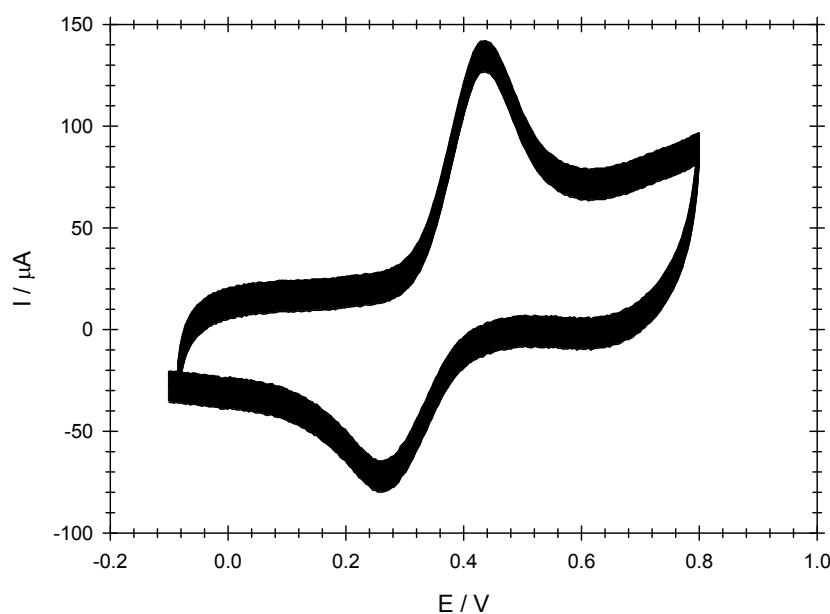


Stability of the modified electrode

In order to investigate the response stability of NiONps/ILCMCPE.....SDS, the CV for 1.0×10^{-3} M ACOP in B-R buffer (pH 7.4) solution were recorded every five minutes and it stands for fifty runs (Supplement 1). It was found that the anodic and cathodic peak currents remained the same. Repetitive measurements indicated that this electrode has a good reproducibility and does not undergo surface fouling during the voltammetric measurements (100 cycles).



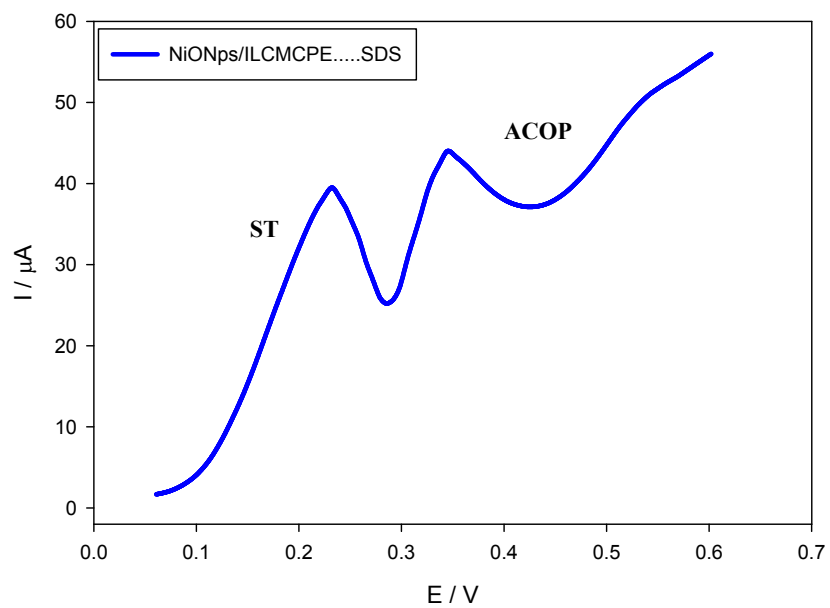
Supplement 1

Evaluated parameters	Found Results
Linearity¹ (working range) * First range *Second range	44.4×10^{-7} to 3.33×10^{-5} mol L ⁻¹ 5.56×10^{-5} to 2.78×10^{-4} mol L ⁻¹
Limit of detection¹ (LOD) * First linear range *Second linear range	8.61×10^{-9} mol L ⁻¹ 5.68×10^{-8} mol L ⁻¹
Limit of quantification¹ (LOQ) * First linear range *Second linear range	2.87×10^{-8} mol L ⁻¹ 1.89×10^{-7} mol L ⁻¹
Recovery² (mean/rsd)	$101.032 \pm 0.73\%$
Recovery³ (mean/rsd)	$101.275 \pm 1.26\%$
Robustness¹ [to pH change] (pH with highest current response)	2.0 – 9.0 (7.0)
Repeatability⁴	$114.0 \pm 1.9\%$ μ A (n = 3)
Reproducibility⁵	$112.67 \pm 1.26\%$ μ A (n = 3)
Long term stability⁶ After 5 days After 14 days	(rsd) = 2.3% (rsd) = 4.8%

