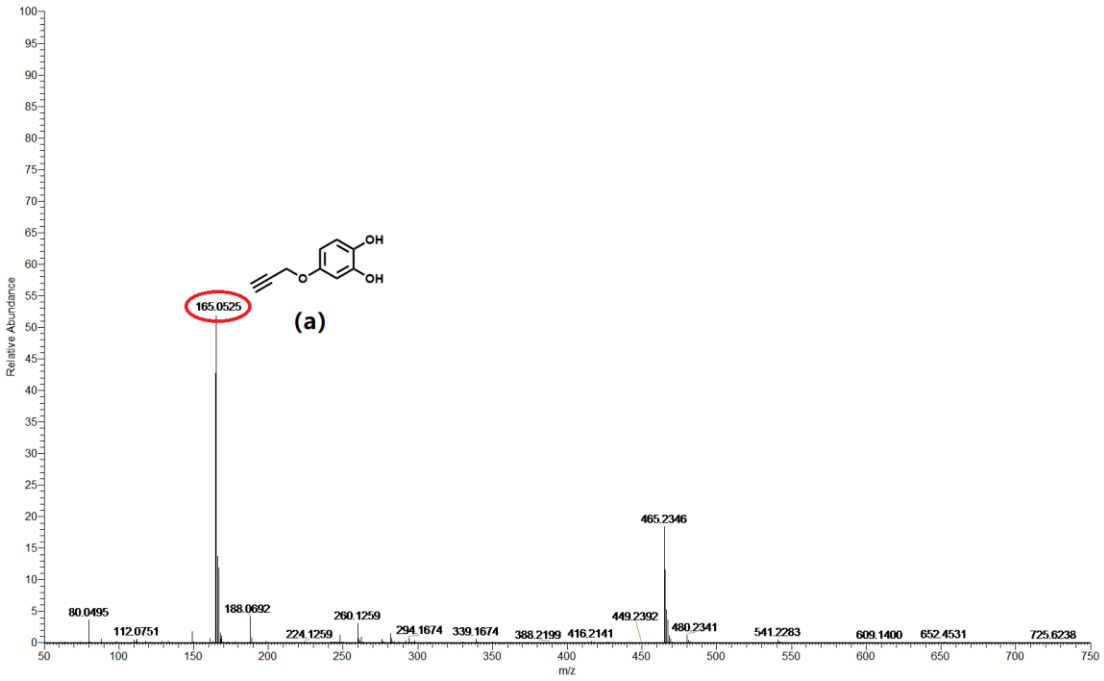

Figure S7. Mass spectrum of peak (a) shown in Figure S6.

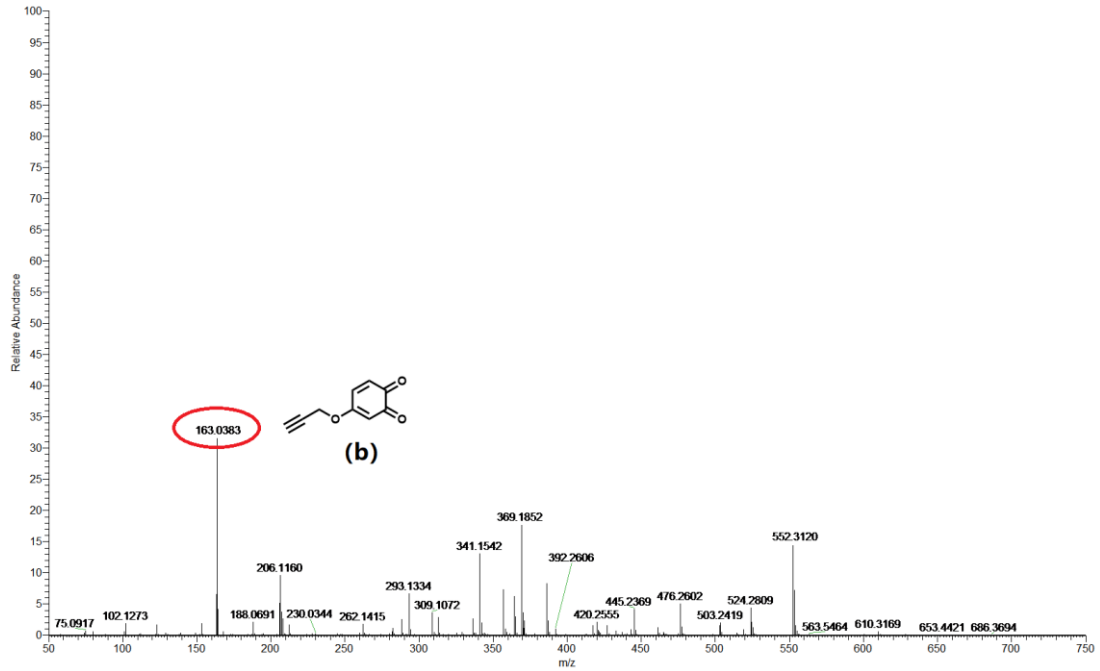

Figure S8. Mass spectrum of peak (b) shown in Figure S6.

