

A Highly Sensitive Electrochemical Sensor for Capsaicinoids and Its Application in the Identification of Illegal Cooking Oil

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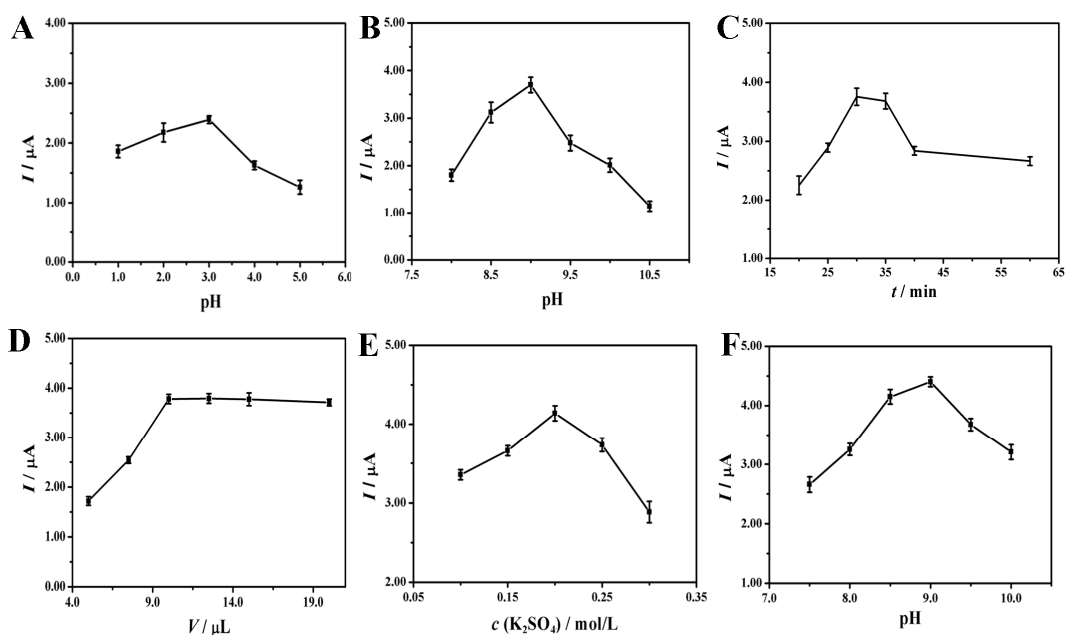


Figure S1. Effects of different experimental conditions on the oxidation currents of capsaicin (n = 5). (A) pH value of the diazotization reaction. (B) pH value of the coupling reaction. (C) The time of the coupling reaction. (D) The volume of AuNPs/Fe₃O₄ nanocomposites. (E) The concentrations of K₂SO₄ solution. (F) pH value of the supporting electrolyte.

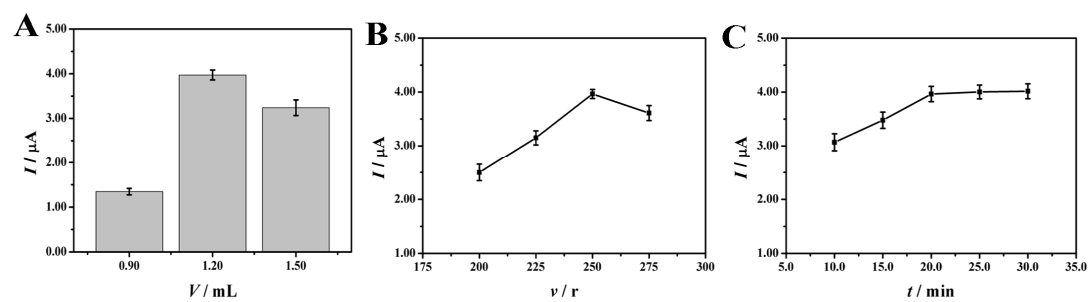


Figure S2. Effects of different experimental conditions for sample pretreatment of ICO on the oxidation currents of capsaicin ($n = 5$). (A) The volume of NaOH solution. (B) The speed of the oscillator. (C) The time of the oscillator.

Table S1. The precisions of capsaicinoids in ICO detected by the electrochemical method ($n = 5$).

Added concentration (ng/mL)	Intra-day		Inter-day	
	Measured concentration	Precision	Measured concentration	Precision
	(Mean \pm SD, ng/mL)	(RSD, %)	(Mean \pm SD, ng/mL)	(RSD, %)
0.30	0.34 \pm 0.02	5.7	0.34 \pm 0.03	7.7
3.00	3.12 \pm 0.15	4.9	3.12 \pm 0.20	6.4
8.00	8.13 \pm 0.42	5.1	8.00 \pm 0.58	7.3

Table S2. The recoveries of capsaicinoids in ICO detected by the electrochemical method ($n = 5$).

Added concentration (ng/mL)	Sample concentration (ng/mL)	Measured concentration (Mean \pm SD, ng/mL)	Precision (RSD, %)	Recovery (%)
0.30	1.09	1.37 \pm 0.09	6.7	103.9
3.00	1.09	3.98 \pm 0.30	7.7	96.4
8.00	1.09	9.46 \pm 0.69	7.3	92.8

Table S3. The effect of interferences on the determination of capsaicinoids in ICO ($n = 5$)

Added cholesterol ($\mu\text{g/mL}$)	Capsaicin (ng/mL)		
	Measured	$X_T - X_C$	1.96S
0	0.62 \pm 0.05		0.09
0.05	0.50 \pm 0.03	-0.02	<i>N</i>
0.50	0.48 \pm 0.04	-0.04	<i>N</i>
5.00	0.45 \pm 0.04	-0.70	<i>N</i>
6.00	0.41 \pm 0.04	-0.11	<i>I</i>