

Figure S1. UV-Vis absorption spectra for: (a) AuNP concentration variation obtained after using sea buckthorn extract (Hf US) as reducing agent; (b) Hf US plant extract concentration variation for 0.01 % AuNP.

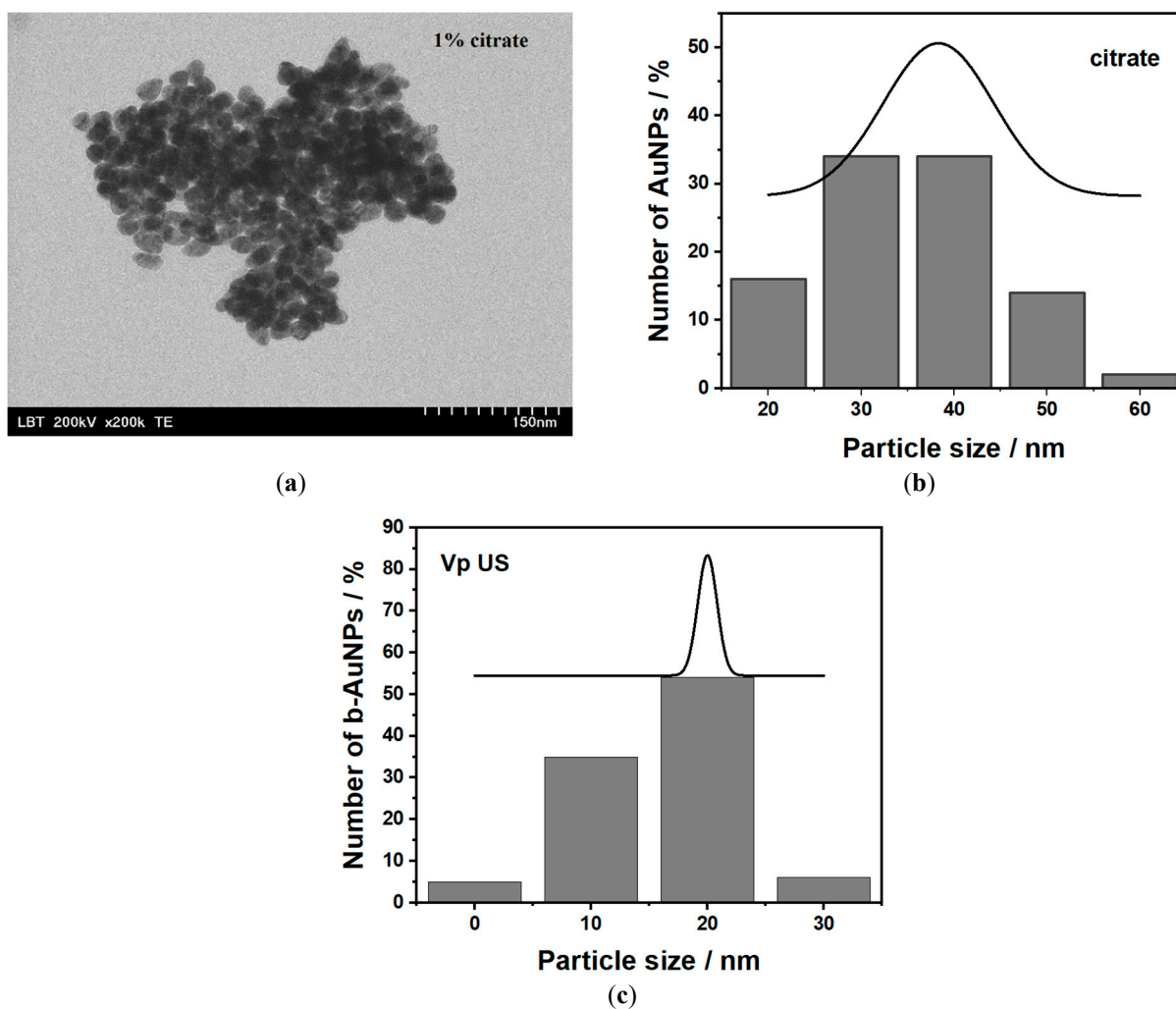


Figure S2. (a) TEM image for citrate reduced AuNPs; Size distribution histograms of b-AuNPs diameter obtained using (b) citrate and (c) Vp US plant extract; with inset of the Gaussian distribution fit.