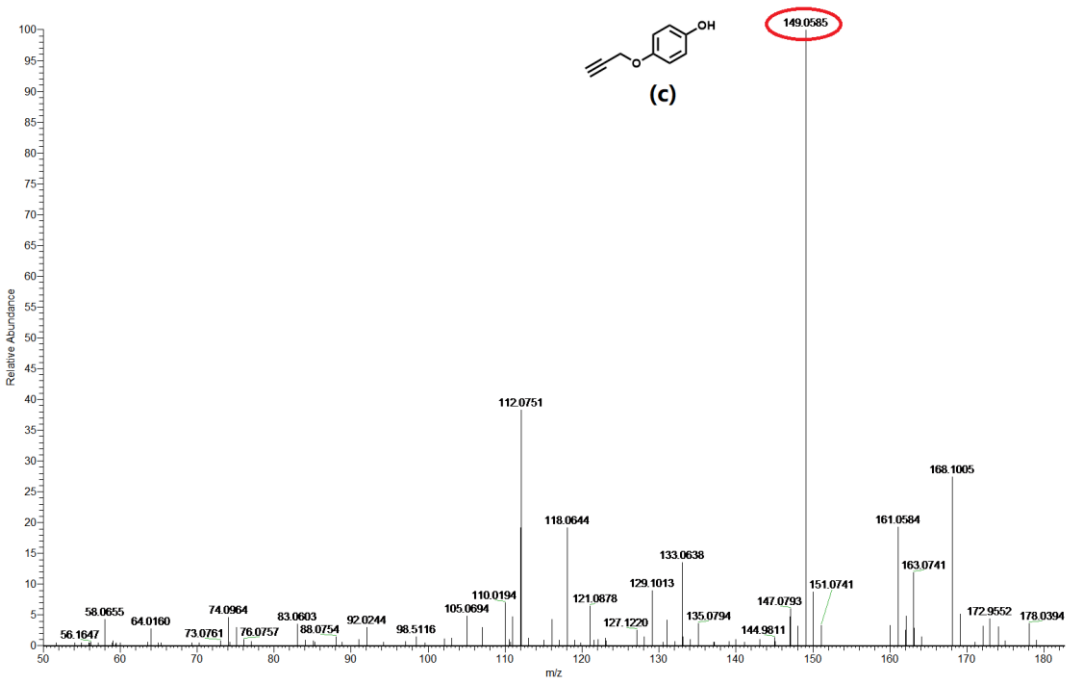

Figure S9. Mass spectrum of peak (c) shown in Figure S6.

3. Reproducibility

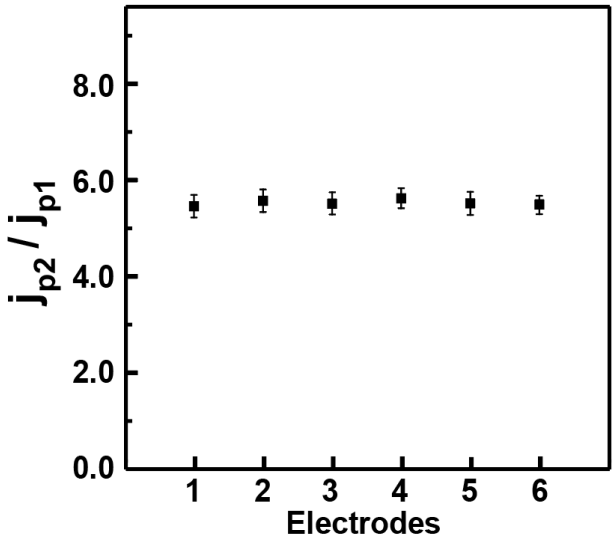

Figure S10. The j_{p2}/j_{p1} valves of six electrodes in 0.1 M PBS solution (pH 7.4) containing 10 U mL^{-1} Tyr.

4. Repeatability

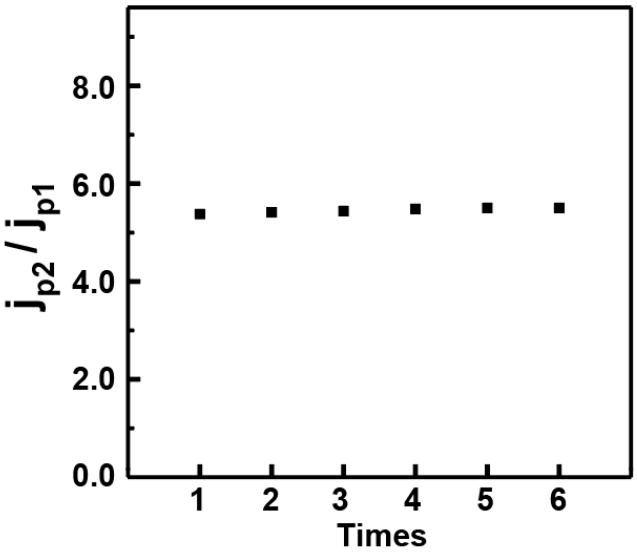

Figure S11. The j_{p2}/j_{p1} valves of one electrode for six times in 0.1 M PBS solution (pH 7.4) containing 10 U mL^{-1} Tyr.

