

## Electronic Supplementary Materials

# Enhanced Acetaminophen Electrochemical Sensing Based on Nitrogen-Doped Graphene

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Table S1. Deconvolution results corresponding to high resolution *C1s*, *O1s* and *N1s* XPS spectra of exf-NGr material

C 1s			O 1s			N 1s		
<i>position</i>	<i>assignment</i>	<i>%</i>	<i>position</i>	<i>assignment</i>	<i>%</i>	<i>position</i>	<i>assignment</i>	<i>%</i>
284.21	C sp <sup>2</sup>	47.13	531.09	C-O	31.25	398.12	pyridinic N	17.72
285.23	C sp <sup>3</sup>	15.74	532.50	O-C=O/COOH	58.75	399.76	pyrrolic N	52.13
286.31	C-O/C-N	12.76	535.45	Adsorbed H <sub>2</sub> O	10.00	401.57	graphitic N	30.15
287.33	C=O	9.27						
288.77	O-C=O/COOH	11.82						
291.30	$\pi$ - $\pi$ *	3.28						

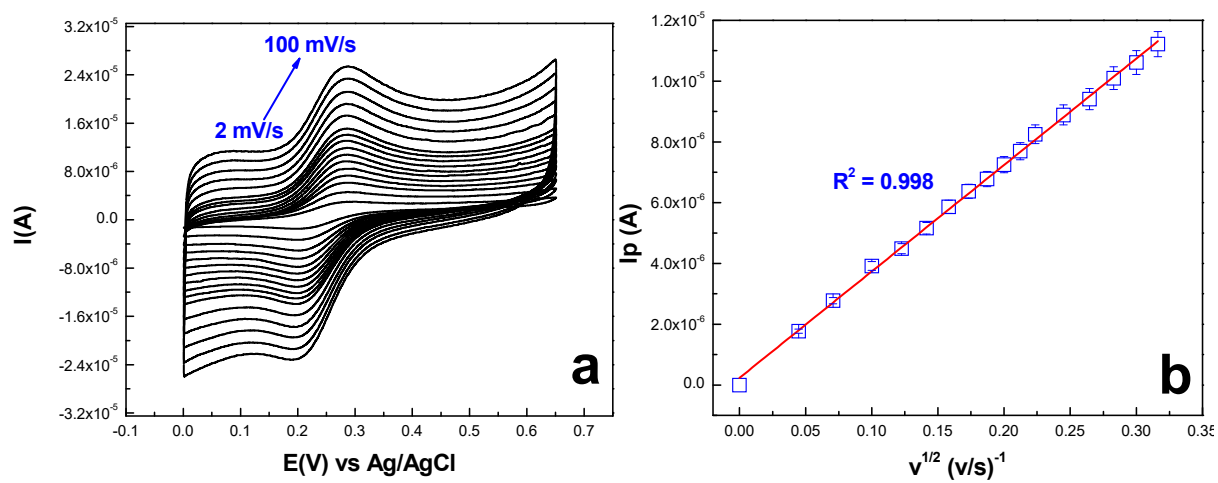


Figure S1. (a) Cyclic voltammetric response of exf-NGr/GCE surface in the presence of 1mM  $K_4[Fe(CN)_6]$  at various scan rates (from 2 to 100 mV/s; 0.2 M KCl supporting electrolyte); (b) Linear plot of anodic peak current ( $I_p$ ) vs  $v^{1/2}$

