Article

Electrochemical Sensor for the Evaluation of Doxorubicin from Novel Pharmaceutical Formulations and Serum

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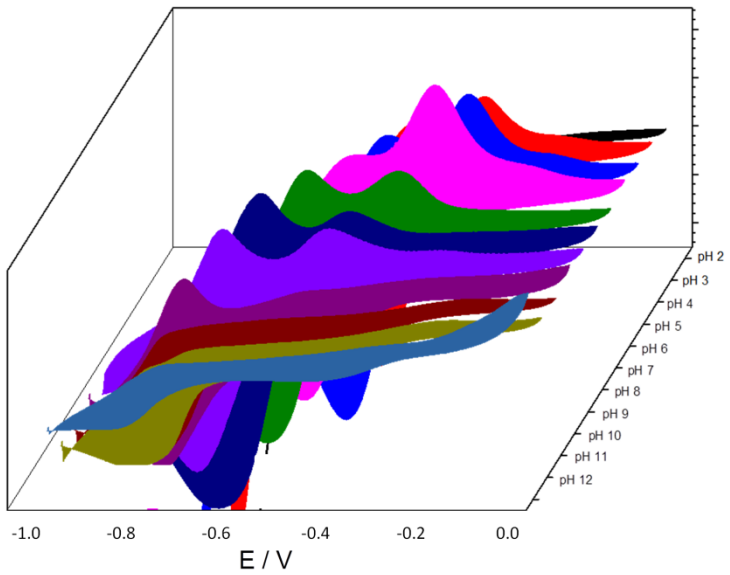

Figure S1. Cyclic 3D voltammograms obtained for 100 µg/mL DOX solutions prepared in BRB pH 2 – 12 (**A**).

Table S1. Values of the EIS parameters derived from the equivalent circuit through the fitting and simulation option of the software at each step of the sensor elaboration protocol.

Development phase	R_S (Ω)	R_{CT} (Ω)	CPE (µA/V); N	W (mA/V)	R_1 (Ω)	C_1 (µF)	X^2
Carbon-based WE after printing process	35	5540	1.71 0.9	0.68	0.27	0.32	0.028
Activated WE	21	91	7.99 0.97	7.6	-	-	0.003
WE after AuNPs electro-chemical deposition	43	26	19.9 0.85	8.15	-	-	0.004

Table S2. Influence of the supporting electrolyte on the detection of DOX from a 500 μg/mL solution. Tests performed using X with the following parameters: scan between –1.2 and – 0.4 V, potential step 5 mV, amplitude 0.2 V, interval time 0.1 s, modulation time 0.05 s, scan rate 50 mV/s. Iox – peak current intensity, Eox – peak potential;.

Electrolyte	Iox (μA)	Eox (V)	Iox (μA)	Eox (V)
0.1 M H_2SO_4	38	0.05	41.8	0.4
0.1 M HCl	4	0.00045	-	-
0.1 M PBS pH 7.4,	11.72	0.551	-	-
0.2 M Carbonate buffer pH 10,	7.83	0.3	-	-

PBS – phosphate buffer saline; Iox – oxidation current intensity; Eox – oxidation potential;

Table S3. Calibration curves obtained for DOX in phosphate buffer saline of different pH values.

Media	λ_{max} (nm)	Calibration curve equation	R^2
PBS pH 5.0	482	A = 0.017 [DOX] + 0.011	0.999
PBS pH 6.0		A = 0.075 [DOX] + 0.002	0.998
PBS pH 7.4		A = 0.016 [DOX] + 0.001	0.999

PBS – phosphate buffer saline; A – absorbance; λmax – maximum absorbance wavelength

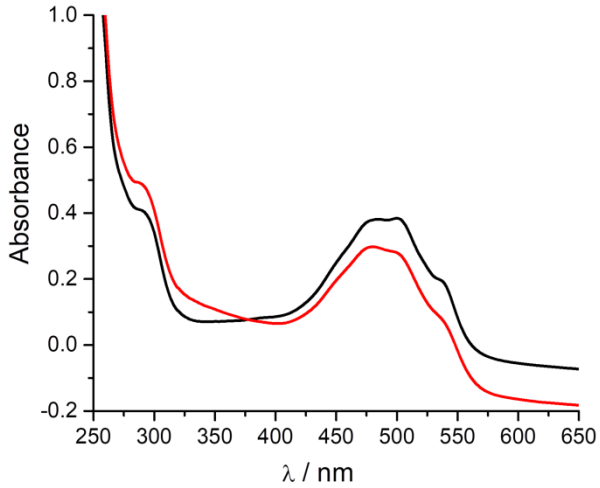

Figure S2. UV-Vis spectra registered in the 250 -650 nm domain for the 2 mg/mL DOX solution before incubation with the nanosomes (before loading) loading solution before (black) and after incubation with the nanosomes (after loading)(red). The decrease in absorbance is attributed to the encapsulation of DOX in the nanosomes. .

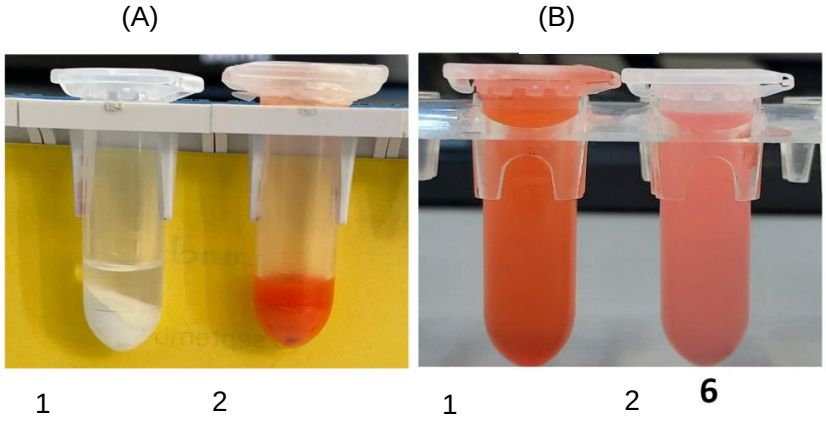

Figure S3. Images of the nanosome suspensions before (**A1**) and after (**A2**) loading form a 2 mg/mL DOX solution prepared in acetate buffer **C.** Images of the nanosome suspensions after 72 h of release in PBS pH 5 (**B1**) and pH 7.4 (**B2**).