

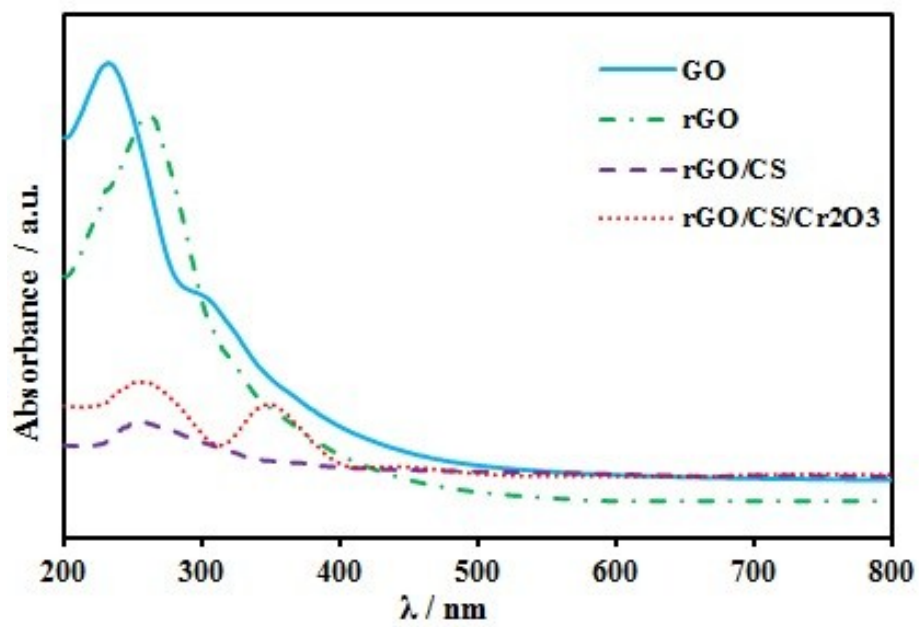
**Ternary nanocomposite based reduced graphene oxide/Chitosan/Cr<sub>2</sub>O<sub>3</sub> for simultaneous determination of Dopamine, Uric acid, Xanthine, and Hypoxanthine in fish meat**

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**Fig. S1.** UV-vis spectra of GO, rGO, rGO/CS, and rGO/CS/Cr<sub>2</sub>O<sub>3</sub>.