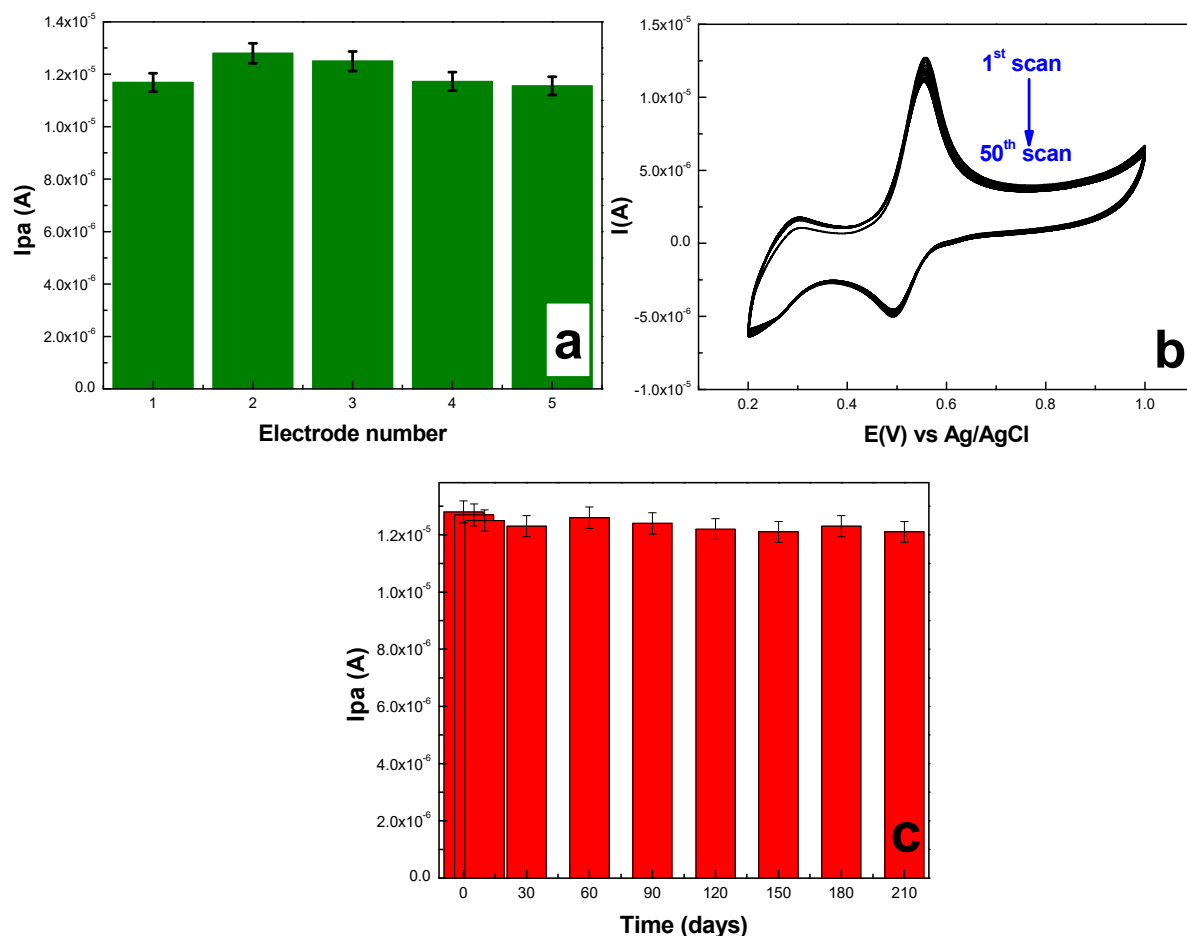


Figure S2. (a) Anodic peak current for five modified electrodes obtained from CV measurements *versus* 100  $\mu$ M AMP in acetate buffer pH 4.4 solution, scan rate 10 mV/s; (c) 50 consecutive measurements in 100  $\mu$ M AMP solution (pH 4.4 acetate buffer), recorded with exf-NGr/GCE (scan rate 10 mV/s); (d) CV response of exf-NGr/GCE electrode in 100  $\mu$ M AMP solution (pH 4.4 acetate buffer), obtained in replicate measurements over 210 days; scan rate 10 mV/s

