

**Electronic supporting information (ESI)**

**Synchronous analysis of acetaminophen, codeine, and caffeine in  
human fluids employing graphite screen-printed electrodes**

Bahaa G. Mahmoud,<sup>a</sup> Mustafa. J. A. Abualreish,<sup>b</sup> Mohamed Ismael,<sup>a</sup> and Mohamed Khairy<sup>a\*</sup>

<sup>a</sup> Department of Chemistry, Faculty of Science, Sohag University, 82524.

<sup>b</sup> Department of Chemistry, College of Science, Northern Border University, Arar, Saudi Arabia

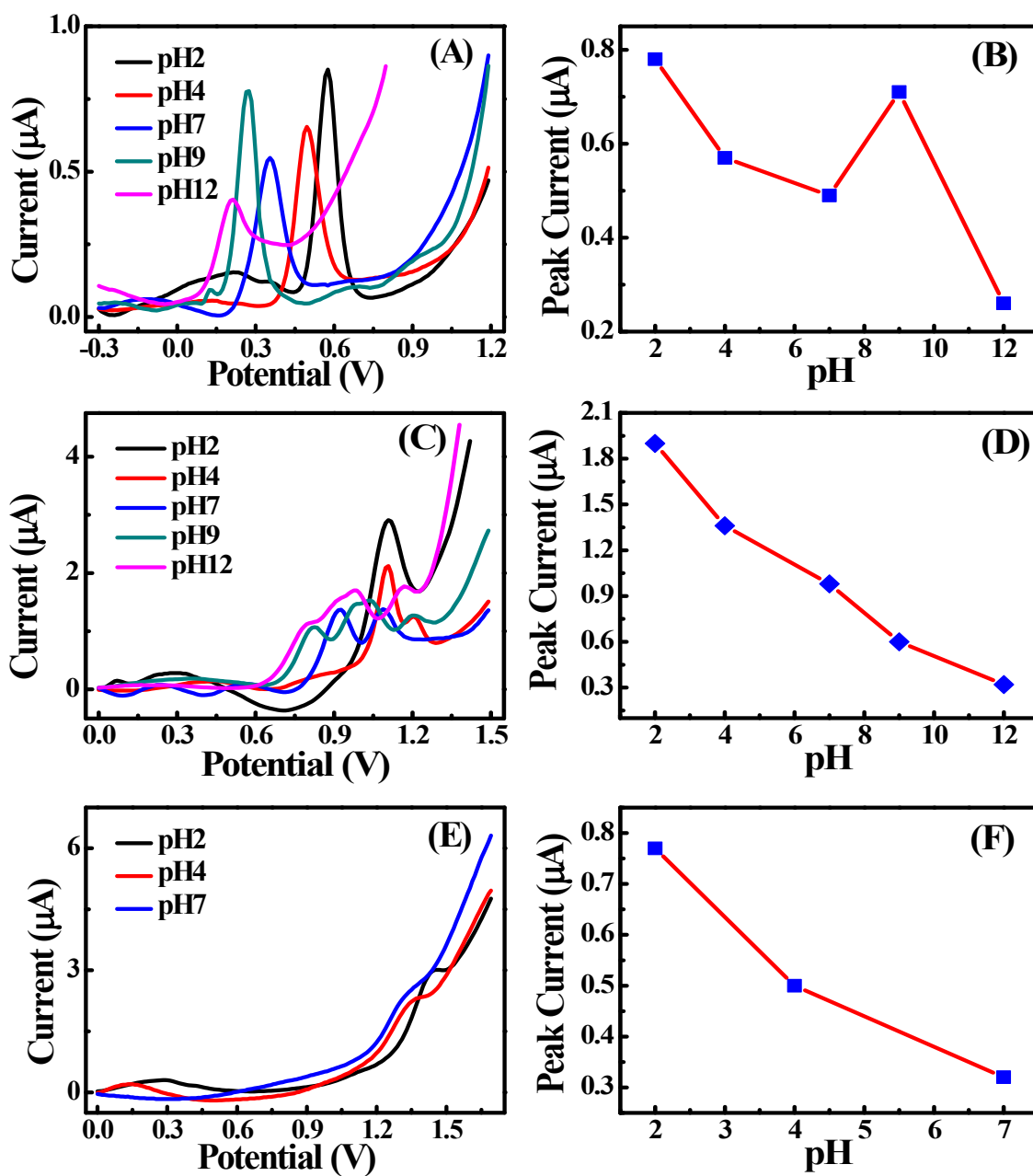
**Corresponding authors**

\*Dr. Mohamed Khairy

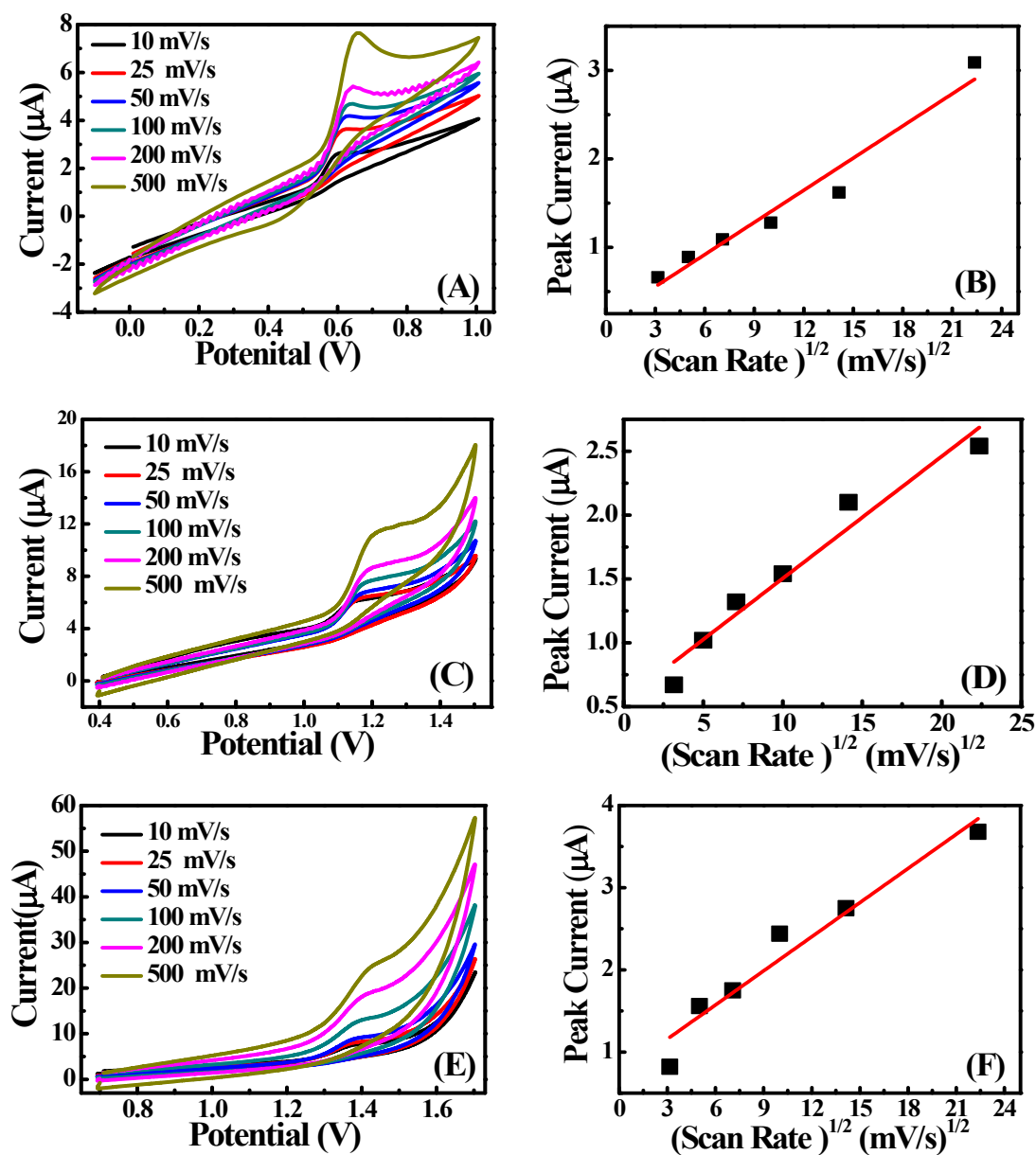
Email: [mohamed.khairy@science.sohag.edu.eg](mailto:mohamed.khairy@science.sohag.edu.eg)

