Quantification of Statins in Pharmaceutical Products Using Screen-Printed Sensors Based of Multi-Walled Carbon Nanotubes and Gold Nanoparticles

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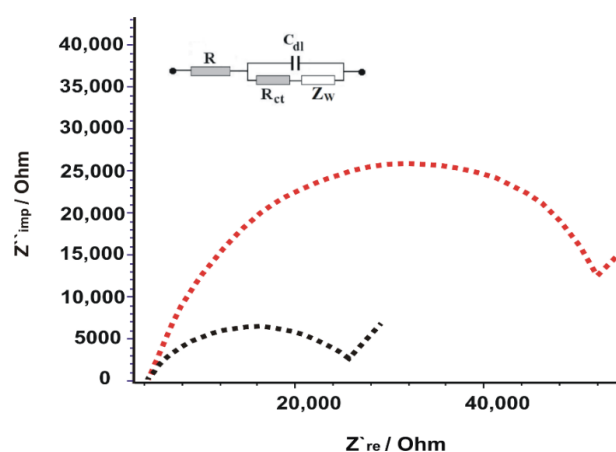
Supplementary information

Figure S1. Nyquist plots of EIS for SPE/C (red line) and SPE/AuNP-CNT(black line) in $K_3[Fe(CN)_6]/K_4[Fe(CN)_6]$ $5 \cdot 10^{-4}$ M / $5 \cdot 10^{-4}$ M - KCl 0.1 M for a frequency range from 1 Hz to 100 kHz, amplitude 10 mV. Inset: Equivalent circuit used to fit the impedance spectra.
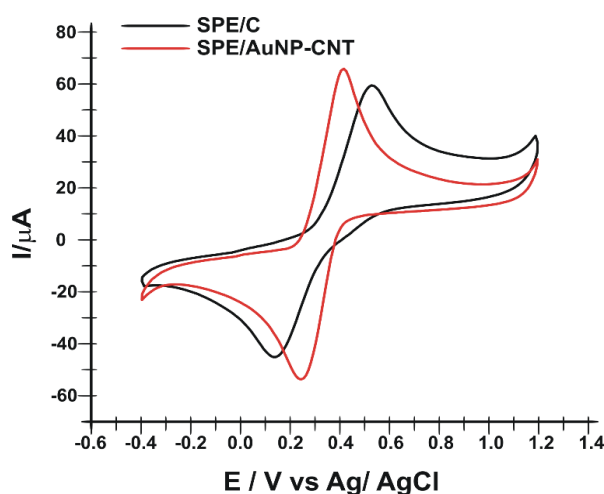

Figure S2. Cyclic voltammograms recorded at SPE/C (black line) and SPE/AuNP-CNT (red line) in 10^{-3} M catechol – 0.1 M KCl solution. Scan rate 0.1 V/s.
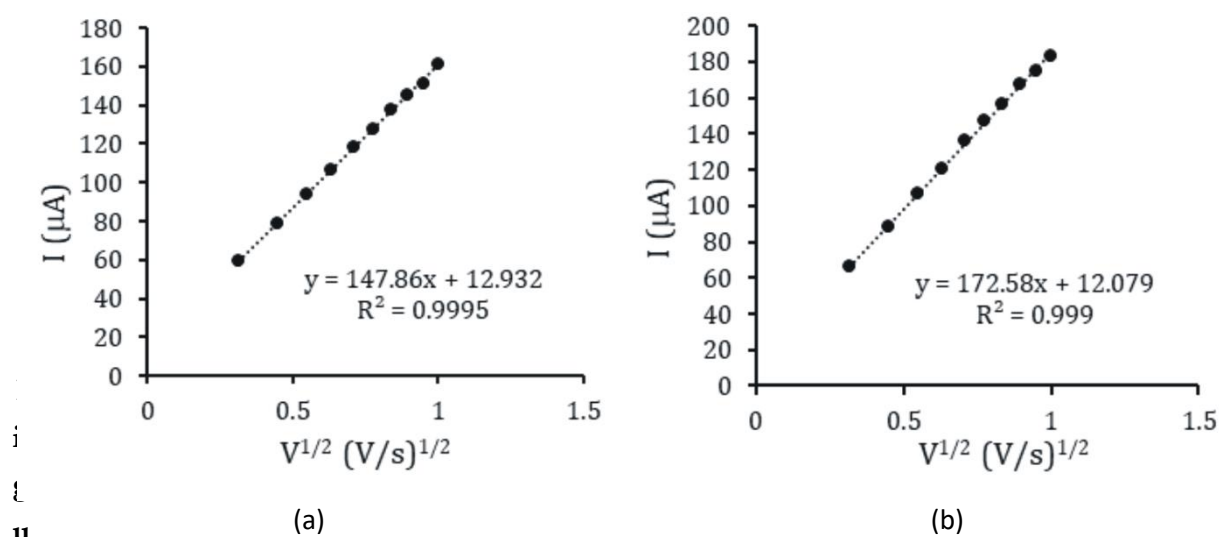
(a)   (b)