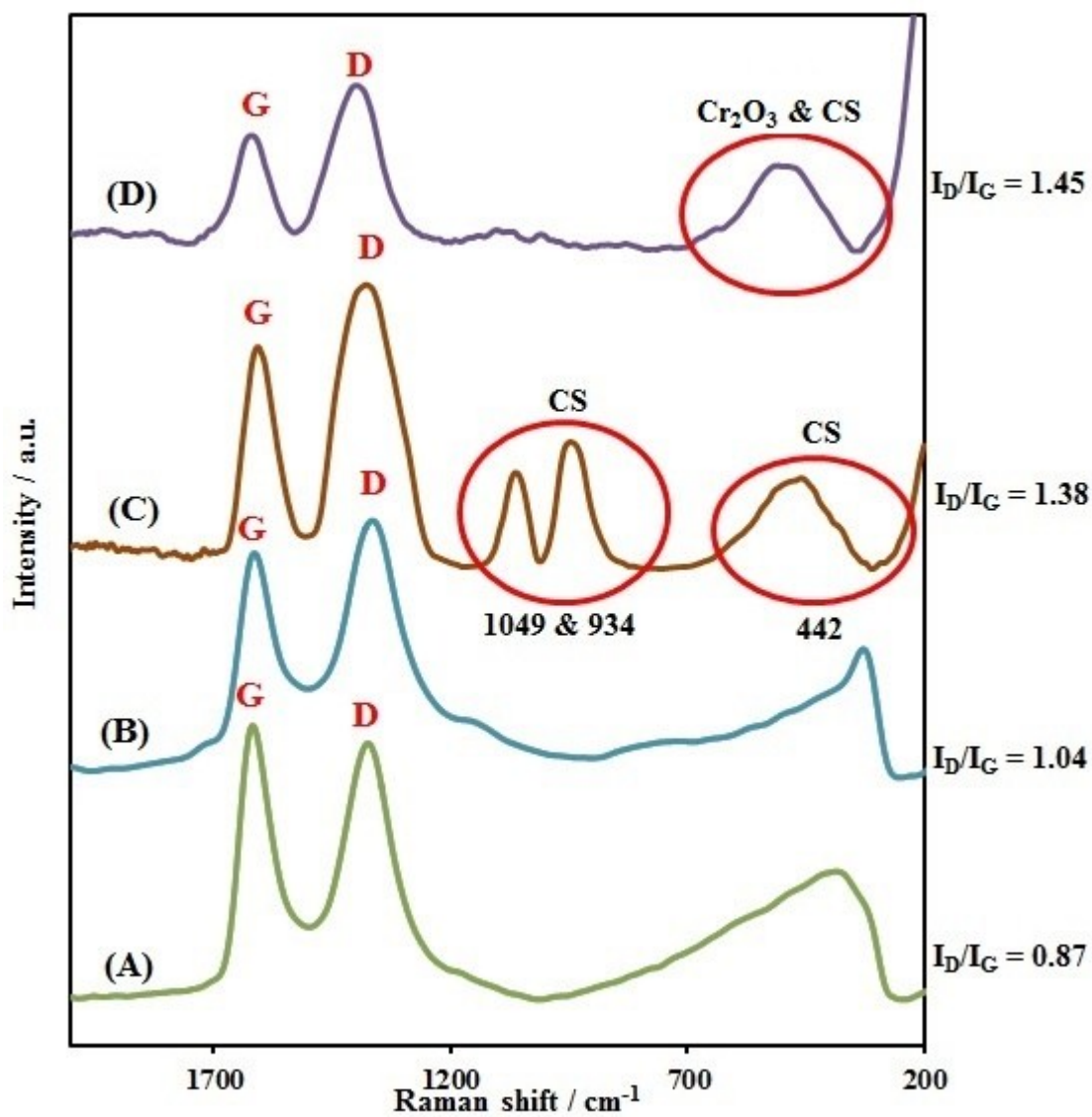
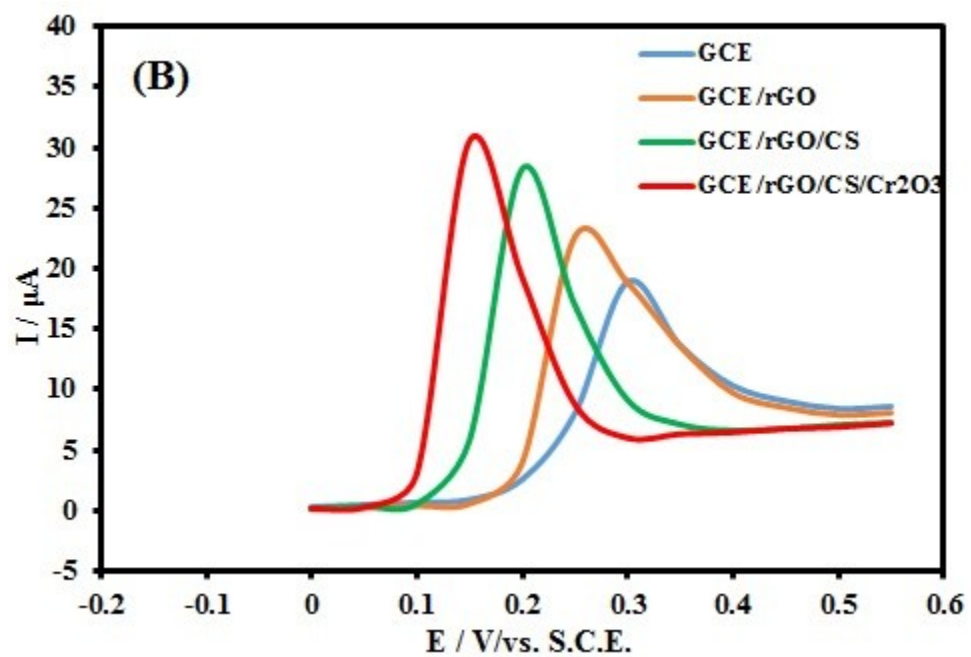
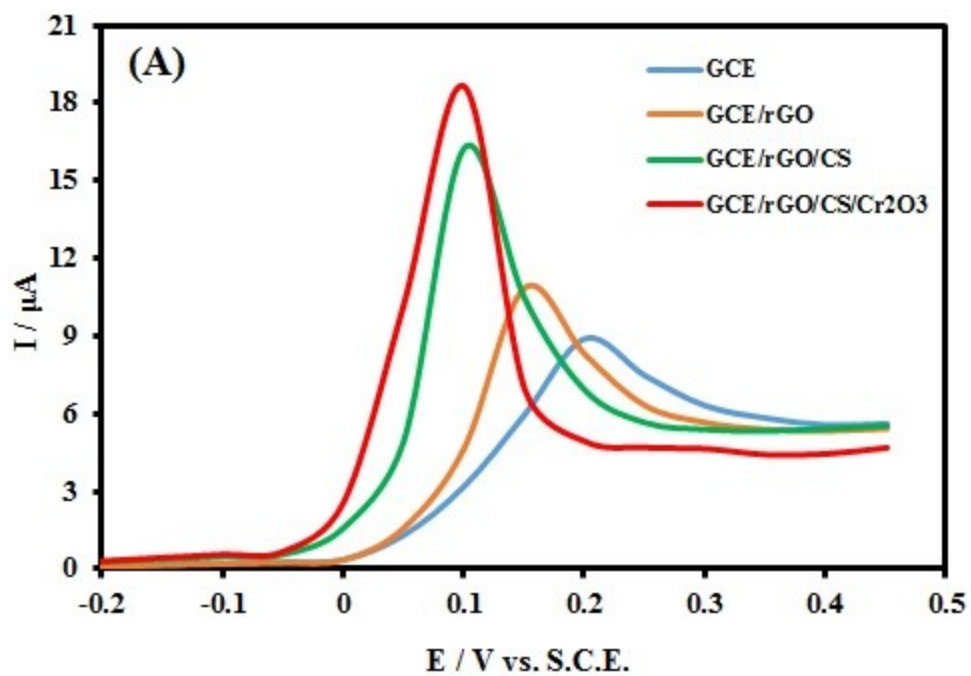
