

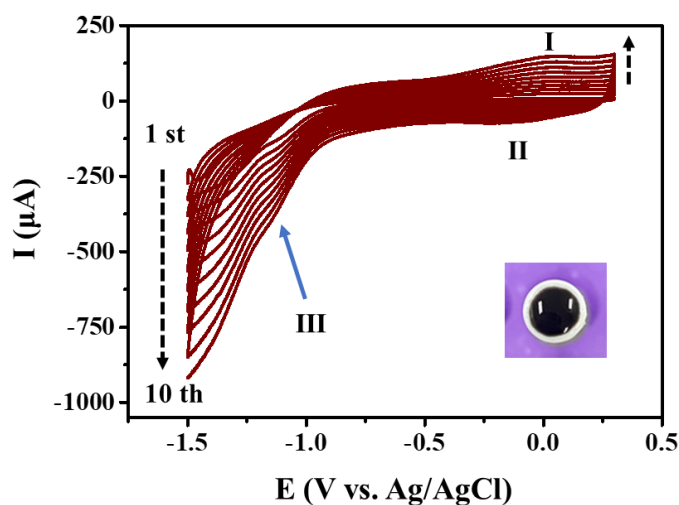


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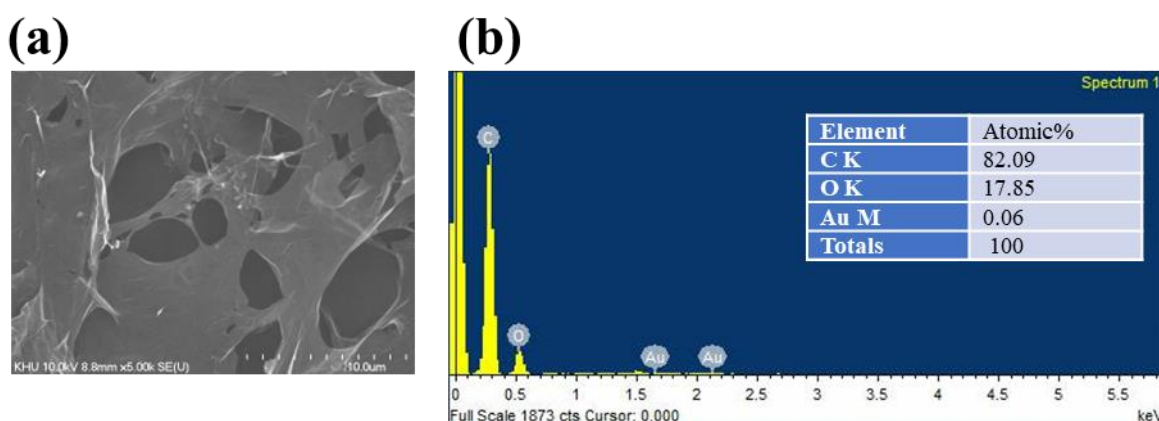
*Supplementary Materials*

# **Simultaneous Electrochemical Analysis of Uric Acid and Xanthine in Human Saliva and Serum Samples Using a 3D Reduced Graphene Oxide Nanocomposite-Modified Electrode**

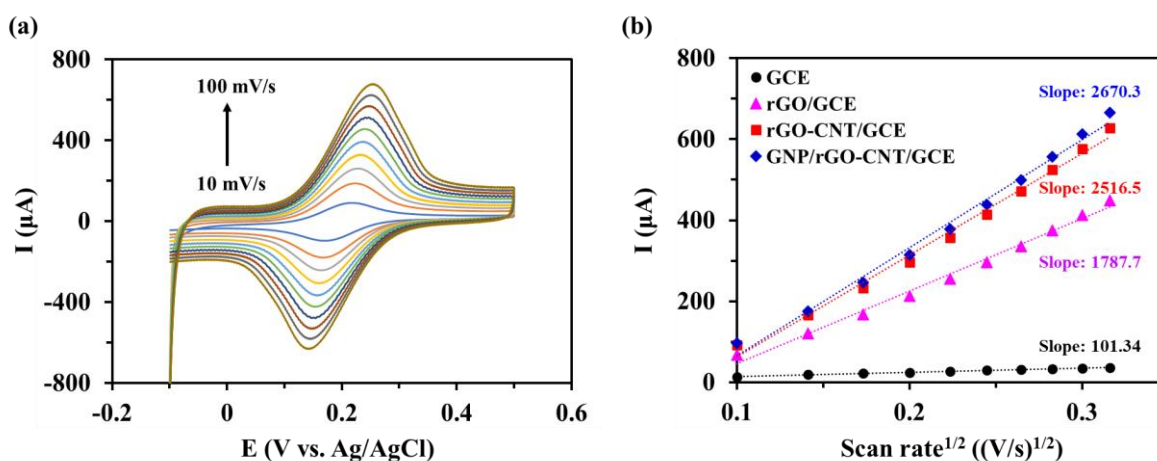
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**Figure S1.** Cyclic voltammetry curves of one-step electrochemical reduction with co-deposition of graphene oxide (GO), carbon nanotube (CNT), and  $\text{HAuCl}_4 \cdot 2\text{H}_2\text{O}$  mixtures in 0.067 M phosphate buffer (pH 7.4) at a potential range from +0.3 to -1.5 V for 10 cycles at 50 mV/s. Inset shows the photographic image of GNP/rGO-CNT/GCE.