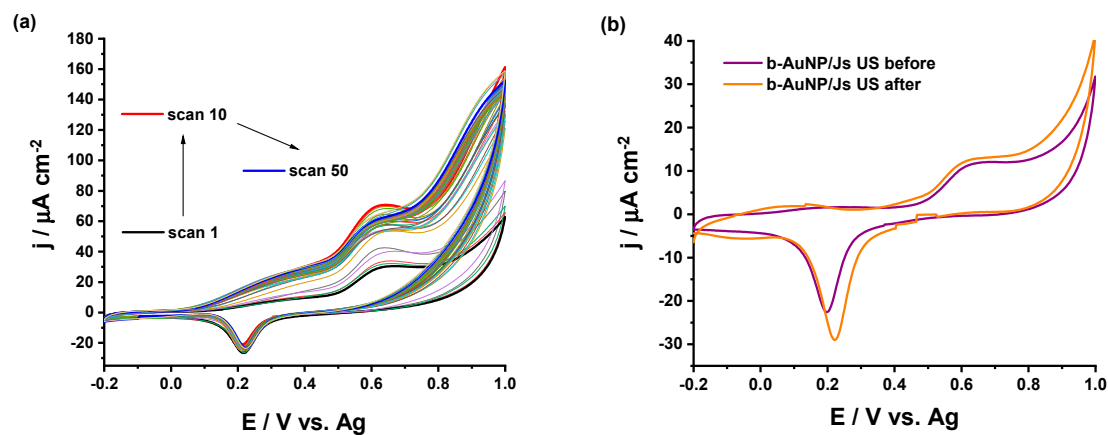


Figure S3. CVs in 0.1 M NaPB, pH 7.0, scan rate 50 mV s⁻¹, step 2 mV for (a) Stability for Js US reduced b-AuNP modified SPE in the presence of 2 mM H₂O₂, (b) b-AuNP/JsUS modified electrode before and after the 50 scans from (a).

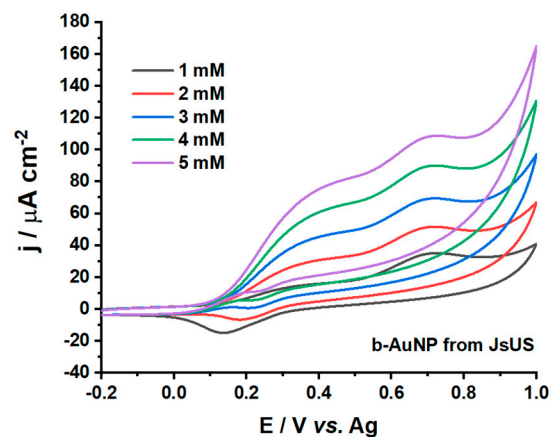


Figure S4. CV in 0.1 M NaPB, pH 7.0, 50 mV s⁻¹, step 2 mV for SPE modified with b-AuNP obtained with JsUS extract, with increasing concentrations of H₂O₂ (1 to 5 mM).