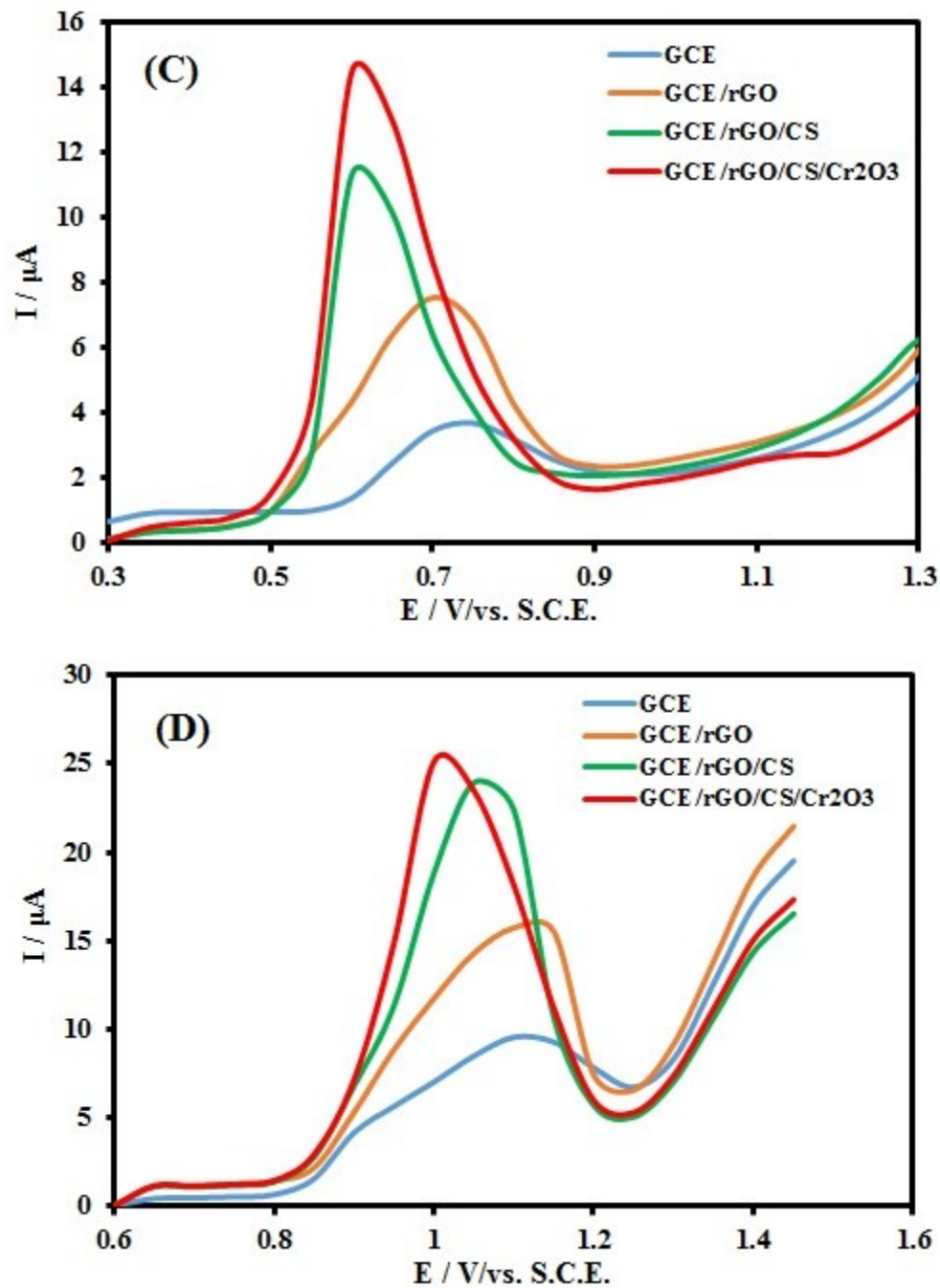
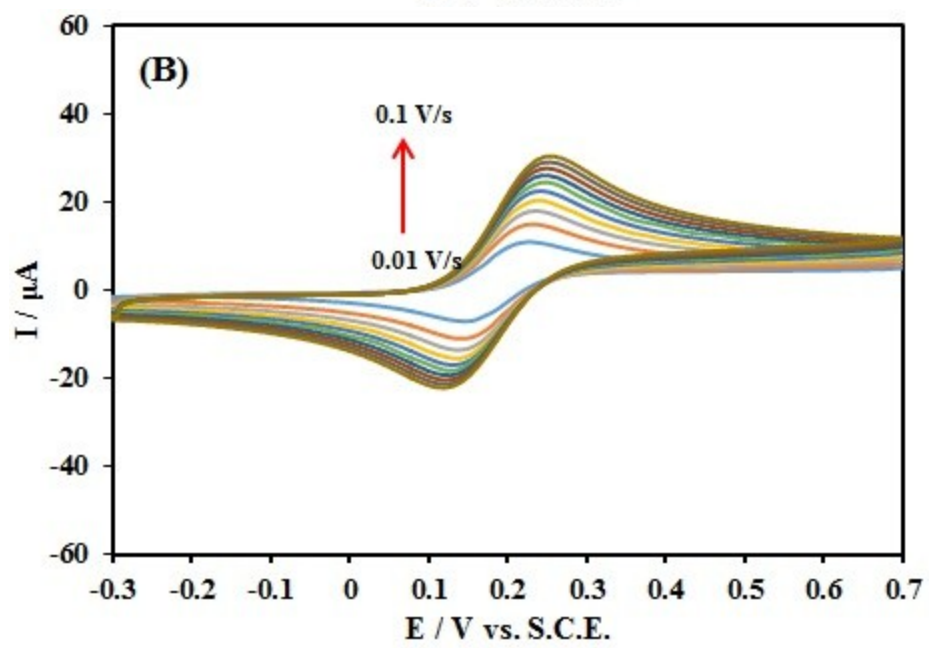
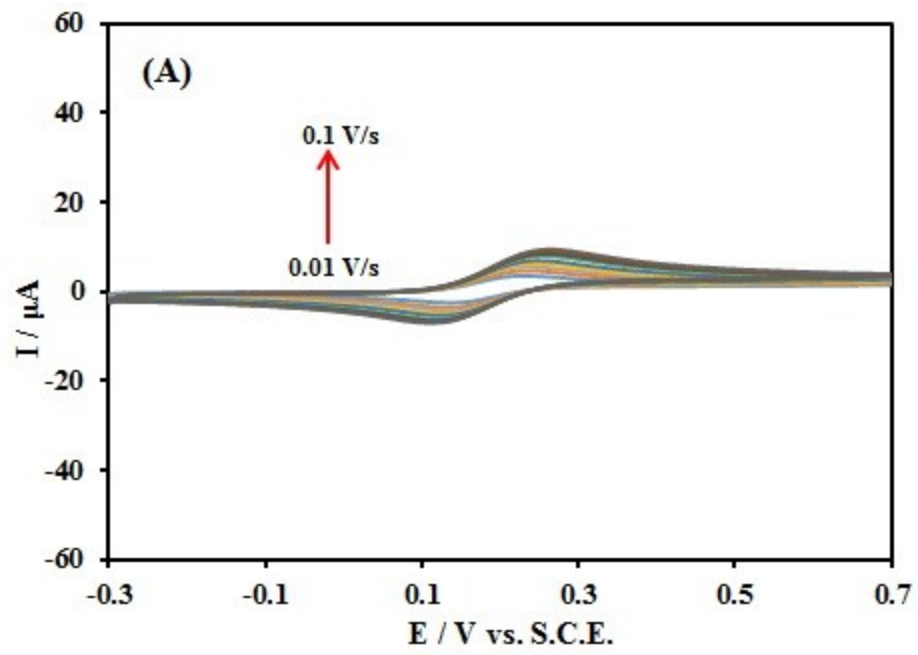