re S3. Dependence I vs. the square root of the scan rate in the case SPE/C (a) and SPE/AuNP-CNT (b).
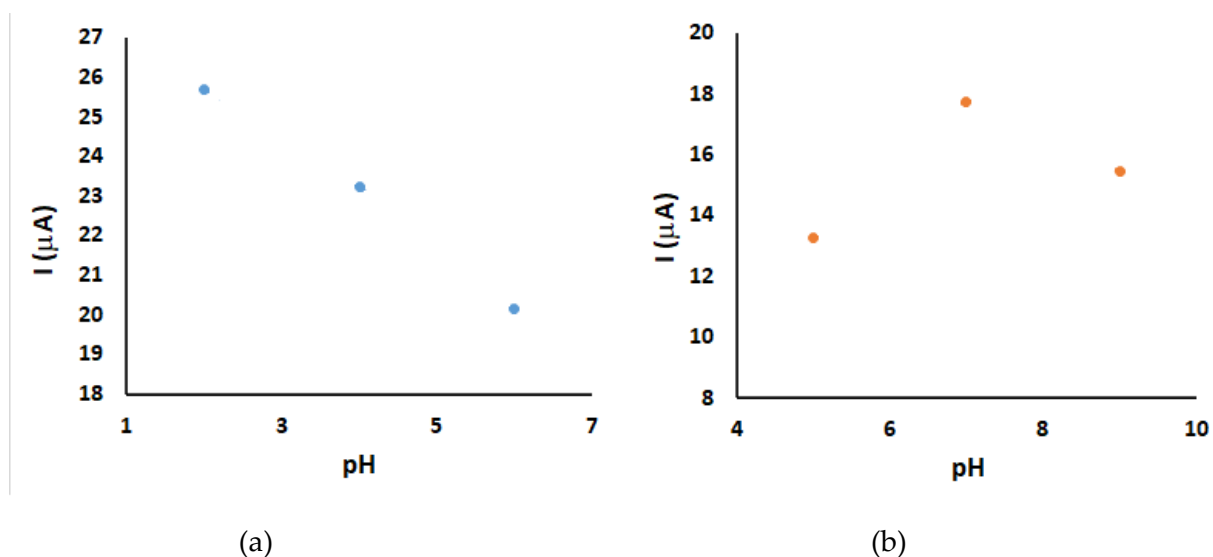

(a)   (b)

Figure S4. Plot of I_{pa} vs pH of 30 μM RV (a) and 30 μM SV (b) solution using cyclic voltammetry.

Table S1. Electrochemical parameters obtained from cyclic voltammograms of sensors immersed in 10^{-3} M catechol – 0.1 M KCl aqueous solution.

Electrode	E_{pa} (V)	E_{pc} (V)	$E_{1/2}$ (V)	ΔE (V)	I_a (μA)	I_c (μA)	I_c/I_a
SPE/C	0.530	0.134	0.332	0.396	59.49	-45.19	0.76
SPE/AuNP-CNT	0.417	0.241	0.329	0.176	65.30	-53.74	0.89

where: I_a – anodic peak current; I_c – cathodic peak current; E_{pa}- anodic peak potential; E_{pc}- potential of the cathodic peak; $E_{1/2}$ – the half-wave potential, $\Delta E = E_{pa}-E_{pc}$.

Table S2. Geometrical area, active surface area, and roughness factor for SPE/C and SPE/AuNP-CNT.

Electrode	Geometrical area (cm²)	m (slope)	Active area (cm²)	Roughness factor
SPE/C	0.1256	0.00014786	0.6675	5.314
SPE/AuNP-CNT		0.00017258	0.7791	6.203