Tel: +(2)01092099116

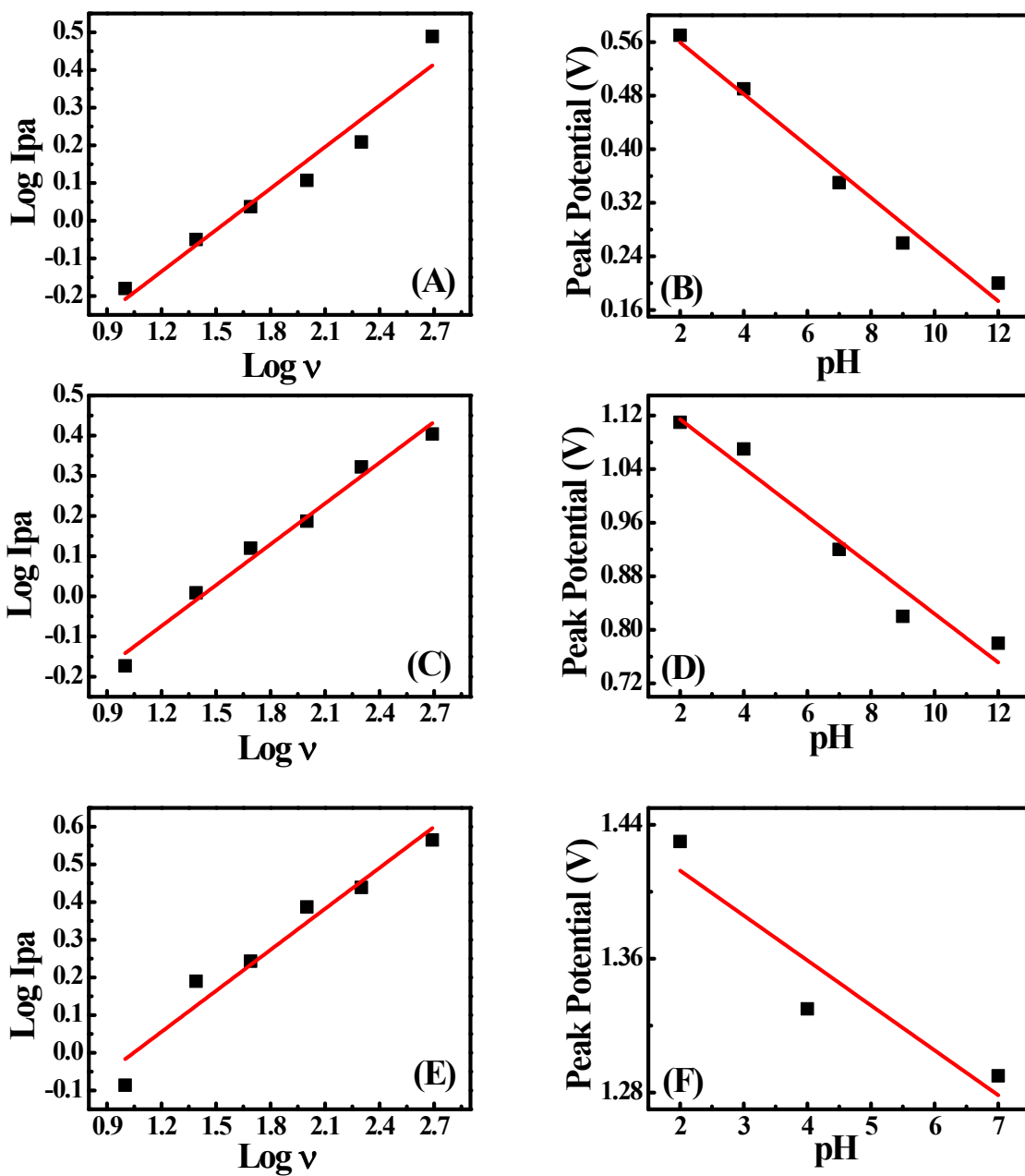




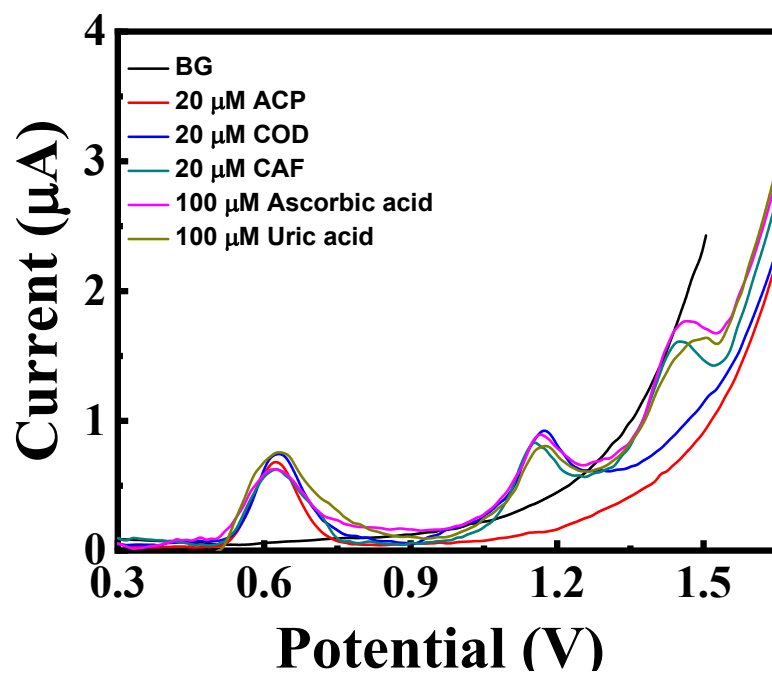
**Figure S1** (A) Influence of solution pH on the oxidation peaks of 50  $\mu\text{M}$  ACP, 100  $\mu\text{M}$  COD and 100  $\mu\text{M}$  CAF at unmodified-SPEs in 0.05 M B. R. buffer, (B) Analysis of the oxidation peak current of ACP, COD and CAF as a function of pHs.



**Figure S2.** Effect of scan rates on cyclic voltammetric curves of 200 μM of ACP (A, Band B), 200 μM of COD (C and D) and 200 μM CAF (E and F) observed on unmodified- SPEs in 0.05 M H<sub>2</sub>SO<sub>4</sub>.



**Figure S3.** (A, C and E) Relation between peak currents and different scan rates of ACP, COD and CAF and (B, D and F) Plot of the Peak Potential ( $E_p$ ) against different pH values of ACP, COD and CAF at unmodified- SPEs in 0.05 M  $\text{H}_2\text{SO}_4$ .



**Figure S4.** DPV of consecutive additions of ACP, COD, CAF, ascorbic acid and uric acid in 0.05 M M H<sub>2</sub>SO<sub>4</sub> at unmodified- SPEs.