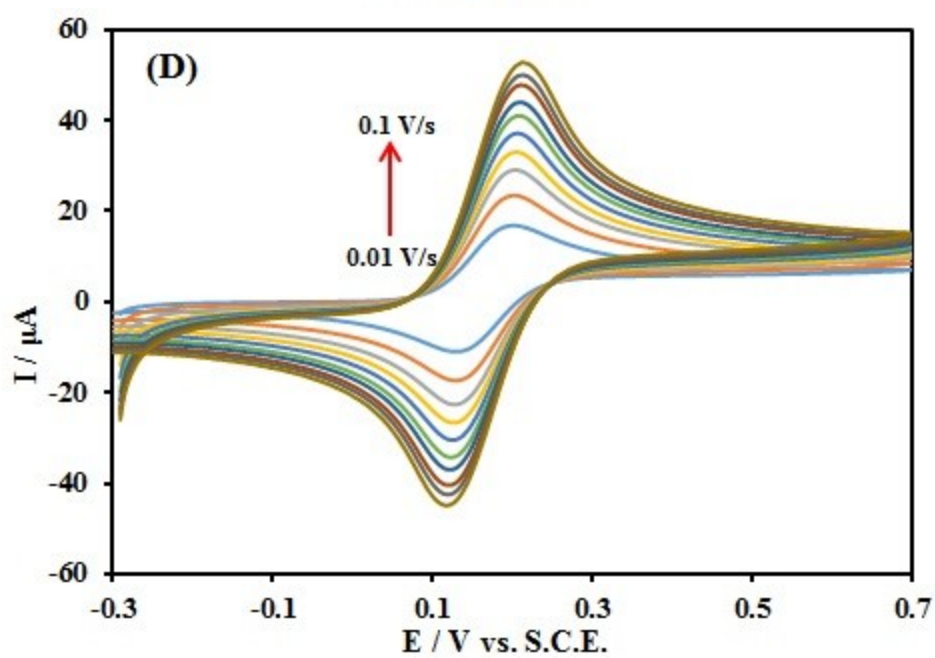
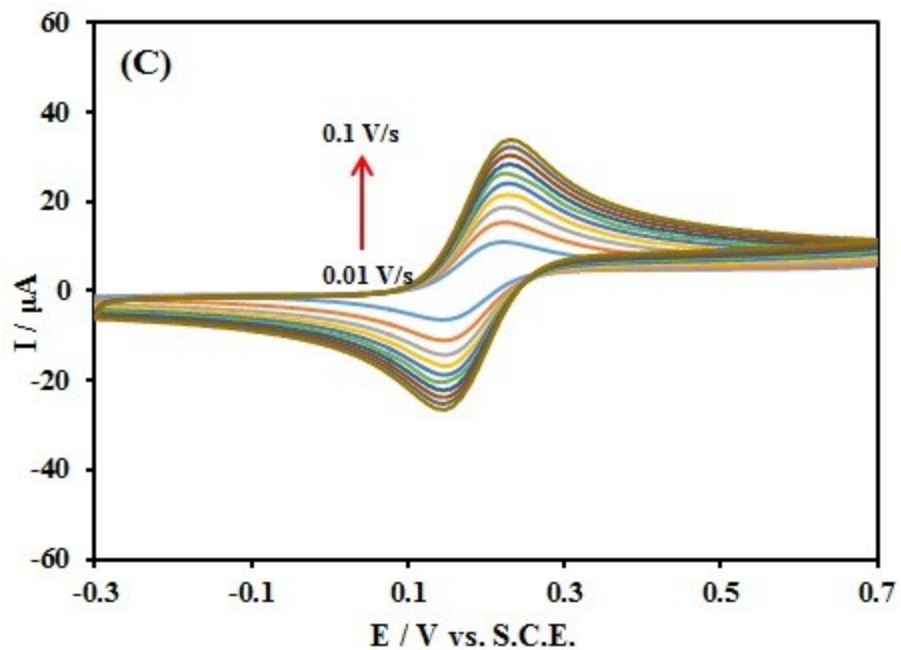
Fig. S2. Raman spectra of GO (A), rGO (B), rGO/CS (C), rGO/CS/Cr<sub>2</sub>O<sub>3</sub> (D).