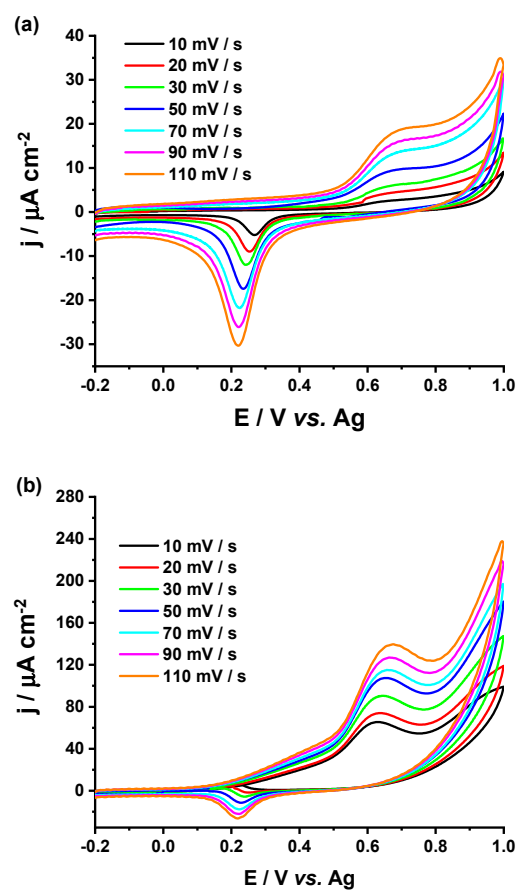


Figure S5. CVs in 0.1 M NaPB, pH 7.0, for b-AuNP/Js US modified electrode at different scan rates: 10, 20, 30, 50, 70, 90 and 110 mV s⁻¹ (a) in the absence and (b) presence of 2 mM H₂O₂.

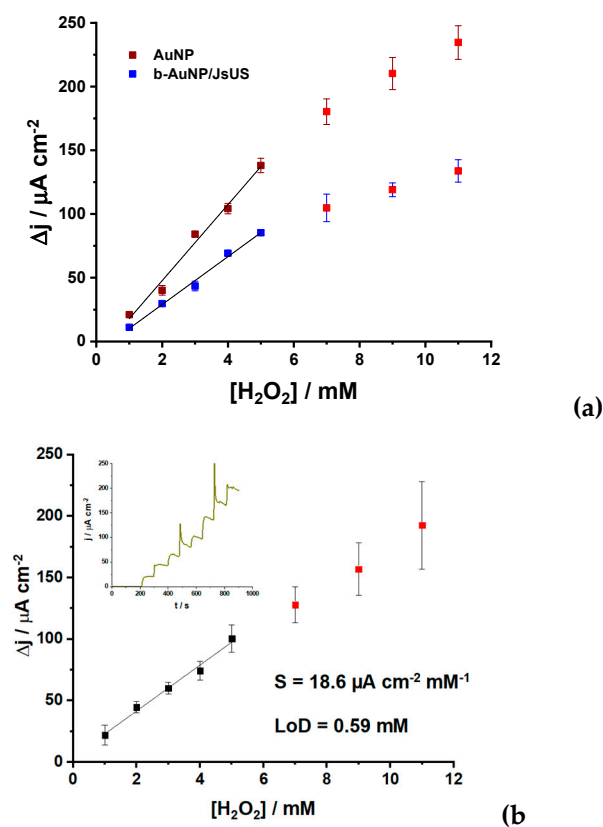


Figure S6. (a) Calibration plots for AuNP and b-AuNP/JsUS ($n=3$) corresponding to Fig 6 (manuscript); (b) Calibration plot for Hf US obtained b-AuNP modified sensor ($n=3$) for increasing H_2O_2 concentrations in 0.1 M NaPB, pH = 7.0; inset: fixed potential amperometry at 0.65 V vs. Ag.