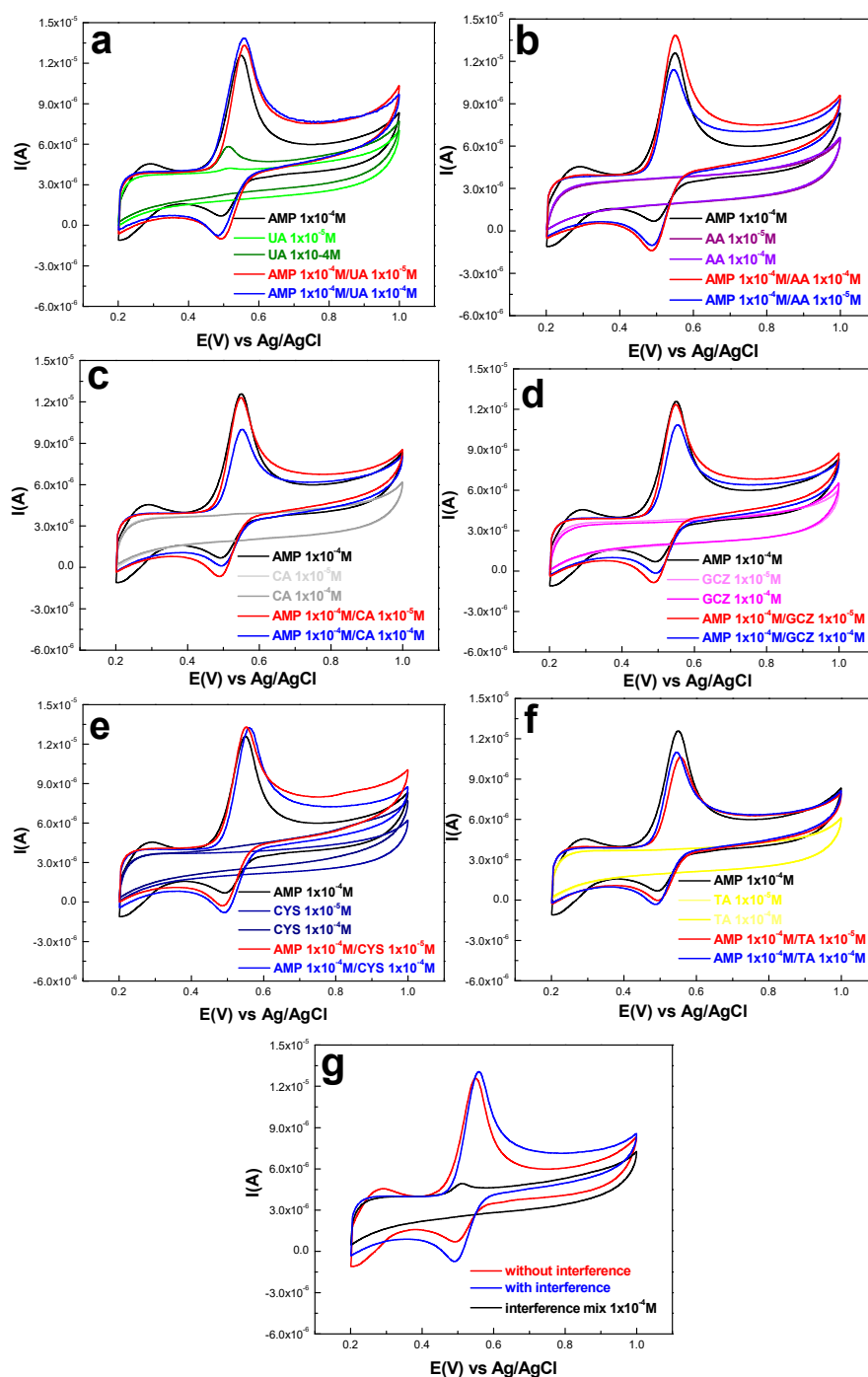


Figure S3. CV response of exf-NGr/GCE modified electrode towards 100  $\mu\text{M}$  AMP in the presence of different interfering molecules - set at two fix concentration 10  $\mu\text{M}$  and 100  $\mu\text{M}$ ): (a) uric acid (UA); (b) ascorbic acid (AA); (c) citric acid (CA); (d) glucose (GCZ); (e) cysteine (CYS); (f) tartaric acid (TA); (g) complex interfering matrix containing UA, AA, CA, GCZ, CYS and TA (100  $\mu\text{M}$ ); supporting electrolyte acetate buffer (pH 4.4) solution; scan rate 10 mV/s