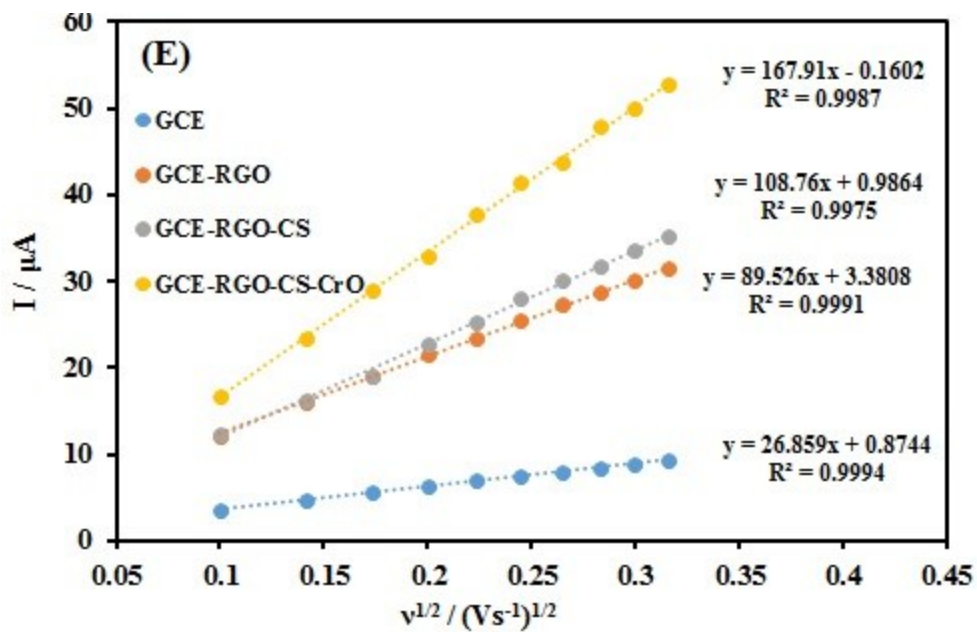




**Fig. S3** Differential pulse voltammograms of the 200 μM DA (A), 500 μM UA (B), 500 μM XN (C), and 500 μM HXN (D) in PBS solution (pH=7, 0.1 M) at GCE, GCE/rGO, GCE/rGO/CS, GCE/rGO/CS/Cr<sub>2</sub>O<sub>3</sub>.