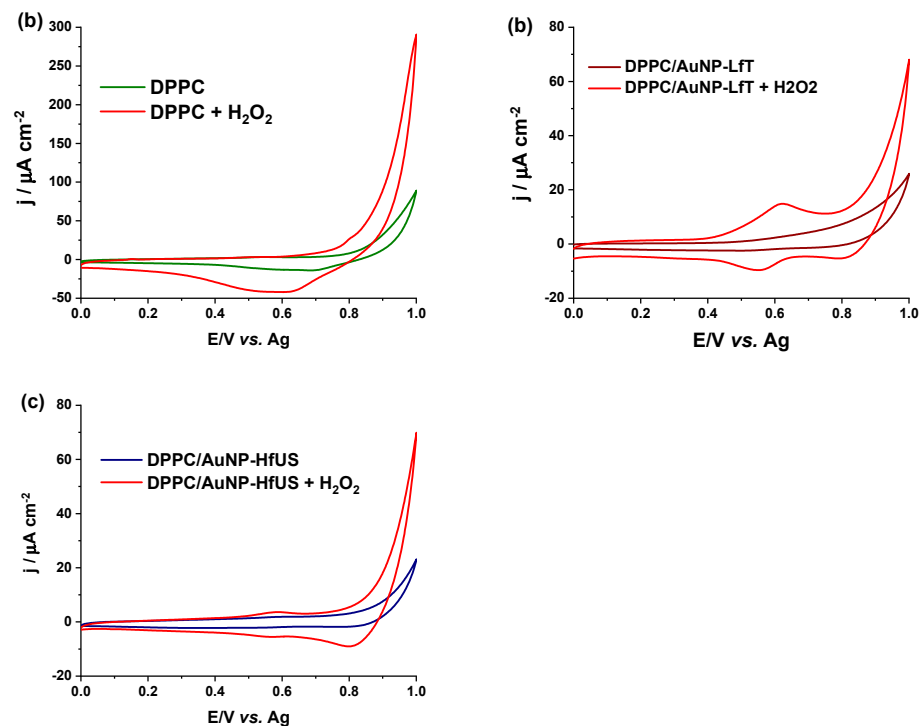


Figure S7. (a) CVs in 0.01 M NaPBS, pH 7.4, scan rate 50 mV s^{-1} , step 2 mV for all liposomal systems in the absence and presence of 3 mM H_2O_2 (a) DPPC, (b) DPPC/AuNP-LfT and (c) DPPC/AuNP-HfUS.

