

Supplementary Information

**Coupling liquid chromatography and inductively coupled plasma-
mass spectrometry with ultrasonic nebulization for chromium
speciation in rice**

Bo-Hao Chen,^a Ru-Ying Ruan^a and Shiuh-Jen Jiang,^{a,b,*}

^a *Department of Chemistry, National Sun Yat-sen University, Kaohsiung 80424, Taiwan*

^b *Department of Medical Laboratory Science and Biotechnology, Kaohsiung Medical
University, Kaohsiung 80708, Taiwan*

* Corresponding author. Fax: 886-7-5253908; E-mail: sjjiang@faculty.nsysu.edu.tw

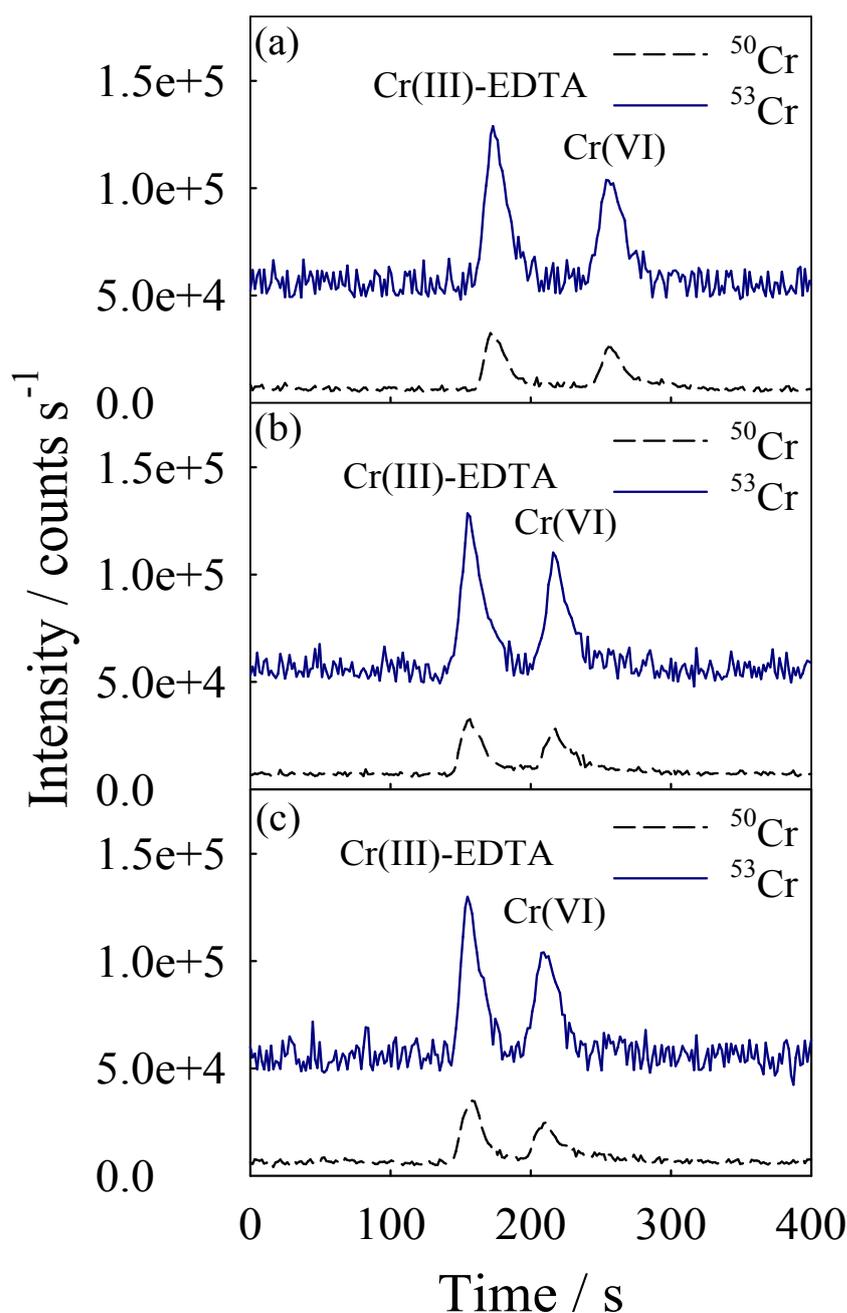


Fig. S1 Effect of EDTA concentration on chromatogram: (a) 0.1 mmol L⁻¹ (b) 0.15 mmol L⁻¹ and (c) 0.2 mmol L⁻¹. Mobile phase contained 0,5 mmol