

## Supporting Information

### A simple electrochemical aptasensor for saxitoxin detection

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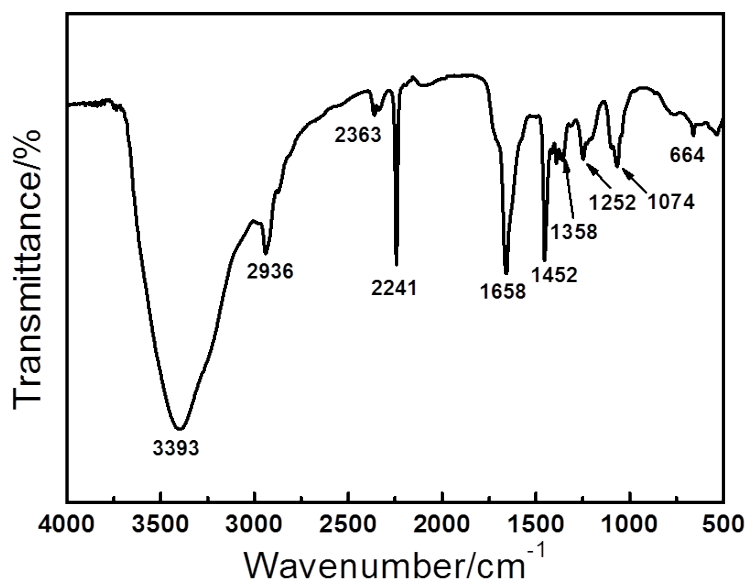


Fig. S1 FTIR of MB-Apt modified electrode

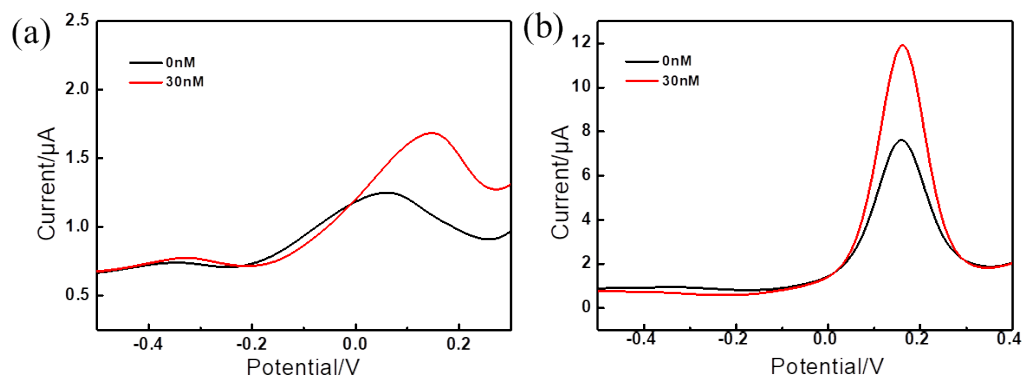
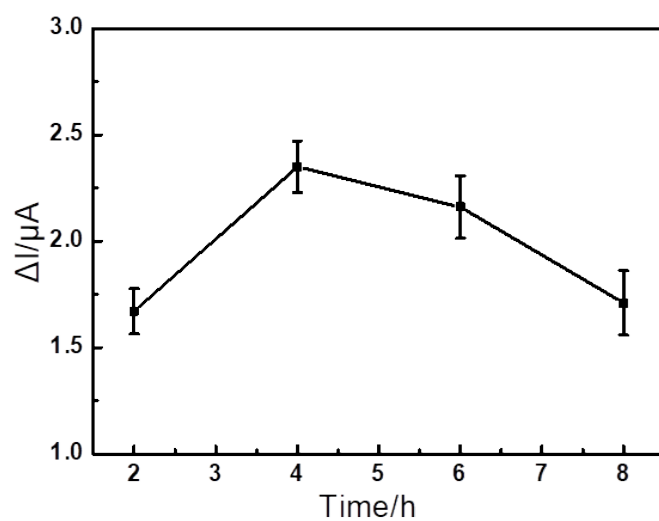
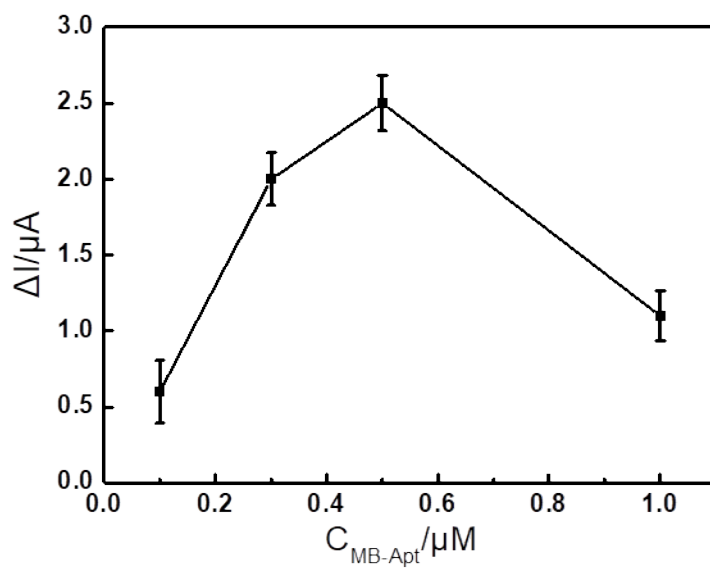


