Supporting information

Strontium vanadate-supported graphitic carbon nitride nanocomposite for simultaneous voltammetric determination of acetaminophen and levofloxacin in complex biological samples

Nandini Nataraj [a], Shen-Ming Chen *[a], Siva Kumar Krishnan *[b]

[†]Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No.1, Section 3, Chung-Hsiao East Road, Taipei 106, Taiwan.

[‡]CONACYT-Instituto de Física, Benemérita Universidad Autónoma de Puebla, Apdo. Postal J-48, Puebla 72570, Mexico.

*Corresponding author:

S-M Chen: Email: smchen78@ms15.hinet.net, smchen1957@gmail.com

Siva Kumar Krishnan: Email: sivakumar@ifuap.buap.mx

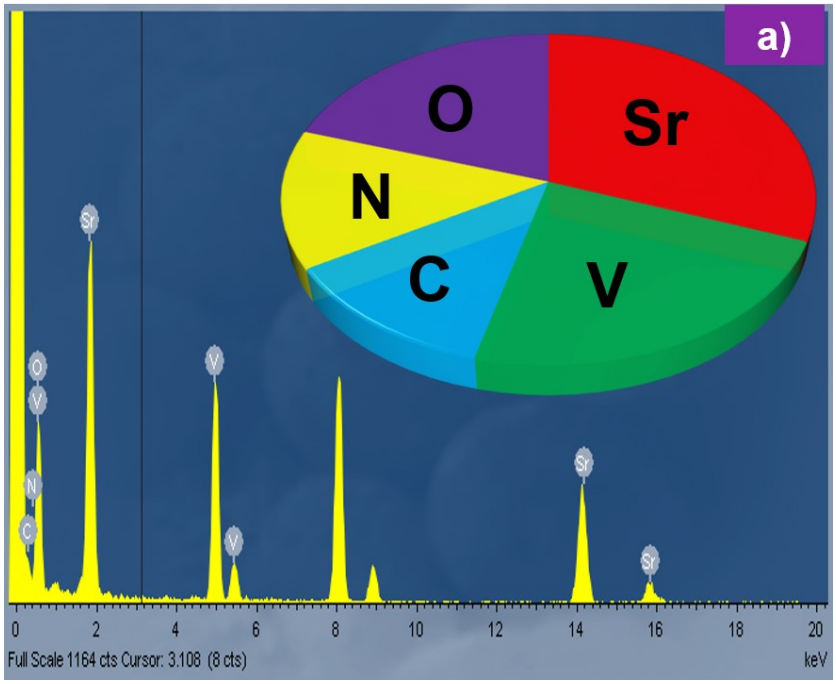

Fig S1. Fig S1. EDAX elemental analysis spectrum of SrV/GCN nanocomposite sample showing the peaks of Sr, V, O, C, and N respectively.

Table S1. Comparison of the EIS parameters of the electrodes.

Materials	R_s (Ω)	C_{dl} (nF)	R_{ct} (Ω)	Z_w (DW)
Bare GCE	40.4	339	328	294
SrV/GCE	36	344	266	248
GCN/GCE	37.9	386	129	316
SrV/GCN/GCE	37.4	450	83	250

S1. Optimization of SrV/GCN/GCE

To optimize the loading amount, the electrochemical activity was studied by varying the amount of SrV/GCN nanocomposite on the GCE surface from 1 to 12 mg/mL. The maximum current response was observed when the GC-electrode was modified with 6 mg of SrV/GCN (**Fig. S2 a**). Moreover, the concentration of SrV/GCN dispersion solution used to deposit over GCE was also optimized by varying the suspension volume from 1 to 10 µL. The modified GC electrode with a concentration of 6 µL SrV/GCN suspension exhibited a higher electrochemical response in comparison with the other studied concentrations (**Fig.**

S2 b). Therefore, the 6 µL (6.0 mg/mL) of SrV/GCN suspension was used for electrochemical detection studies.