L⁻¹ TBAP and various concentrations of EDTA in 3% (v/v) methanol (pH 6.9). Each chromium species was present at 50 ng Cr mL⁻¹. Mobile phase flow rate was 1.0 mL min⁻¹. No reaction gas was used. Carrier gas flow rate of USN was 1.3 L min⁻¹; desolvation tube temperature was 120 °C; condenser temperature was -2 °C.

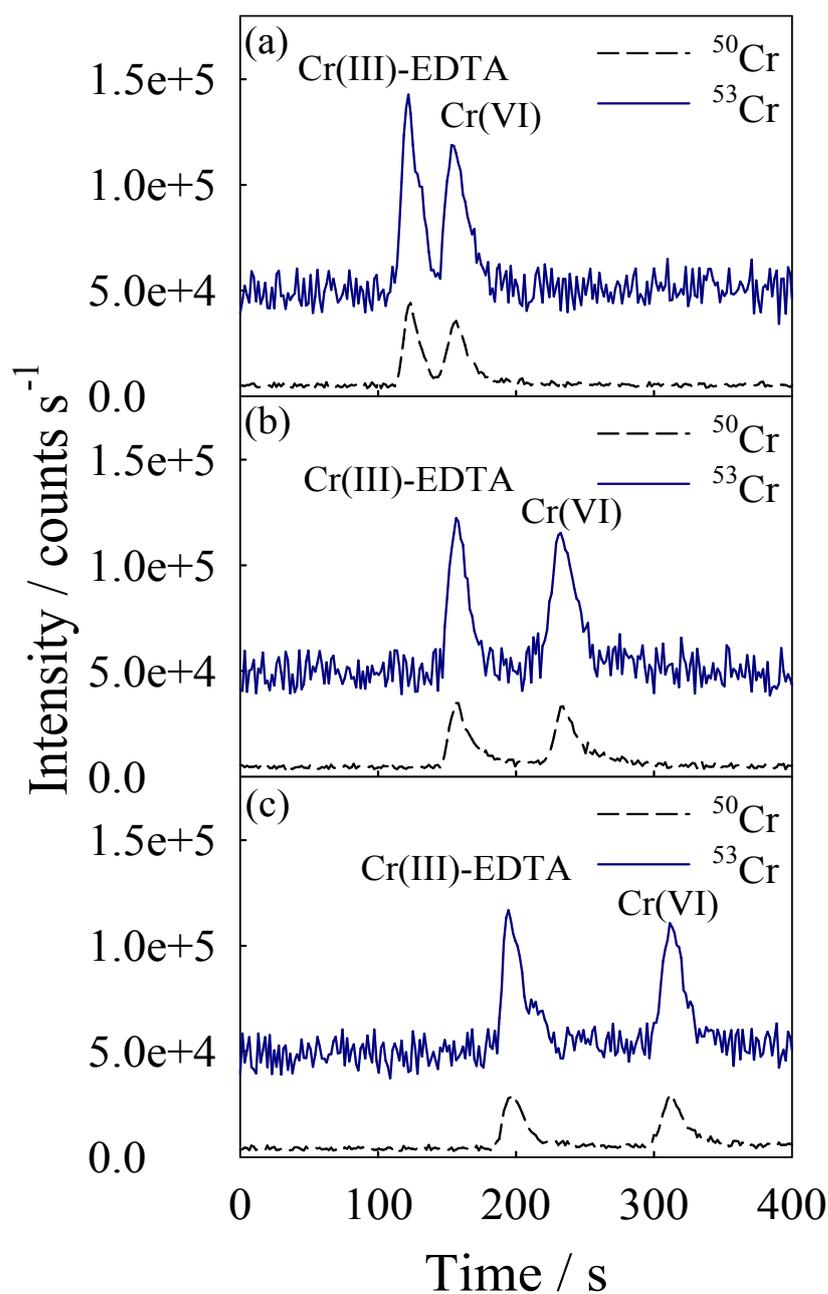


Fig. S2 Effect of TBAP concentration in mobile phase on separation: (a) 0.25 mmol L⁻¹ (b) 0.5 mmol L⁻¹ and (c) 0.75 mmol L⁻¹. Mobile phase contained 0.1 mmol L⁻¹ EDTA and various concentrations of TBAP in 3% (v/v) methanol (pH 6.9). Each chromium species was present at 50 ng Cr mL⁻¹. Mobile phase flow rate was 1.0 mL min⁻¹. No reaction gas was used.