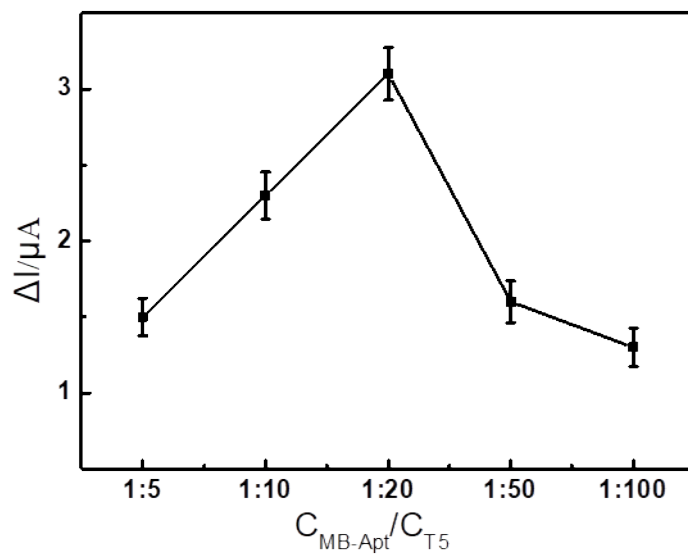
Fig. S2 The DPVs of the aptasensor in (a) PBS (pH=7) solutions and (b)  $K_3[Fe(CN)_6]/K_4[Fe(CN)_6]$  (1:1) solutions



**Fig. S3** The effect of the immobilization time of MB-Apt on the change of anodic peak current ( $\Delta I$ ) obtained in 1 mM  $\text{K}_3[\text{Fe}(\text{CN})_6]/\text{K}_4[\text{Fe}(\text{CN})_6]$  (1:1) solution containing 0.1 M KCl. (Scan rate of DPV:  $25 \text{ mV} \cdot \text{S}^{-1}$ )

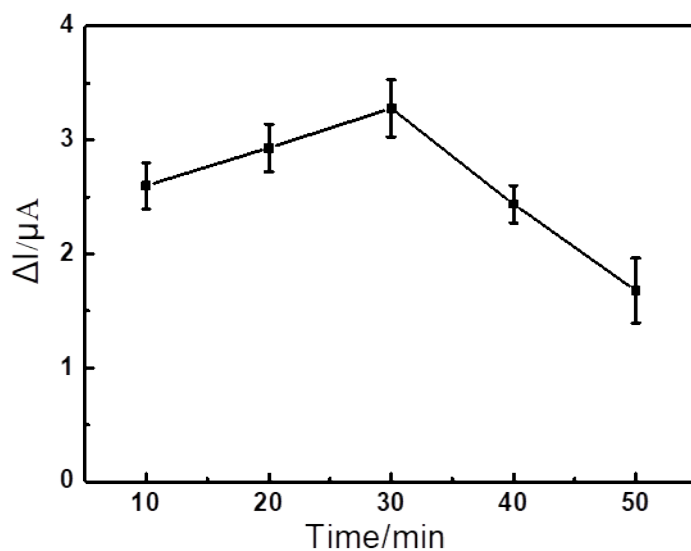


**Fig. S4** The relationship between the aptamer concentration and the change of anodic peak current ( $\Delta I$ ) obtained 1 mM  $\text{K}_3[\text{Fe}(\text{CN})_6]/\text{K}_4[\text{Fe}(\text{CN})_6]$  (1:1) solution containing 0.1 M KCl. (Scan rate of DPV:  $25 \text{ mV} \cdot \text{S}^{-1}$ )