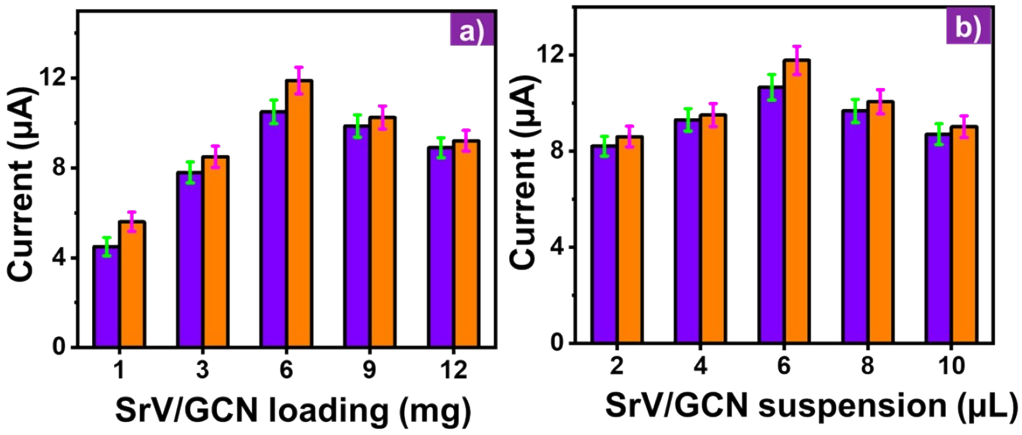

Fig S2. Bar chart diagram showing the electrooxidation peak current response of **a)** varying the amount of SrV/GCN (mg) deposited over GCE, **b)** The amount of SrV/GCN solution (6 µL) utilized to drop-cast onto GCE surface to fabricate SrV/GCN/GCE.

S2. Optimization of electrochemical sensing performance of SrV/GCN in different electrode surface and buffer solutions.

The sensing performance of the SrV/GCN nanocomposite was systematically optimized in two different buffer electrolyte solutions and supporting SrV/GCN over GCE and screen-printed carbon electrode (SPCE) working electrodes. As shown in **Fig S3a**, the CV profiles of the 100 µM of ACAMP and 100 µM of LEV at SrV/GCN/GCE recorded in phosphate buffer solution (PBS, 0.1 M), and acetate buffer solution (ABS, 0.1 M) at a scan rate of 50 mVs^{-1}. The SrV/GCN/GCE exhibited a well-defined redox peak with higher oxidation peak current response along with low ΔE as noticed in 0.1 M PBS in comparison with the ABS electrolyte solution, suggesting the SrV/GCN/GCE exhibit efficient electrocatalytic activity toward detection of ACAMP and LE V in 0.1 M PBS (**Fig S3a).** In addition, the sensing response of the SrV/GCN was also studied by modifying SrV/GCN over different electrode surfaces such as GCE and screen-printed carbon electrode (SPCE) and CV curves were recorded in 0.1 M PBS (pH=7.0) at a scan rate of 50 mV s^{-1} (**Fig S3 b**. Therefore, the GCE was utilized to modify the as-prepared SrV/GCN nanocomposite and implemented for electrochemical sensing.

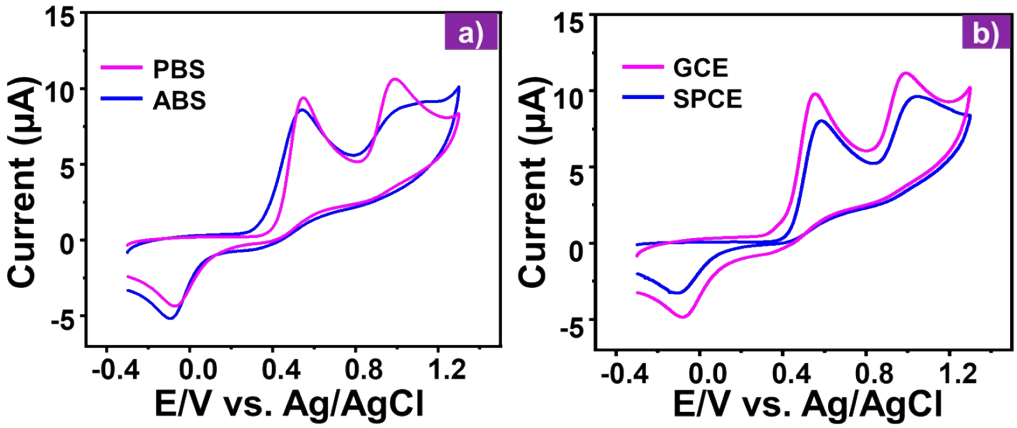

Fig S3. CV plots of **a)** SrV/GCN/GCE in the presence of 0.1 M of phosphate buffer solution (PBS) and acetate buffer solution (ABS) at scan rate 50 mVs^{-1} with 100 µM addition of ACAMP and LEV**. b)** SrV/GCN modified over GCE and SPCE in the presence of 0.1 M of PBS at 50 mVs^{-1} of scan rate with 100 µM addition of ACAMP and LEV, respectively.