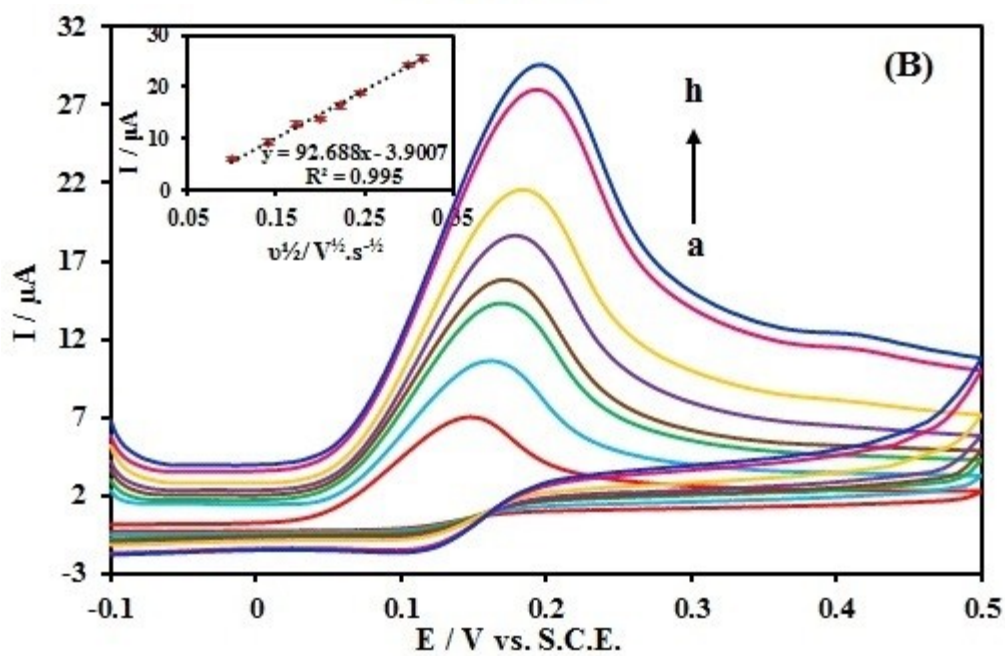
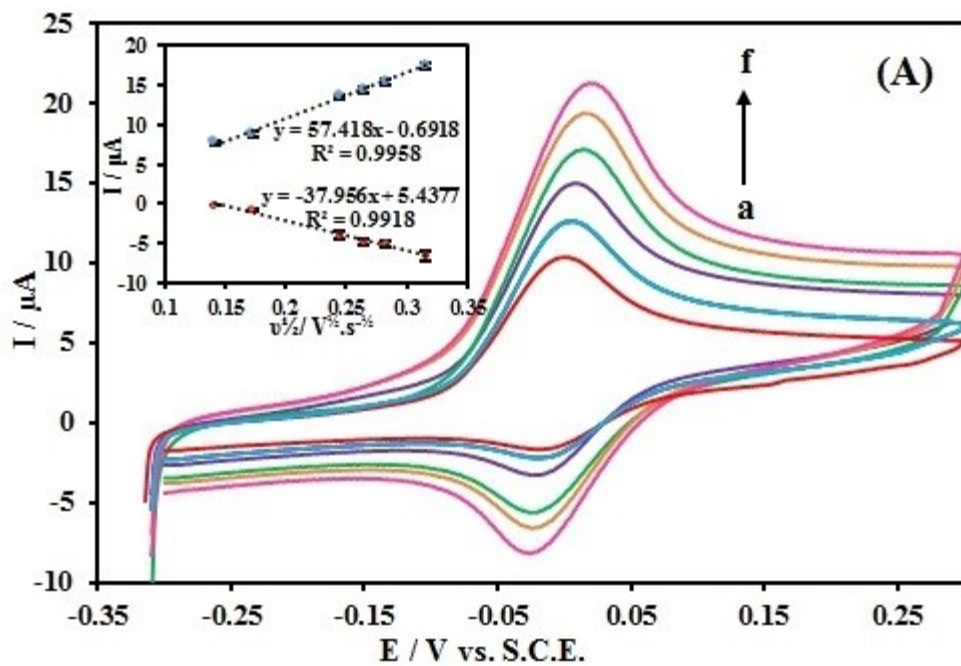


