Electrochemical Sensing of Biotin using Nafion Modified Boron Doped Diamond Electrode

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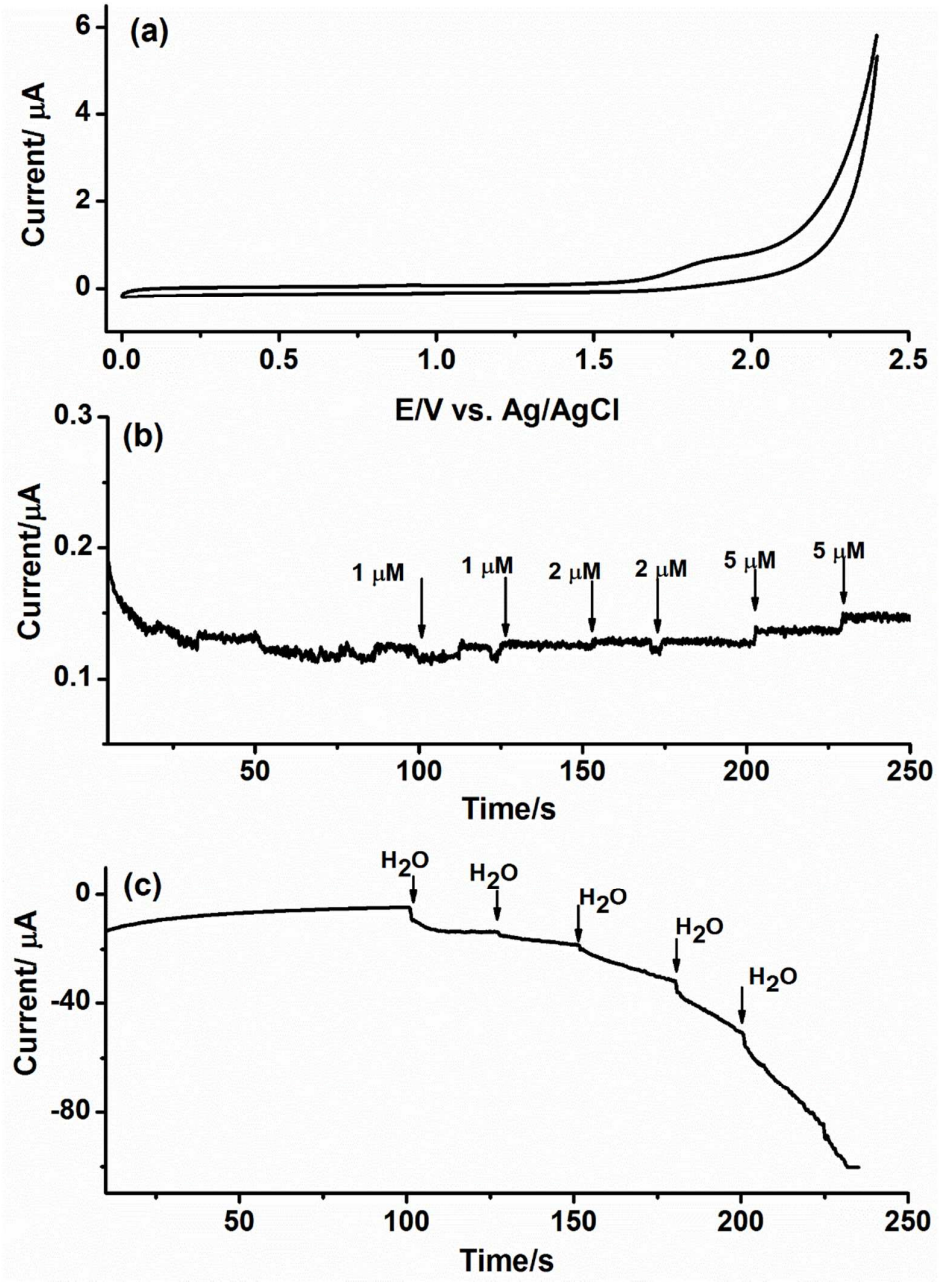

Figure S1. (a) CV of 50 μM biotin, a scan rate of 50 mVs^{-1}. (b) LOD of biotin using the *i-t* curve at + 1.8 V. (c) Water also induced the signal response, indicating its reduction at -1 V. Electrolyte: 0.2 M TBAPF in MeCN. The detection was achieved on the bare BDD electrode vs. Ag/AgCl.

