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Supplementary Information

Novel Non Enzymatic TBHQ Modified Electrochemical Sensor for Hydrogen Peroxide Determination in Different Beverage Samples

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Table S1. Comparison of the electrocatalytic reduction peak potential (E_p) and peak current (I_p) of H_2O_2 (0.3 mmol L^{-1}) on various electrode surfaces at pH 7.0

Name of electrode	Reduction potential / mV	Reduction current / μA
N-GO/TBHQ/GCE[a]	−142	−0.10
AgNPs/TBHQ/GCE[b]	−109	−0.12
N-GO/AgNPs/TBHQ/GCE[c]	−97	−0.70

[a]N-GO/TBHQ/GCE: nafion, graphene oxide and TBHQ modified glassy carbon electrode; [b]AgNPs/TBHQ/GCE: silver nanoparticles and TBHQ modified glassy carbon electrode; [c]N-GO/AgNPs/TBHQ/GCE: nafion, graphene oxide, silver nanoparticle and TBHQ modified glassy carbon electrode.

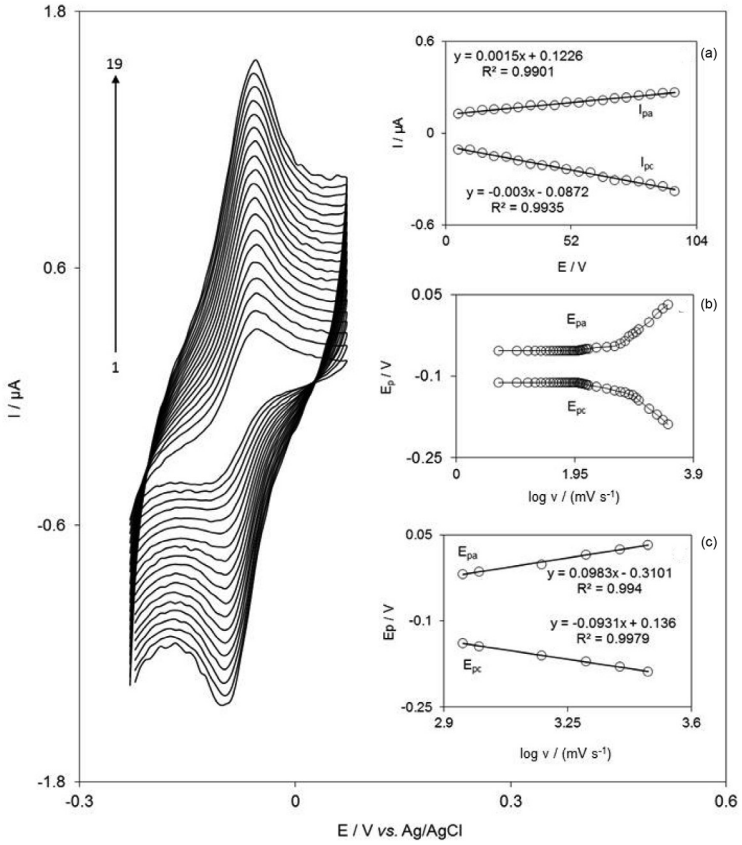

Figure S1. Cyclic voltammetric responses of N-GO/AgNPs/TBHQ/GCE in 0.1 mol L^{-1} phosphate buffer (pH 7.0) at different scan rates (5-95 mV s^{-1}). Insets: (a) plots of anodic and cathodic peak currents *vs.* scan rate; (b) variation of the peak potentials *vs.* the logarithm of the scan rate; (c) magnification of the same plot for high scan rates.

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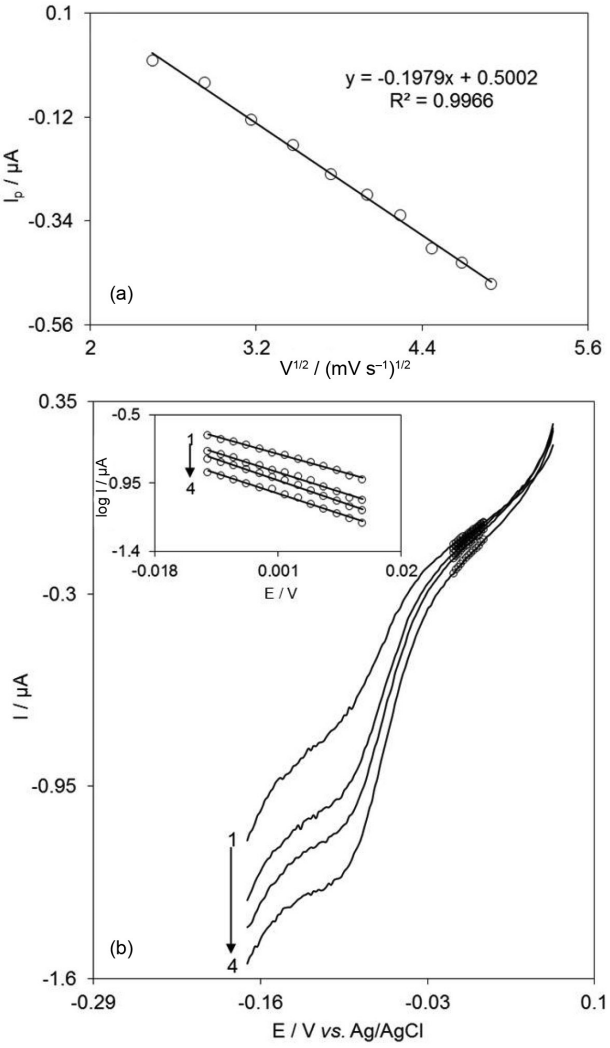