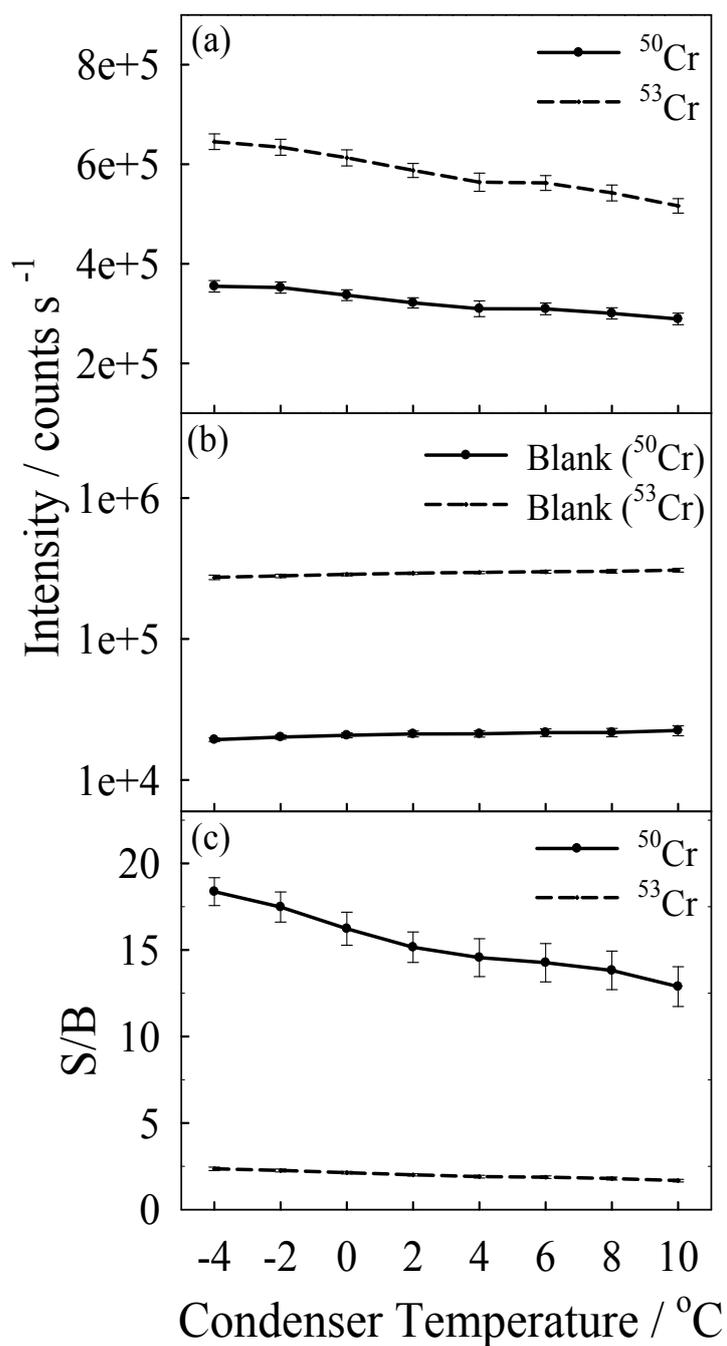


Fig. S3 Effect of condenser temperature on Cr ion signal and the blank signal. The desolvation tube temperature was set at 120 °C and carrier gas flow rate was set at 1.1 L min⁻¹.