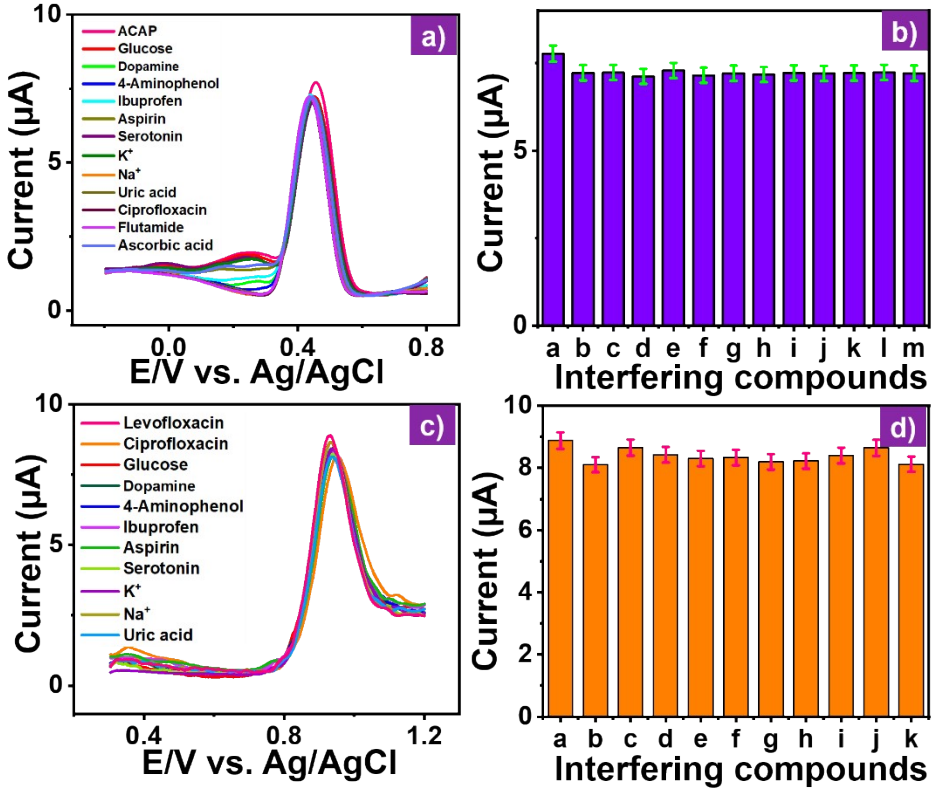

Fig S4. Selectivity performance of the SrV/GCN/GCE in the presence of various interference compounds. a, c) DPV curves of the 100 µM ACAMP and LEV in the presence of various interference compounds at SrV/GCN/GCE in 0.1M PBS. b, d) corresponding bar diagram of ACAMP and LEV against various interference compounds.