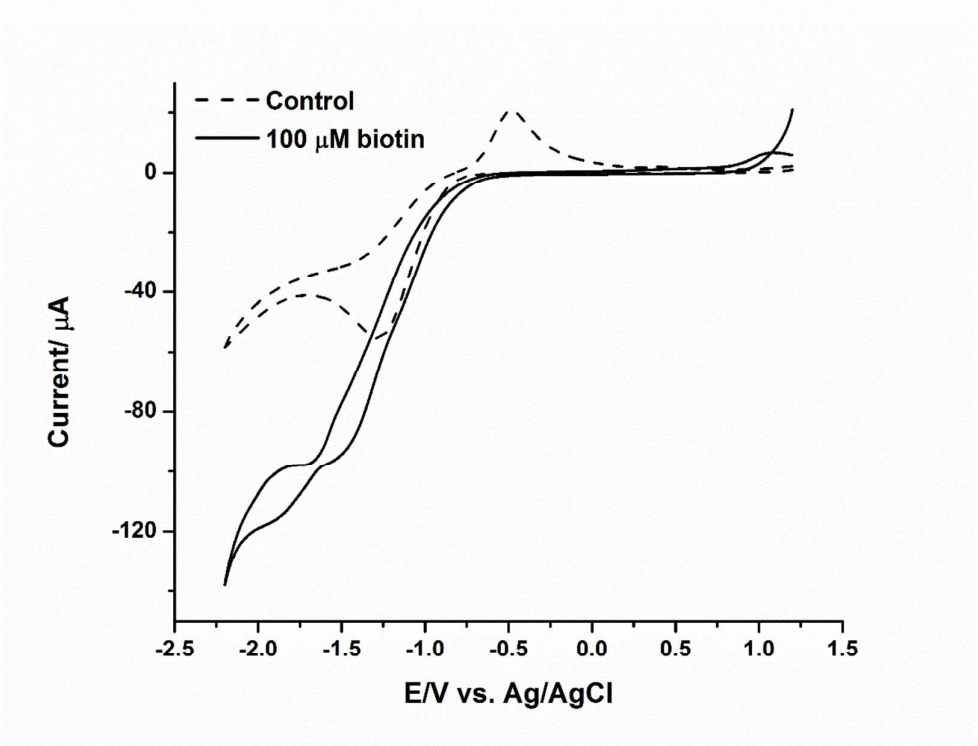

Figure S2. The CV of 100 μM biotin obtained by the bare BDD electrode in Electrolyte: 0.2 M TBAPF in MeCN, at a scan rate of 100 mVs^{-1}.

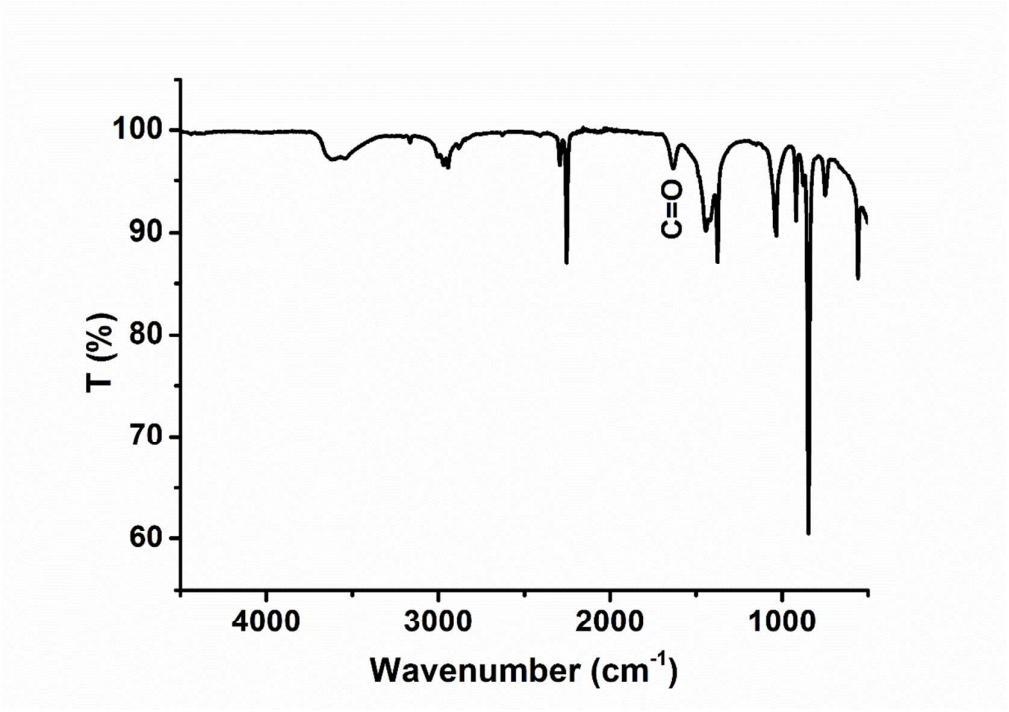

Figure S3. IR spectra of 0.2 M TBAPF in MeCN contains 1 % water after 30 cycles of voltammetry (-2.5 to + 2.5 V at 100 mVs^{-1}).