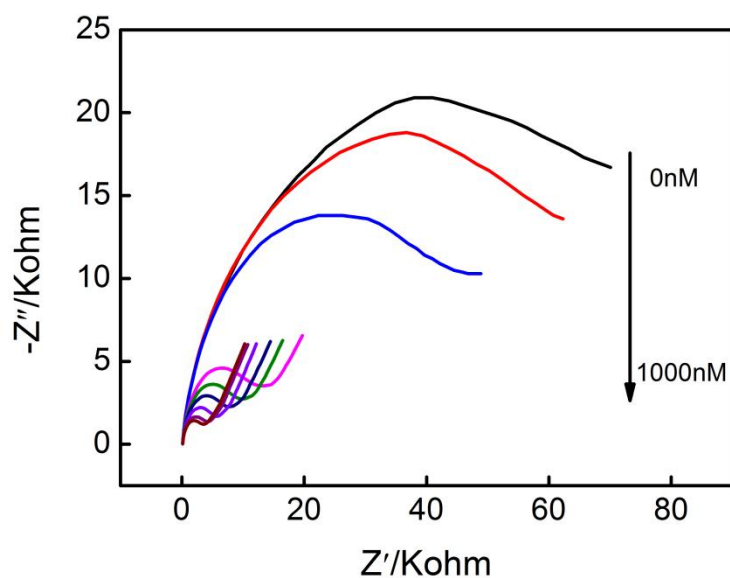
**Fig. S5** The relationship between the  $C_{\text{MB-Apt}}/C_{\text{T5}}$  and the relative anodic peak current ( $\Delta I$ ) obtained 1 mM  $\text{K}_3[\text{Fe}(\text{CN})_6]/\text{K}_4[\text{Fe}(\text{CN})_6]$  (1:1) solution containing 0.1 M KCl.

(Scan rate of DPV:  $25 \text{ mV} \cdot \text{S}^{-1}$ )

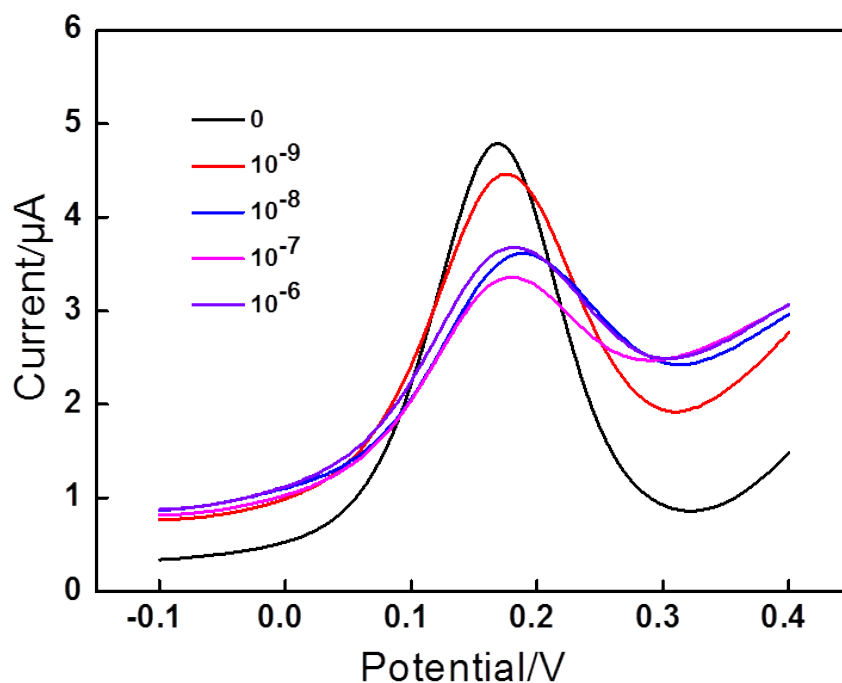


**Fig. S6** The effect of incubation time on the relative anodic peak current ( $\Delta I$ ) obtained in 1 mM  $\text{K}_3[\text{Fe}(\text{CN})_6]/\text{K}_4[\text{Fe}(\text{CN})_6]$  (1:1) solution containing 0.1 M KCl. (Scan rate of