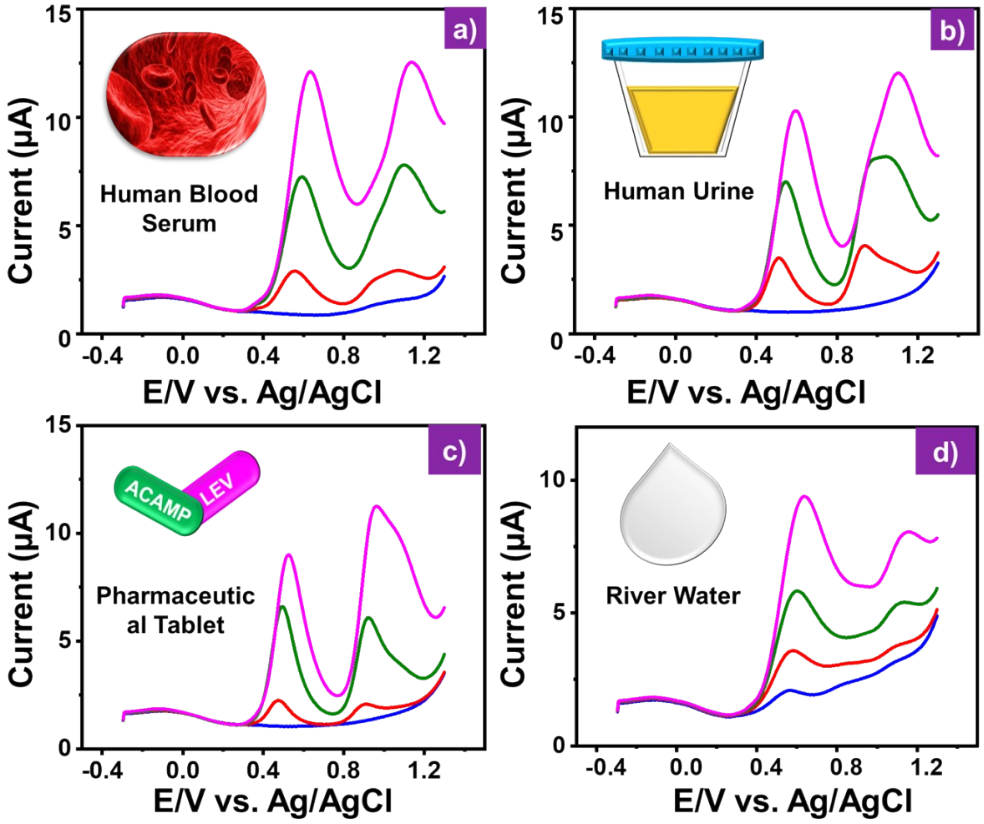

Fig S5. DPV response curves of SrV/GCN/GCE obtained in the presence of ACAMP and LEV in 0.1 M PBS containing **a)** human blood serum, **b)** human urine, **c)** commercial pharmaceutical tablet, and **d)** river water.

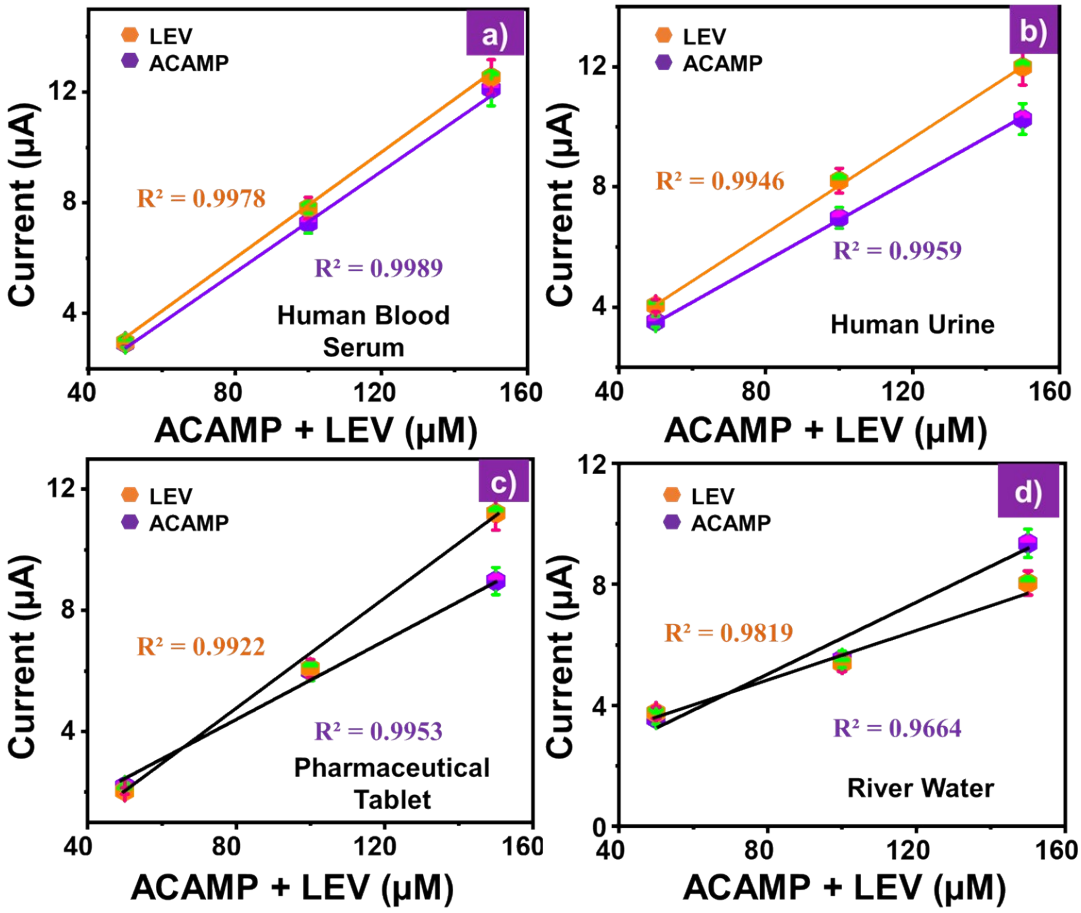

Fig S6. Linearity plot of current response *vs*. concentration of ACAMP and LEV at SrV/GCN/GCE in **a)** human blood serum, **b)** human urine, **c)** commercial pharmaceutical tablet, and d) river water.