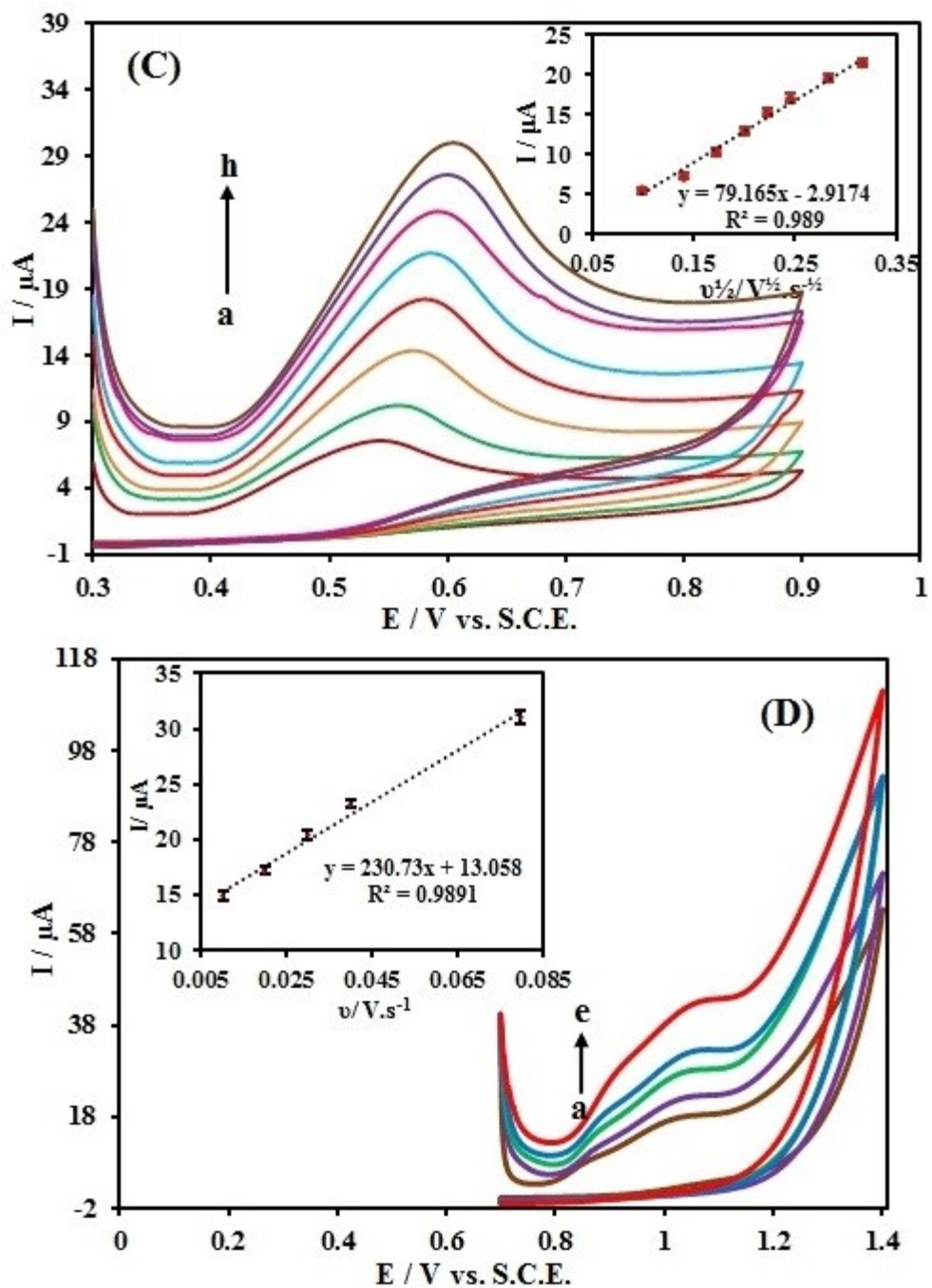




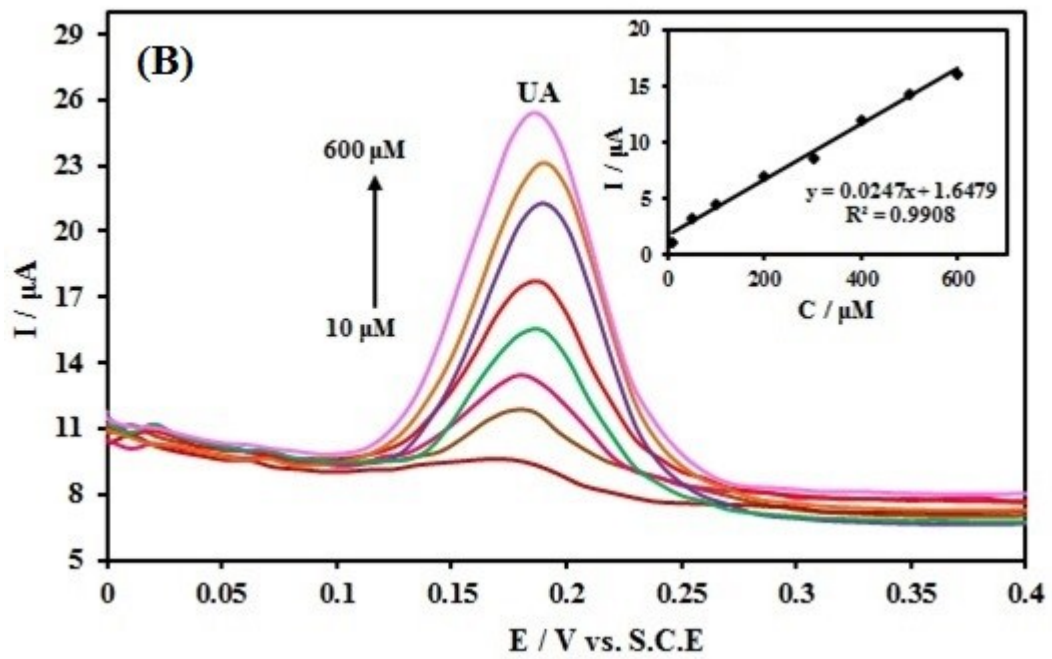
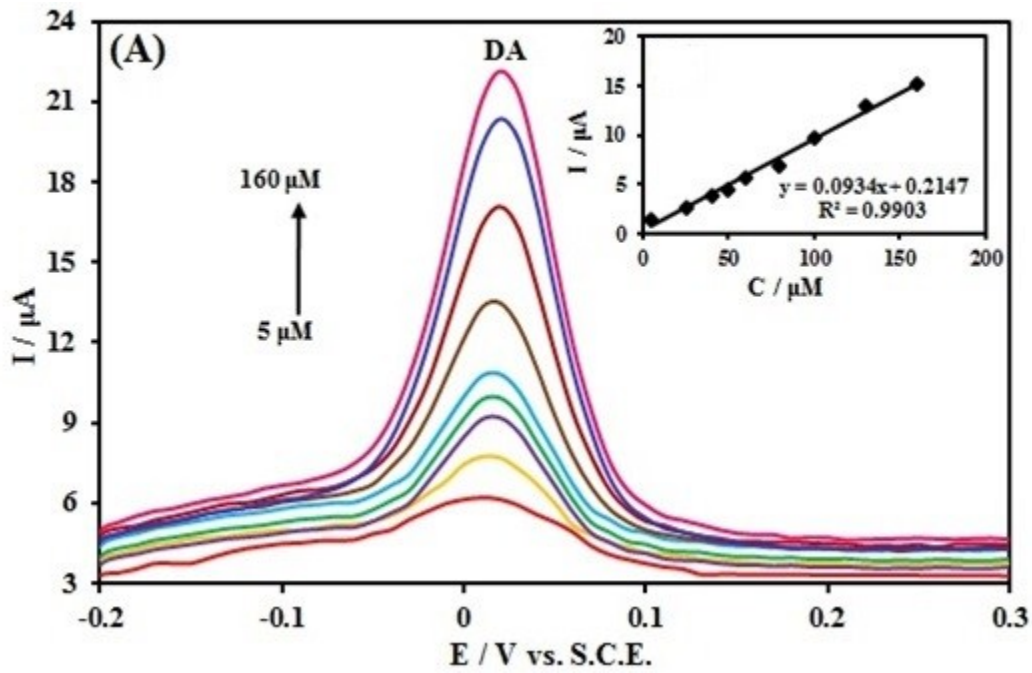
**Fig. S4.** Cyclic voltammograms obtained using GCE (A), GCE/rGO (B), GCE/rGO/CS (C), GCE/rGO/CS/Cr<sub>2</sub>O<sub>3</sub> (D) in 0.1 M KCl solution containing 5.0 mM Fe(CN)<sub>6</sub><sup>3-/4-</sup> by using different potential scan rates. The plots of  $I_p$  vs.  $v^{1/2}$  (E).