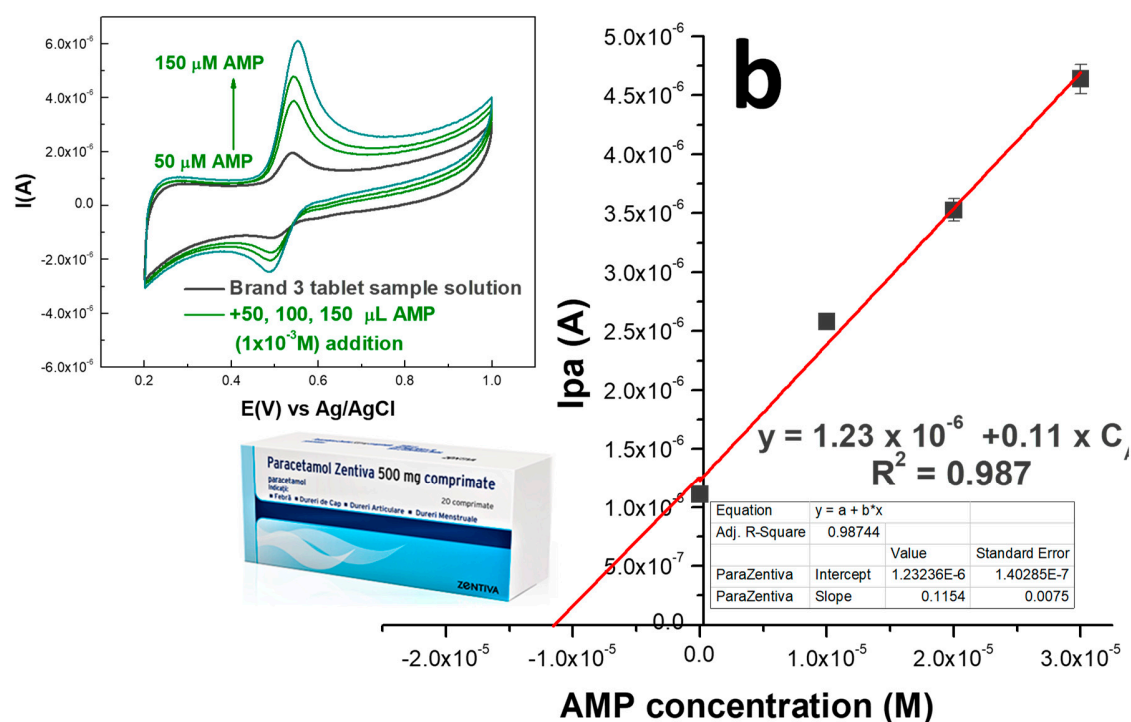
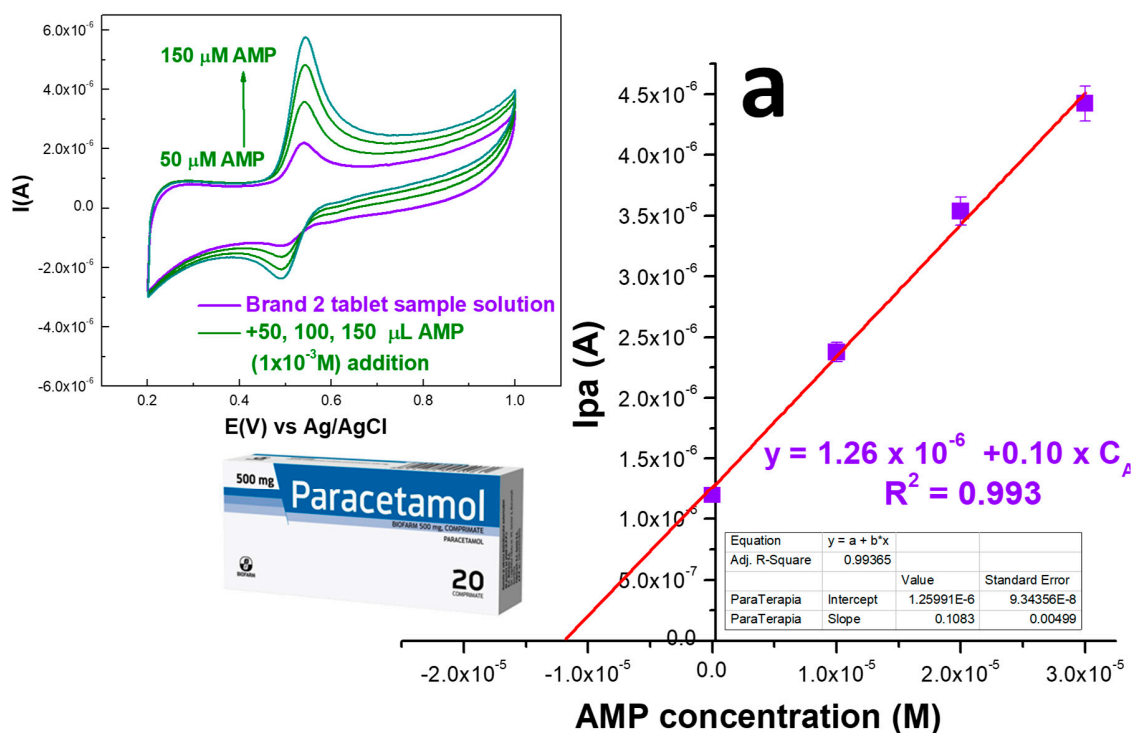