Table S1. Parameters obtained for the bare and Nafion modified BDD electrodes using an equivalent circuit R_s (C_{dl}(R_{ct} Zw)). The parameters were obtained by ZnSimpWin.

	Bare BDD	**Nafion BDD**
R_s (Ω) -solution	71.3	75.4
C_{dl} (F) – double layer	1.26×10^{-7}	2.24×10^{-7}
R_{ct} (Ω)- charge transfer	36.4	43.2
Z_w (Ω $s^{-1/2}$)-Warburg model	0.001851	0.001372
Chi Square	0.0014	0.0036

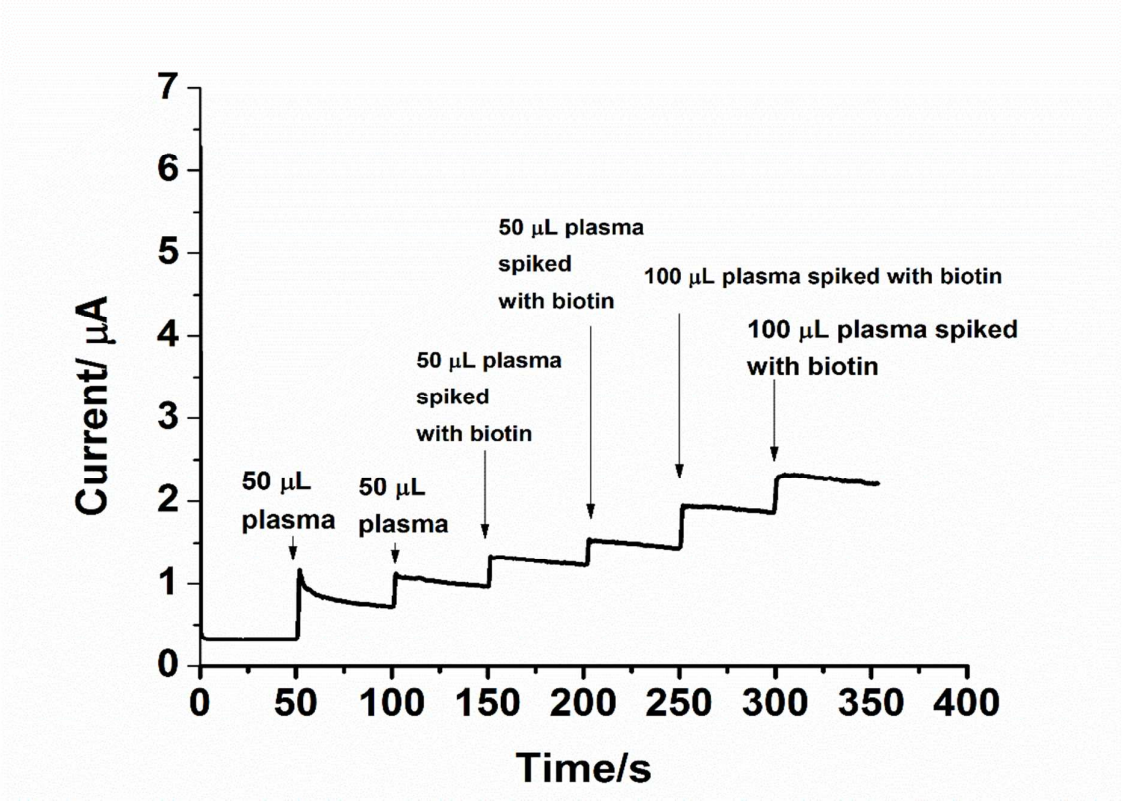

Figure S4. The *i-t* curve of the blood plasma and the biotin spiked blood plasma.