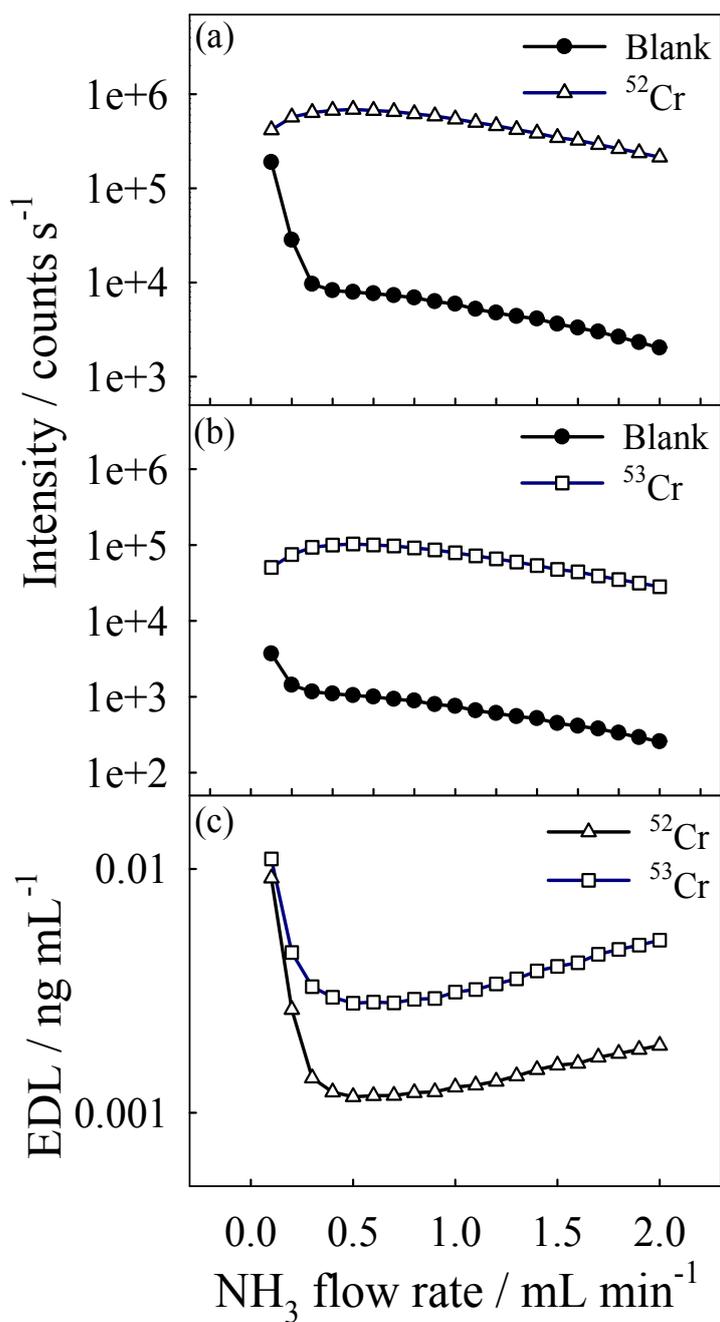


Fig. S4 Effect of NH_3 reaction gas flow rate on the ion signals of $^{52}\text{Cr}^+$, $^{53}\text{Cr}^+$, the blank and estimated detection limit (EDL). The concentration of Cr was 3 ng mL^{-1} . The mobile phase solution spiked with 300 ng mL^{-1} Cl was treated as blank. Rejection parameter $q = 0.55$, $a = 0.0$.