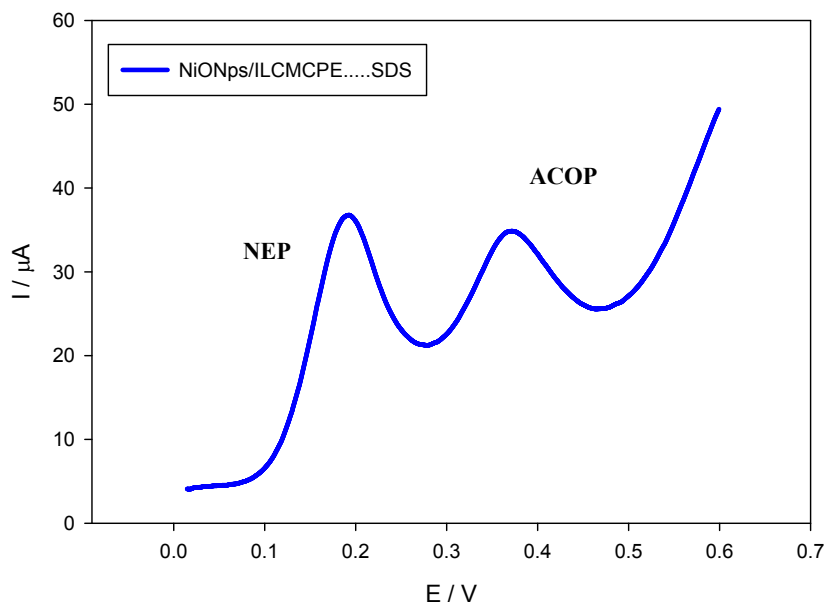
- 1 Data obtained from calibration curves using standard provided by NODCAR
- 2 Recovery data obtained by the standard addition method for (ACOP) in drug tablets
- 3 Recovery data obtained by the standard addition method for (ACOP) in urine samples
- 4 The repeatability was investigated by monitoring a 1.0 mM ACOP solution using one modified electrode, (the standard ACOP provided by NODCAR).
- 5 Three repeated experiments were performed using three NiONps/ILCMCPE.....SDS electrodes with the same conditions (the standard provided by NODCAR).
- 6 After storage for 5 days, and 14 days in air, the current response of the sensor retained 97% and 95% of its initial value, respectively.

(NODCAR is the national organization for drug control and research of Egypt)

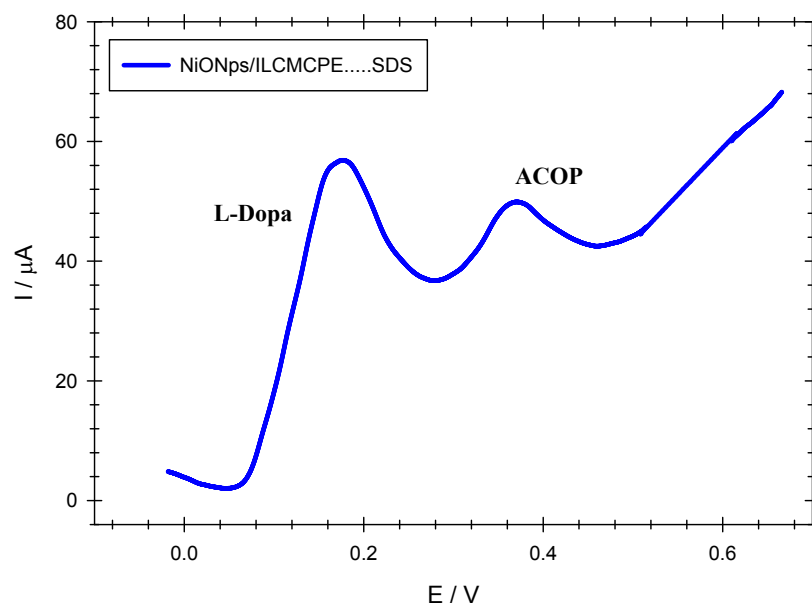
Supplement 2. Evaluated parameters in the validation of the proposed sensor according to the WHO protocols [81].



(I)



(II)



(III)

Supplement 3. The differential pulse voltammograms obtained with the NiONps/ILCMCPE.....SDS of I) 1.0 mM serotonin, II) 1.0 mM norepinephrine and III) 1mM L-Dopa, and 1 mM ACOP in 0.04 M B-R buffer pH 7.4, scan rate 10 mV/s.

Techniques used	LOD (Mole L ⁻¹)	LDR (Mole L ⁻¹)	Reference
HPLC	6.48×10^{-6}	$(1.36 - 13.63) \times 10^{-6}$	1
Colorimetric	1.32×10^{-6}	$(165.4 - 2646) \times 10^{-6}$	2
Spectrophotometry	3.44×10^{-6}	$(0.662 - 13.23) \times 10^{-6}$	3
Flurometry	0.132×10^{-6} 6.62×10^{-6}	Unknown	4
Electrochemical	8.61×10^{-9} 5.68×10^{-8}	44.4×10^{-7} to 3.33×10^{-5} 5.56×10^{-5} to 2.78×10^{-4}	This work

- [1] M. L. Qi, R. Wang, L. Zhou, J. L. Gu, R. N. Fu, *Chromatographia*, 2003, **57**, 139-142.
- [2] F. Shihana, D. D. Yake, P. Dargan, A. Dawson, *Clin. Toxicology*, 2010, **48**, 42-46.
- [3] C. O. Nnadi, M. O. Agbo, P. F. Uzor, L. O. Ugwu, *Ind. J. Pharm. Res.*, 2013, **1**, 15-21.
- [4] J. Shibasaki, R. Konishi, K. Yamada, S. Matsuda, *Chem. Pharm. Bull.*, 1982, **30**, 358-361.

Supplement 4. Comparison of the determination of acetaminophen using different techniques