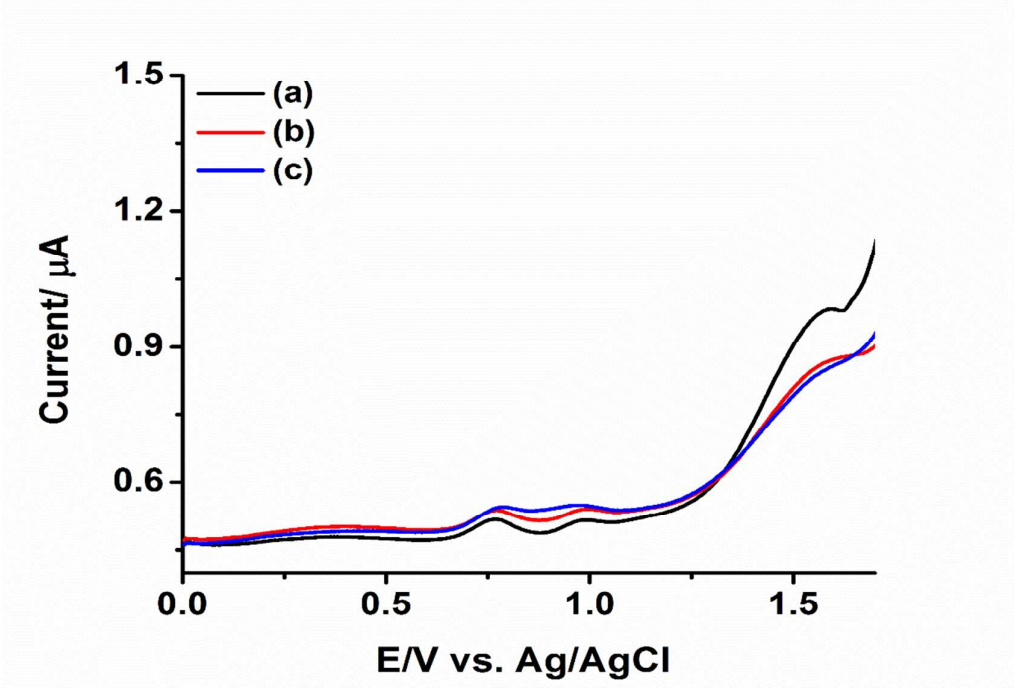

Figure S5. DPVs obtained of a blank and spiked plasma sample with a uric acid standard. (a) 200 µL blank plasma; (b) 200 µL uric acid spiked plasma and (c) 400 µL uric acid spiked plasma.

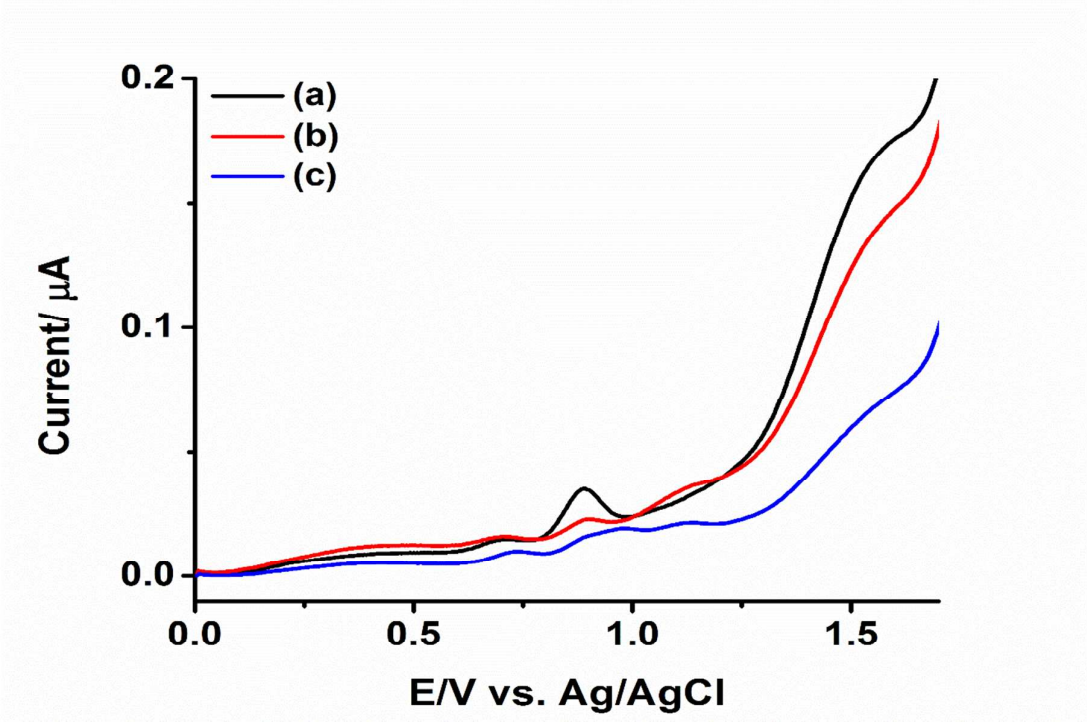

Figure S6. DPVs obtained of a blank and spiked plasma sample with a tyrosine standard. (a) 200 µL blank plasma; (b) 200 µL tyrosine spiked plasma and (c) 400 µL tyrosine spiked plasma.