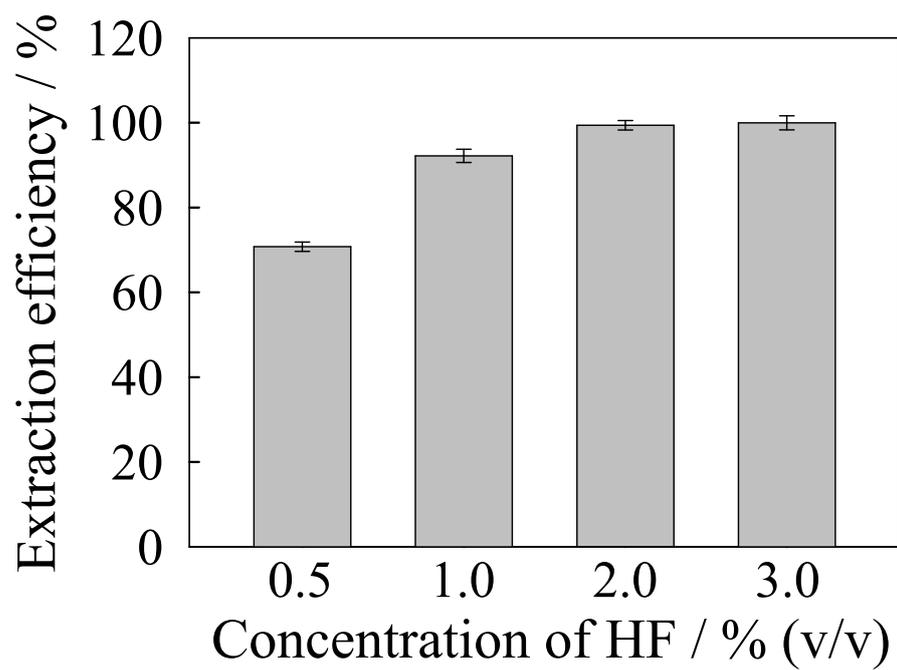


Fig. S5 Effect of HF concentration on extraction efficiency. The extraction solution contained 2 mmol L⁻¹ EDTA and various concentration of HF.

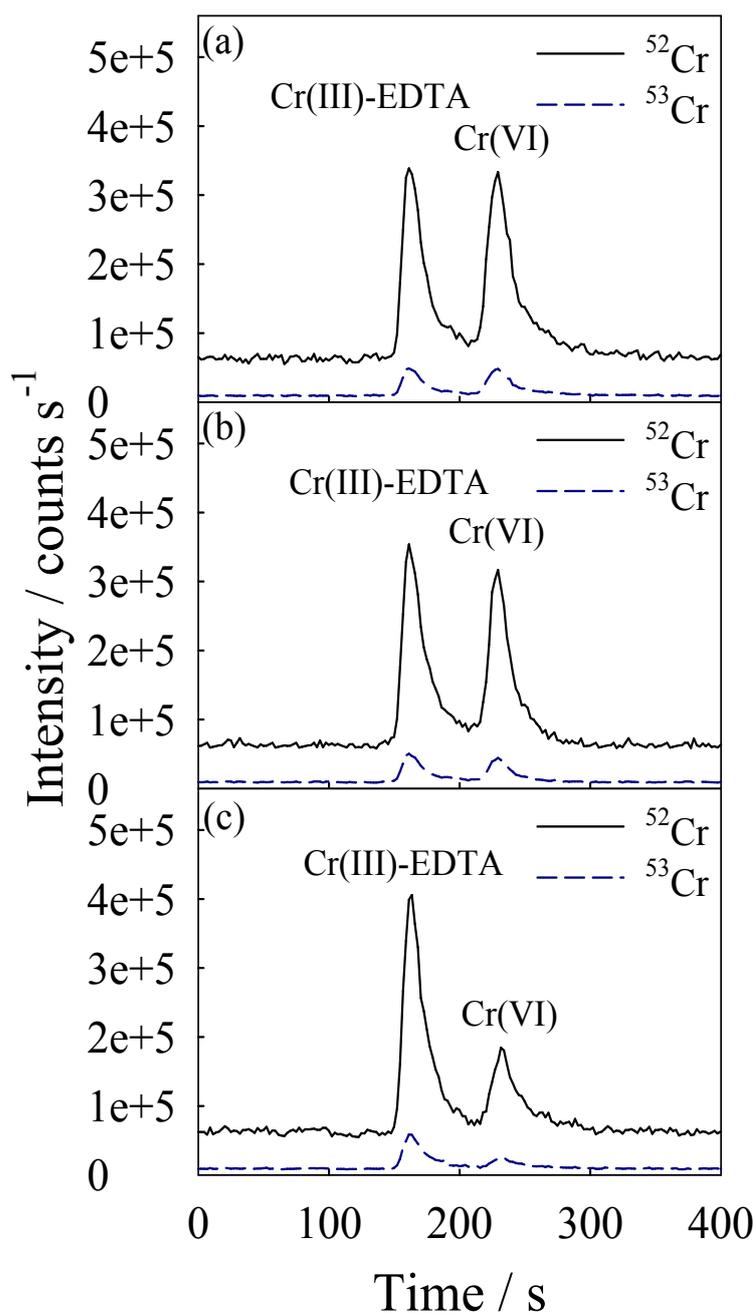


Fig. S6 Effect of HF concentration in extracting solution on the stability of Cr(VI). (a) 0.5% (v/v), (b) 1% (v/v), and (c) 2% (v/v).