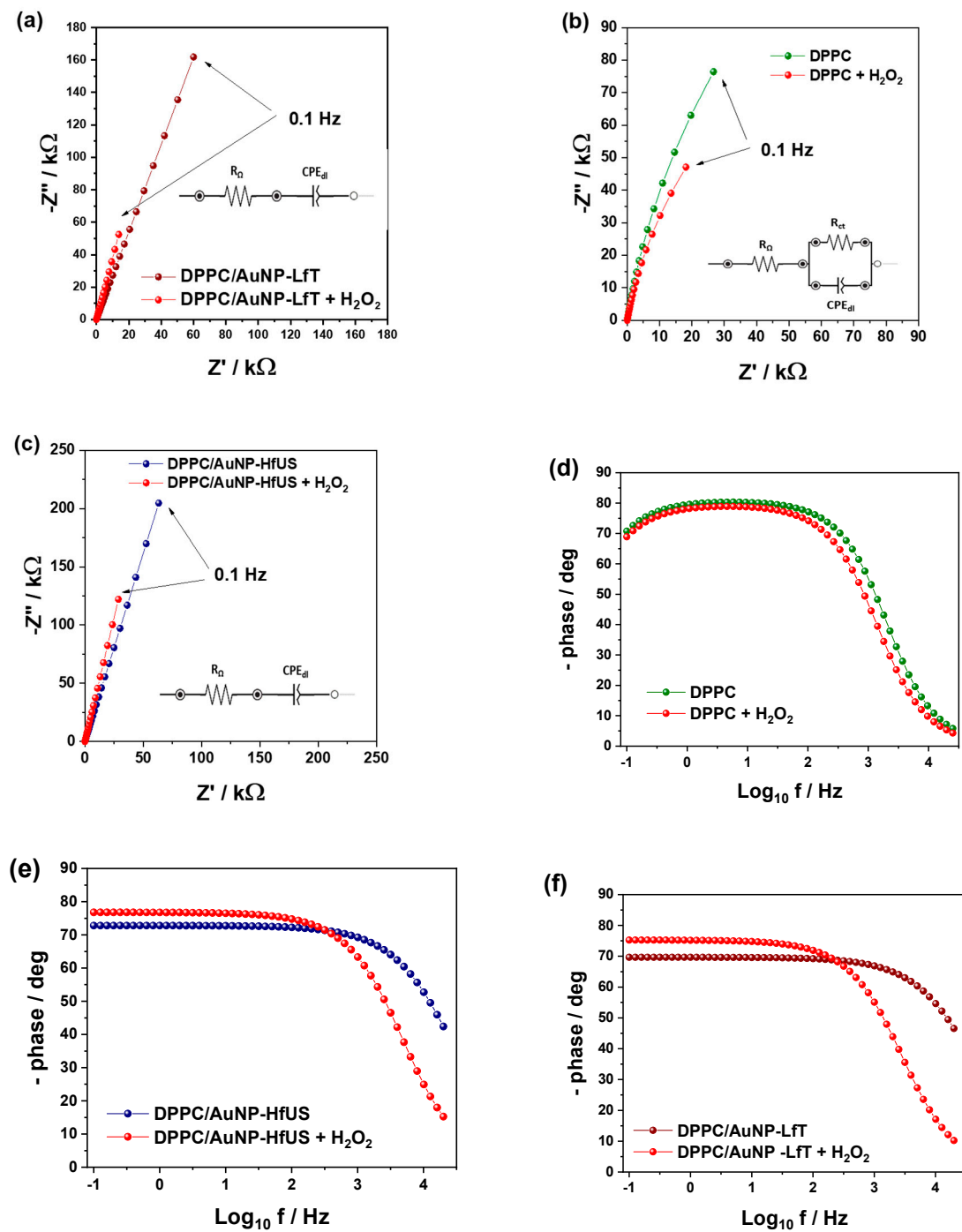


Figure S8. EIS in 0.01 M PBS, pH 7.4, applied potential of +0.1 V vs. Ag in the absence and presence of 3 mM H_2O_2 : Nyquist spectra of (a) DPPC, (b) DPPC/AuNP-LfT and (c) DPPC/AuNP-HfUS liposomal systems; Bode phase plots for (d) DPPC, (e) DPPC/AuNP-HfUS liposomal systems and (f) DPPC/AuNP-LfT.

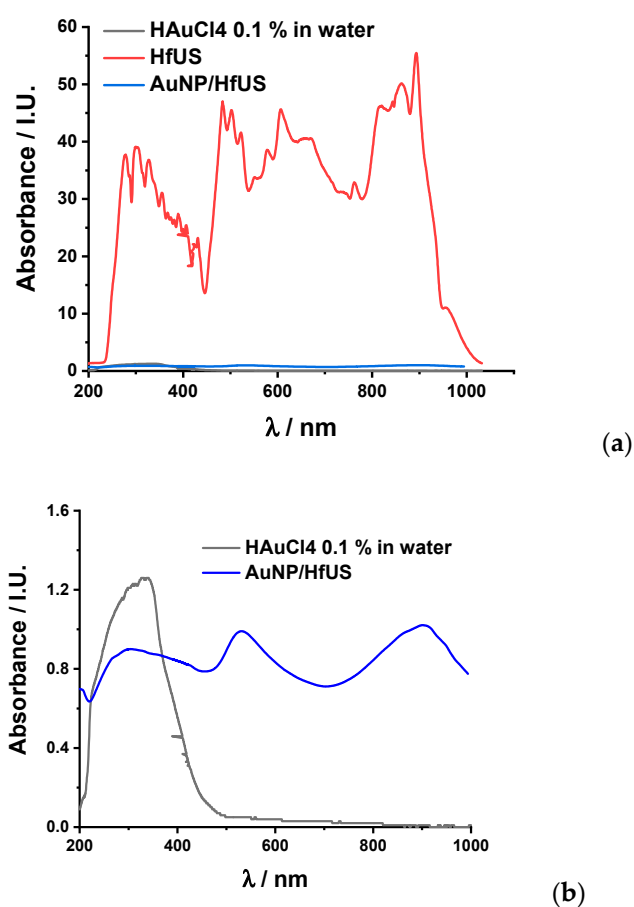


Figure S9. UV-Vis absorption spectra for: (a) diluted Hf US plant extract (4%), 0.01 % H_{AuCl₄} aqueous solution and washed 0.01 % AuNP/HfUS colloidal solution. (b) magnification of (a) for 0.01 % H_{AuCl₄} aqueous solution and washed 0.01 % AuNP/HfUS colloidal solution.

Table S1. Equivalent circuit parameter values obtained by fitting the impedance spectra from Figure 8 and Figure S6.

System	R_{Ω} / Ω	$R_{ct} / k\Omega$	$CPE_{dl} / \mu F s^{a-1}$	a
DPPC	11.28	454.4	0.179	0.899
DPPC + H ₂ O ₂	11.41	267.8	0.283	0.885
DPPC/AuNP-HfUS	8.26	-	6.799	0.809
DPPC/AuNP-HfUS + H ₂ O ₂	12.57	-	0.118	0.853
DPPC/AuNP-LfT	7.34	-	8.299	0.774
DPPC/AuNP-LfT + H ₂ O ₂	10.25	-	0.272	0.836