Figure S2. (a) Plot of the electrocatalytic currents *vs.* the square root of scan rate; (b) linear sweep voltammogram recorded at 14-24 mV s^{-1}. The conditions are the same as in (a). Inset shows the Tafel plot derived from the linear sweep voltammogram.

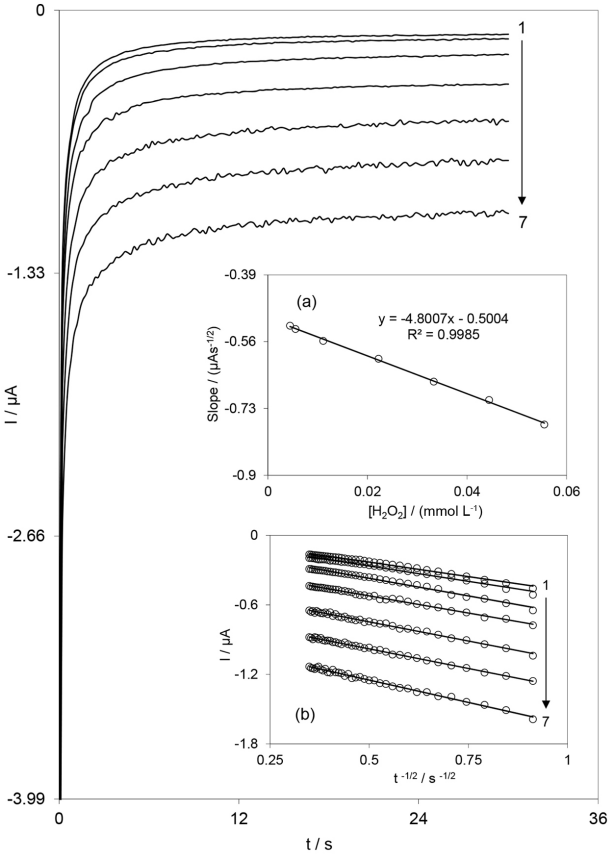

Figure S3. Chronoamperometric response at an N-GO/AgNPs/TBHQ/GCE in 0.1 mol L^{-1} phosphate buffer (pH 7.0) at a potential step of −150 mV for different concentrations of hydrogen peroxide. The numbers 1-7 correspond to 4, 5, 10, 20, 30, 40, and 50 mmol L^{-1} of H_2O_2. Insets: (a) plots of I *vs.* $t^{-1/2}$ obtained from the chronoamperograms; (b) plot of the slope of the straight lines against the hydrogen peroxide concentration.

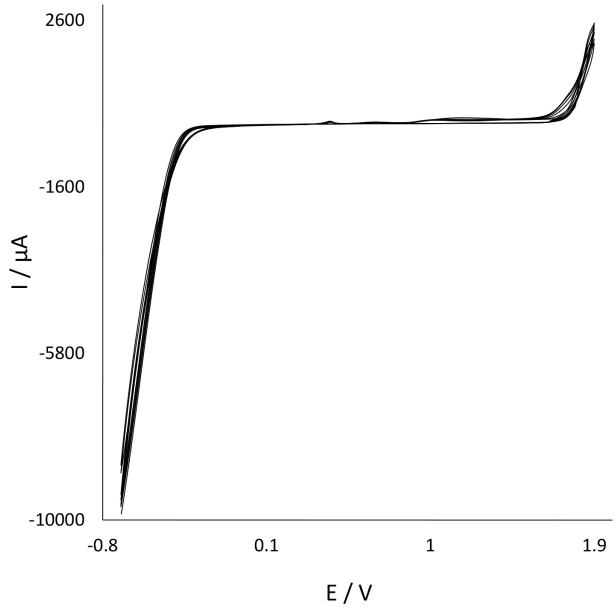

Figure S4. 8 reparative cyclic voltammograms of the N-GO/GCE with continuous potential cycling from −0.7 to 1.9 V at a sweep rate of 80 mV s^{-1} in a solution containing 1 mmol L^{-1} $AgNO_3$ and 100 mmol L^{-1} nitric acid.