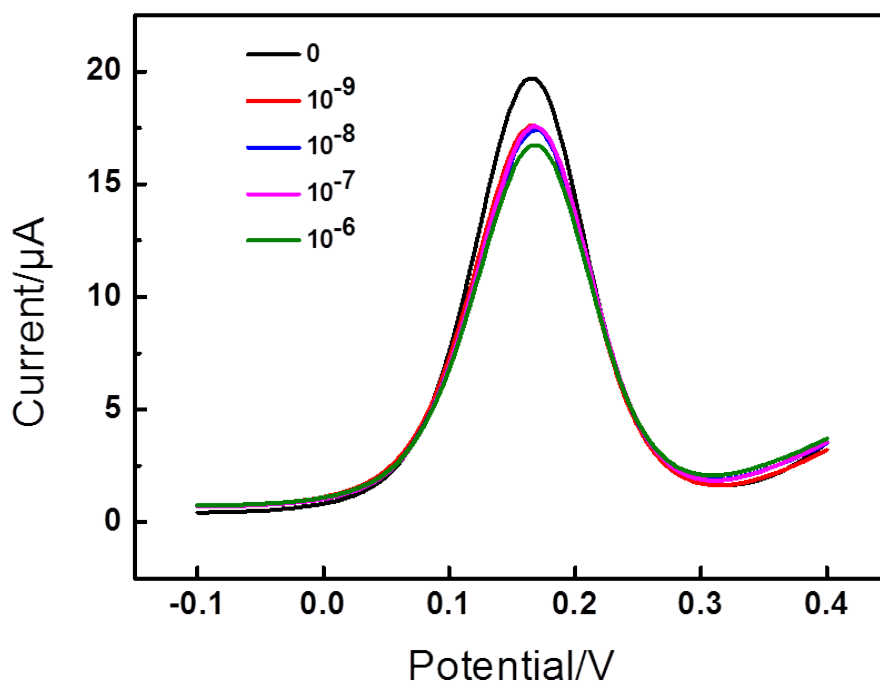
DPV:  $25 \text{ mV} \cdot \text{S}^{-1}$ )



**Fig. S7** EIS obtained for aptasensor after incubation with different concentrations of STX (0, 1, 5, 10, 30, 100, 300, 500, 1000 nM, respectively) in 1 mM  $K_3[Fe(CN)_6]/K_4[Fe(CN)_6]$  (1:1) solution containing 0.1 M KCl. Biasing potential: 0.175 V.



**Fig. S8** DPVs obtained for electrochemical sensor modified with T5 after incubation with different concentrations of STX in 1 mM  $K_3[Fe(CN)_6]/K_4[Fe(CN)_6]$  (1:1) solution containing 0.1 M KCl. (Scan rate of DPV:  $25 \text{ mV} \cdot \text{S}^{-1}$ )



**Fig. S9** DPVs obtained for electrochemical sensor without modification after incubation with different concentrations of STX in 1 mM  $K_3[Fe(CN)_6]/K_4[Fe(CN)_6]$  (1:1) solution containing 0.1 M KCl. (Scan rate of DPV:  $25 \text{ mV} \cdot \text{S}^{-1}$ )

Table S1. Reproducibility of STX (10 nM) detection by the electrochemical aptasensors.

$\Delta I$						RSD (%)
1	2	3	4	5	Average	
2.18	2.31	2.29	2.05	2.35	2.24	8.50

Table S2. Real samples analysis (n = 3)

Real Samples	Added ( nM)	Detection (nM)	Recovery (%)	RSD (%)
shellfish	3	2.7	84-106	9.8
	10	9.9	96-105	6.8
	30	29.5	94-112	8.5