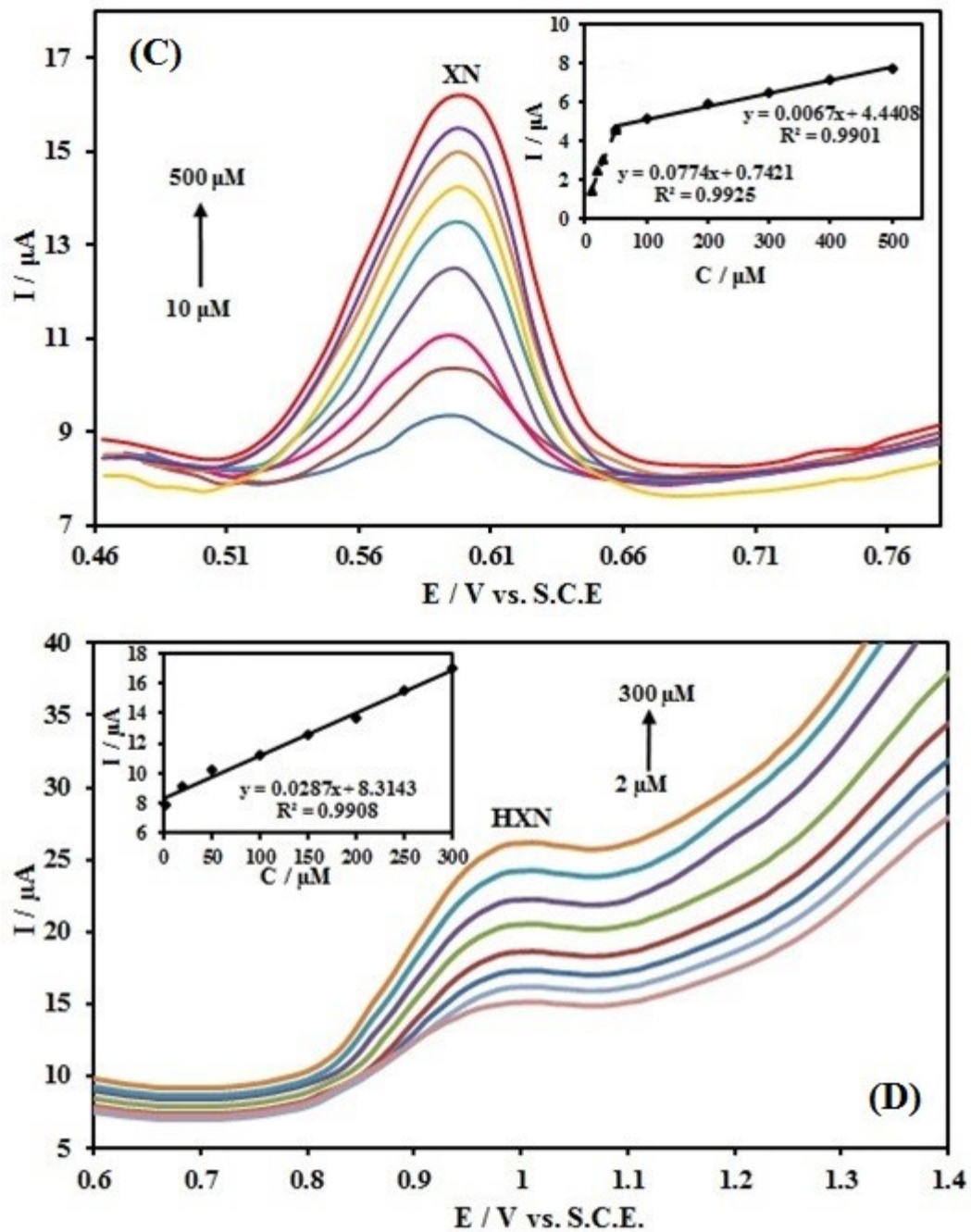




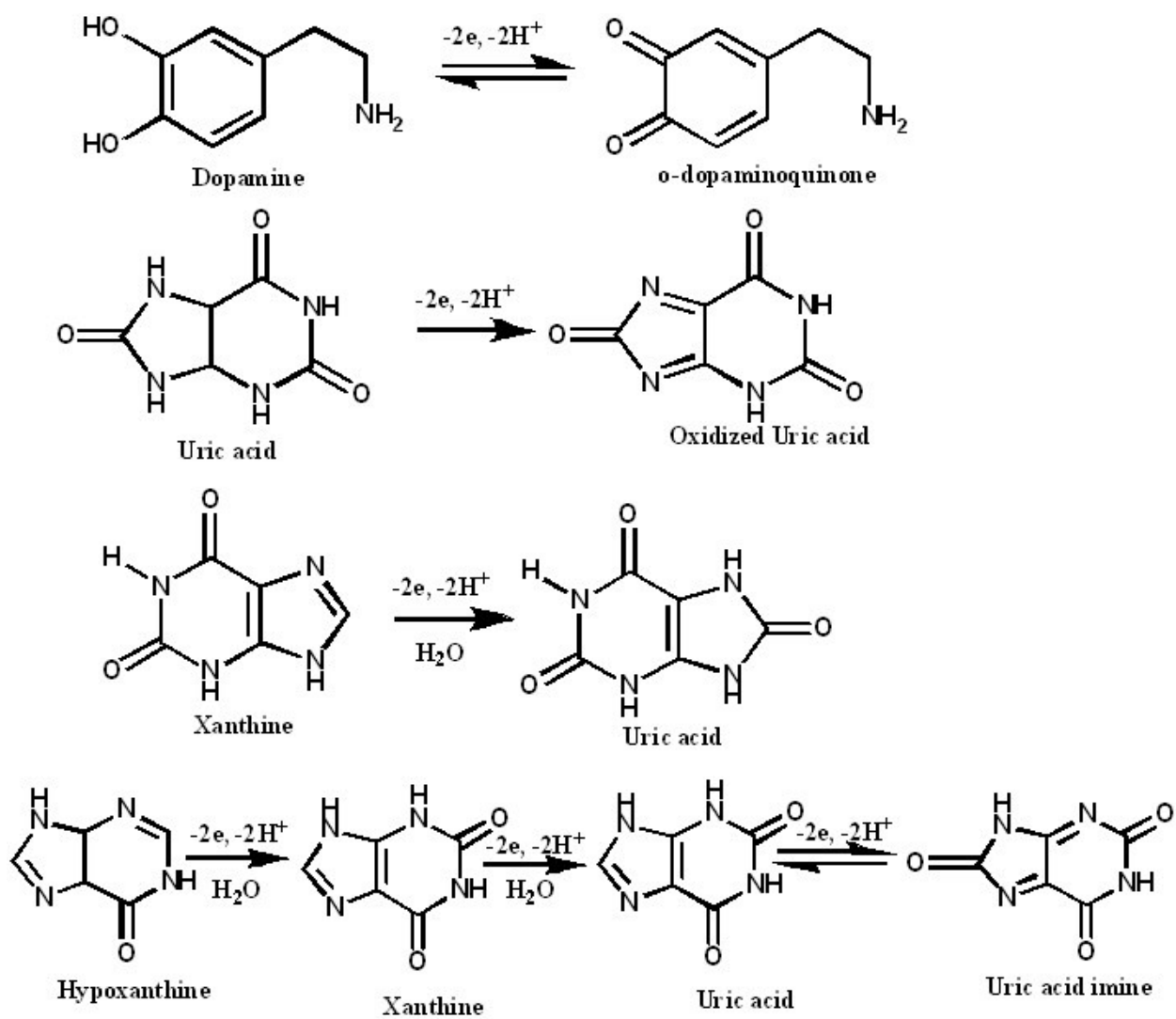


**Fig. S5.** Cyclic voltammograms of the 500  $\mu\text{M}$  DA (A), 1.0 mM UA (B), 500  $\mu\text{M}$  XN (C), and 500  $\mu\text{M}$  HXN (D) at the GCE/rGO/CS/Cr<sub>2</sub>O<sub>3</sub> in 0.1 M PBS (pH 7.0) at different scan rates, a to h (0.01 to 0.9 V s<sup>-1</sup>). Inset: a plot of  $I_p$  vs.  $v^{1/2}$  (in (A, B, and C)) and  $I_p$  vs.  $v$  (in (D)). Error bars indicate the standard deviations of three repeated measurements.





**Fig. S6.** DPVs of different concentrations of: (A) DA (5.0–160.0  $\mu\text{M}$ ), (B) UA (10.0–600.0  $\mu\text{M}$ ), (C) XN (10.0–500.0  $\mu\text{M}$ ), and (D) HXN (2.0–300.0  $\mu\text{M}$ ) at the GCE/rGO/CS/CrO<sub>2</sub> in PBS (pH=7, 0.1M). DPV experimental conditions: pulse amplitude of 0.05 V, pulse time of 0.1 s, sweep rate of 0.1 V s<sup>-1</sup>.



**Scheme S1.** Electrochemical oxidation of dopamine, uric acid, xanthine, and hypoxanthine.

**Table S1:** Interferences of some foreign substances for DA (100  $\mu\text{M}$ ), UA (400  $\mu\text{M}$ ), XN (300  $\mu\text{M}$ ), and HXN (200  $\mu\text{M}$ ).

Interference ( $\mu\text{M}$ )	Ip ( $\mu\text{A}$ )				%E ( $\pm$ )			
	DA	UA	XN	HXN	DA	UA	XN	HXN
<b>NaCl (1800)</b>	9.11	13.33	5.23	14.47	1.7	3.74	1.95	2.48
<b>KCl (1800)</b>	8.84	12.40	4.89	14.77	4.64	3.5	4.68	4.6
<b>CaCl<sub>2</sub> (1600)</b>	8.96	12.50	4.93	13.61	3.34	2.72	3.9	3.61
<b>MgSO<sub>4</sub> (1600)</b>	9.02	12.31	5.15	14.59	2.7	4.2	0.39	3.32
<b>Zn(NO<sub>3</sub>)<sub>2</sub> (1600)</b>	9.08	12.44	4.93	14.68	2.05	3.19	3.9	3.97
<b>Glucose (800)</b>	9.69	12.57	5.12	14.46	4.53	2.18	0.19	2.41
<b>Citric acid (800)</b>	9.32	13.07	5.25	14.56	0.54	1.71	2.34	3.12
<b>Ascorbic acid (2000)</b>	9.59	13.08	5.04	14.28	3.45	1.79	1.75	1.13
	9.27	12.85	5.13	14.12				