Figure S4. Calibration plot obtained for the standard addition method in case of paracetamol containing solutions obtained from Brand 2 and Brand 3 real tablet samples;

*Inset:* CVs recorded after spiking AMP from the stock solution (1 mM) - supporting electrolyte acetate buffer (pH 4.4) solution; scan rate 10 mV/s.

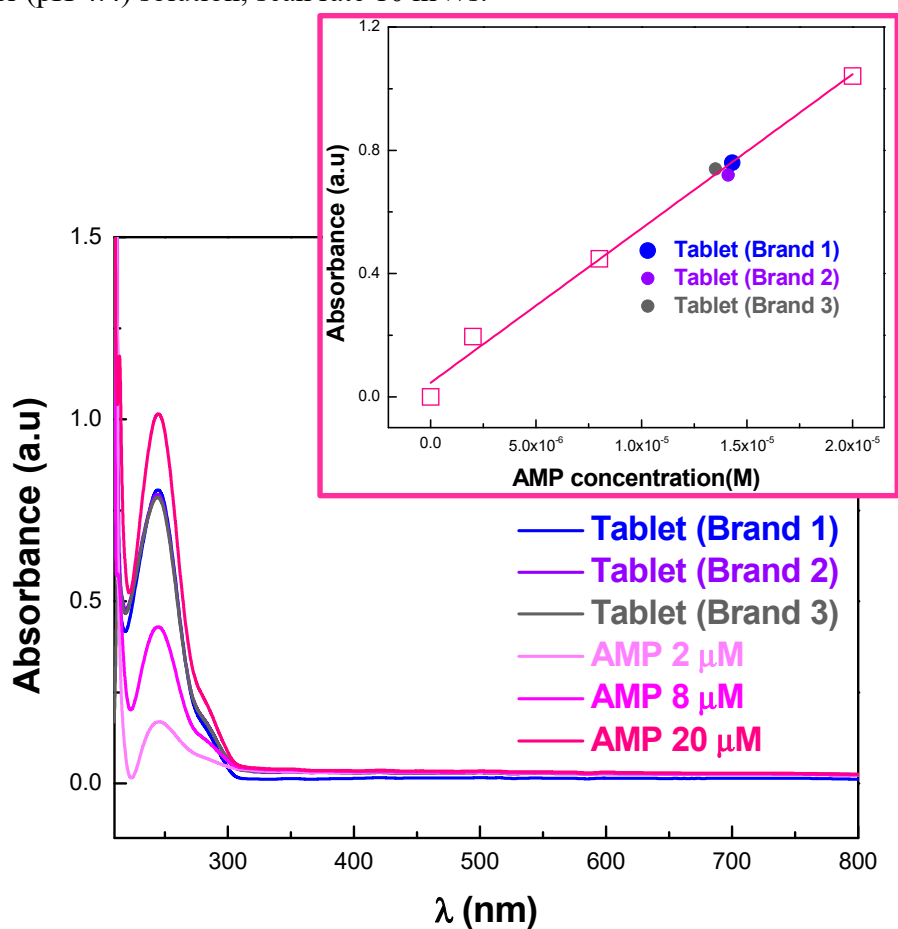


Figure S5. UV-Vis absorption spectra obtained for several solutions of known AMP concentration (2  $\mu$ M; 8  $\mu$ M; 20  $\mu$ M) and for paracetamol containing solutions obtained from Brand 2 and Brand 3 real tablet samples (AMP concentration 13.2  $\mu$ M);

*Inset:* The corresponding calibration curve