5. Anti-fouling property

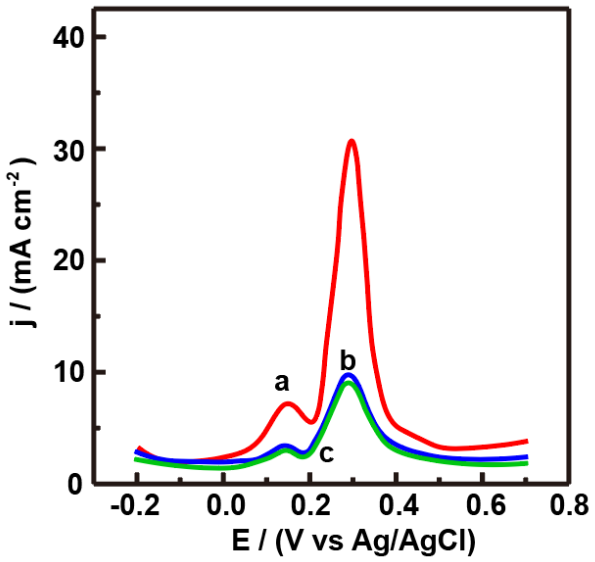

Figure S12. DPVs obtained at one GCE/Au/Pyyp electrode in (a) 0.1 M PBS solution (pH 7.4) containing 10 U mL^{-1} Tyr; (b) 0.1 M PBS solution (pH 7.4) containing 10 U mL^{-1} Tyr and 5 mM BSA; (c) a new 0.1 M PBS solution (pH 7.4) containing 10 U mL^{-1} Tyr and 5 mM BSA.

6. Selectivity tests

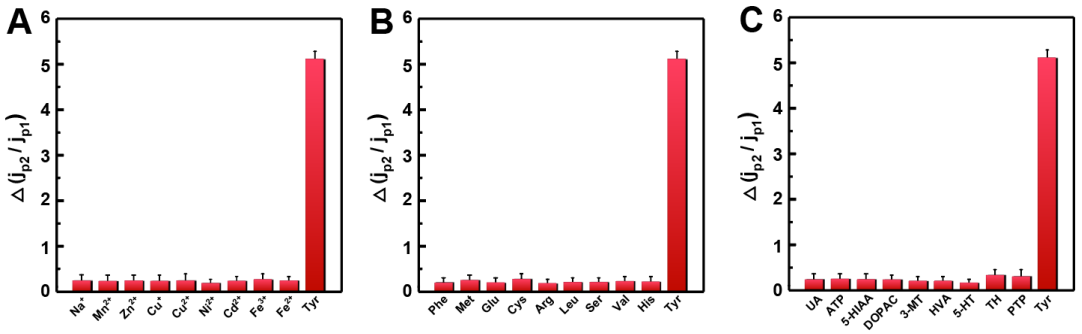

Figure S13. Selectivity tests for Tyr in the presence of (A) metal anions (Na^+, Mn^{2+}, Zn^{2+}, Cu^+, Cu^{2+}, Ni^{2+}, Cd^{2+}, Fe^{3+} and Fe^{2+} respectively from left to right. Concentration: 100 mM for Na^+, 10 μM for other ions. Control: 10 U mL^{-1} Tyr), (B) amino acids (Phe, Met, Glu, Cys, Arg, Leu, Val and His respectively from left to right. Concentrations: 10 mM. Control: 10 U mL^{-1} Tyr), (C) neurotransmitters and enzymes (UA, ATP, 5-HIAA, DOPAC, 3-MT, HVA, 5-HT, TH and PTP respectively from left to right. Concentrations: 10 μM. Control: 10 U mL^{-1} Tyr).

7. Post calibration

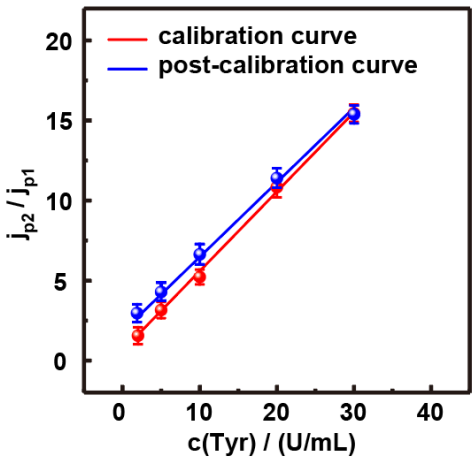

Figure S14. The post calibration of j_{p2}/j_{p1} value (blue) and the linear relationship of j_{p2}/j_{p1} value (red) in 0.1 M PBS with different Tyr activity.