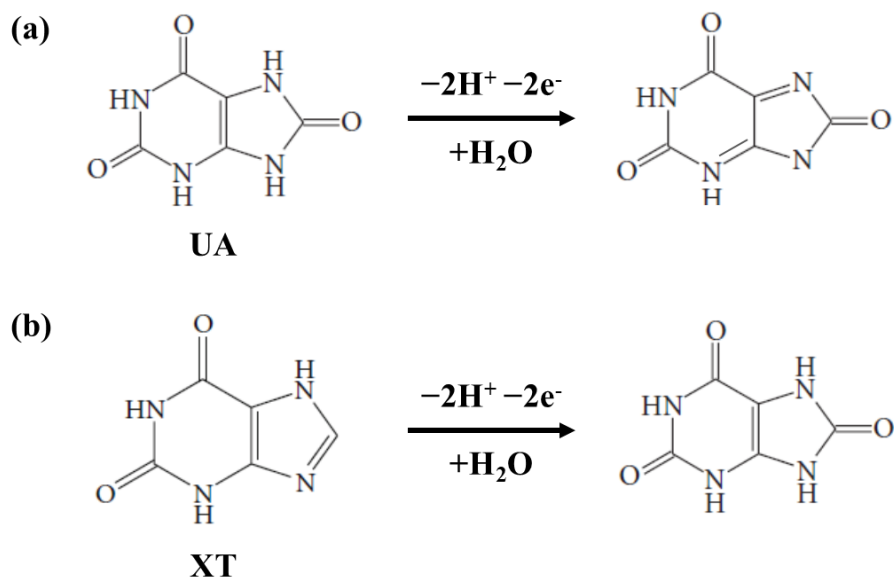


**Figure S2.** (a) SEM image and (b) EDX spectrum of GNP/rGO-CNT/GCE.

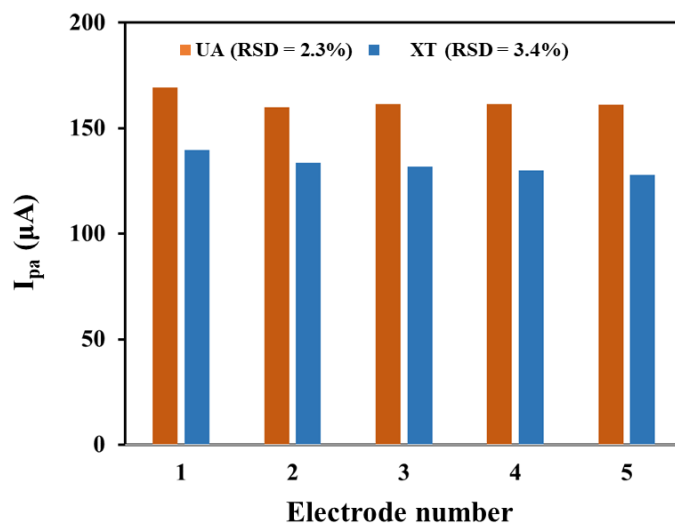


**Figure S3.** (a) Cyclic voltammetry curves of GNP/rGO-CNT/GCE at different scan rates (10–100 mV/s) in 0.1M KCl containing 2 mM  $\text{Fe}(\text{CN})_6^{3-/4-}$ . (b) The corresponding plot of anodic peak current ( $I_{pa}$ ) versus square root of scan rate for bare GCE, rGO/GCE, rGO-CNT/GCE, and GNP/rGO-

CNT/GCE. Effective surface area for each electrode was calculated using the Randles–Sevcik equation [ $I_p = (2.69 \times 10^5) n^{3/2} A D^{1/2} C v^{1/2}$ ], where  $I_p$  is the peak current ( $\mu\text{A}$ ),  $n$  is the number of electrons in the reaction ( $n=1$ ),  $A$  is the effective surface area of electrode ( $\text{cm}^2$ ),  $D$  is the diffusion coefficient of the redox probe in solution ( $7.6 \times 10^{-6} \text{ cm}^2 \text{ s}^{-1}$ ),  $C$  is the concentration of the redox probe ( $2 \text{ mmol/L}$ ), and  $v$  is the scan rate ( $\text{V/s}$ ).



**Figure S4.** The proposed mechanism for the electrochemical oxidation of (a) uric acid (UA) and (b) xanthine (XT).



**Figure S5.** Square wave voltammetry responses of five GNP/rGO-CNT/GCE electrodes on different fabrication dates to  $25 \mu\text{M}$  uric acid (UA) and  $25 \mu\text{M}$  xanthine (XT).