

Supplementary Information

Simultaneous speciation of arsenic and mercury in fish by high-performance liquid chromatography inductively coupled plasma mass spectrometry

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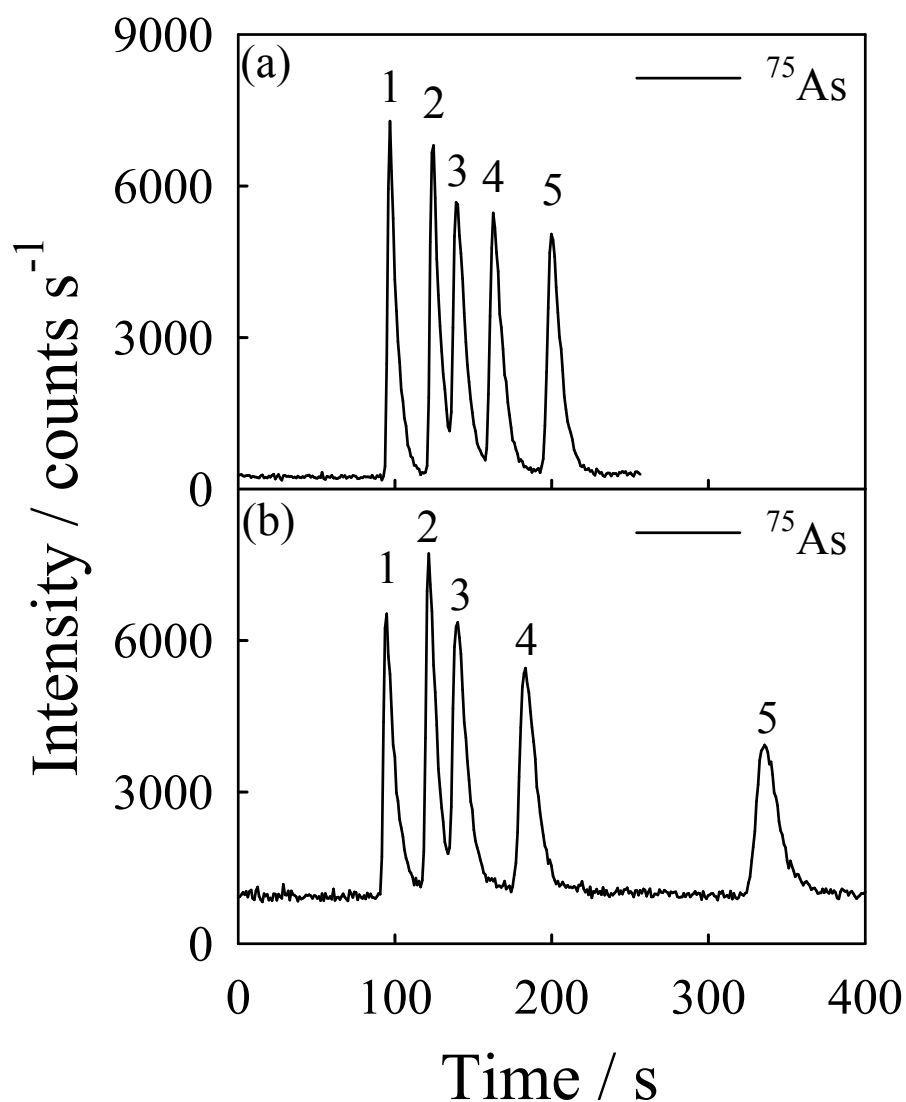


Fig. S1 Effect of the type of ion pairing reagent on chromatogram: (a) sodium 1-octanesulfonate and (b) sodium 1-decanesulfonate. Mobile phase contained 5 mmol L⁻¹ of various ion pairing reagent, 5 mmol L⁻¹ acetate buffer, 0.5% (v/v) ACN and 0.5% (v/v) IPA at pH 4.0. Mobile phase flow rate was 1.2 mL min⁻¹. Injected solution contained 5 ng mL⁻¹ of each of the As species studied. Peak assignment: 1, As(V); 2, MMA; 3, As(III); 4, DMA; 5, AsB.

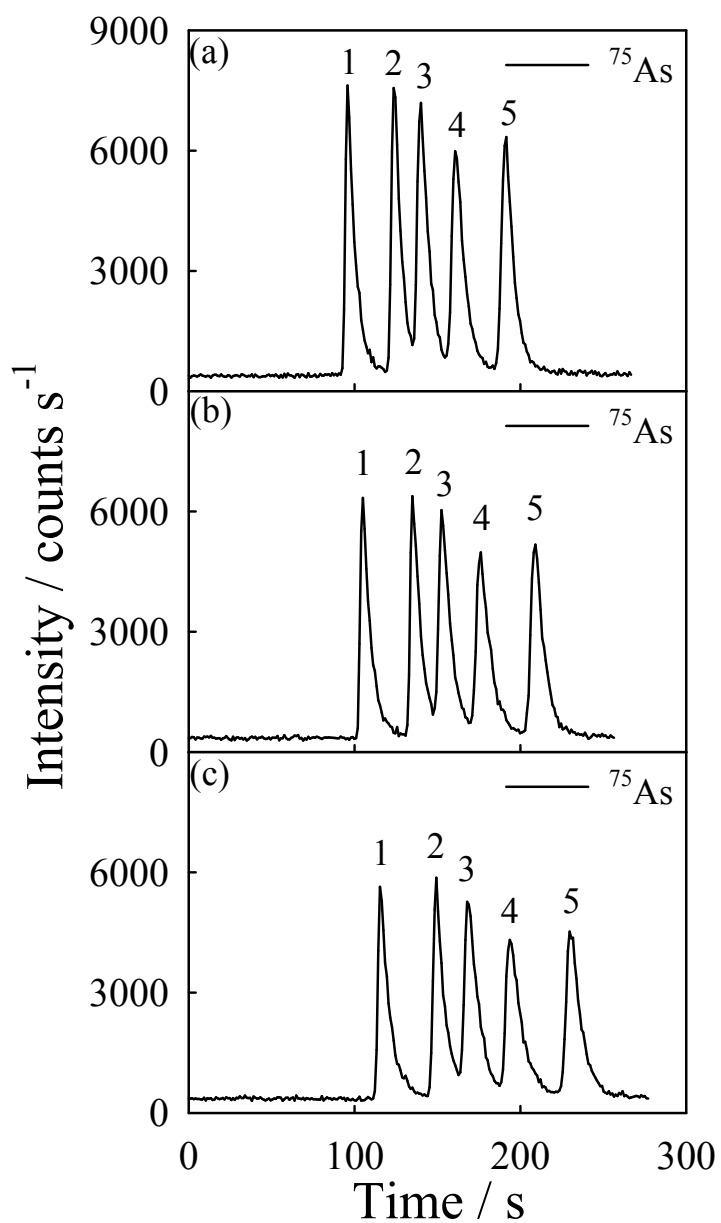


Fig. S2 Effect of mobile phase flow rate on chromatogram: (a) 1.2, (b) 1.1 and (c) 1.0 mLmin⁻¹. Mobile phase contains 5 mmol L⁻¹ acetate buffer, 5 mmol L⁻¹ sodium 1-octanesulfonate and 1% (v/v) IPA at pH 4.0. Injected solution contained 5 ng As mL⁻¹ of each of the As species studied. For peak assignment, see Fig. S1.

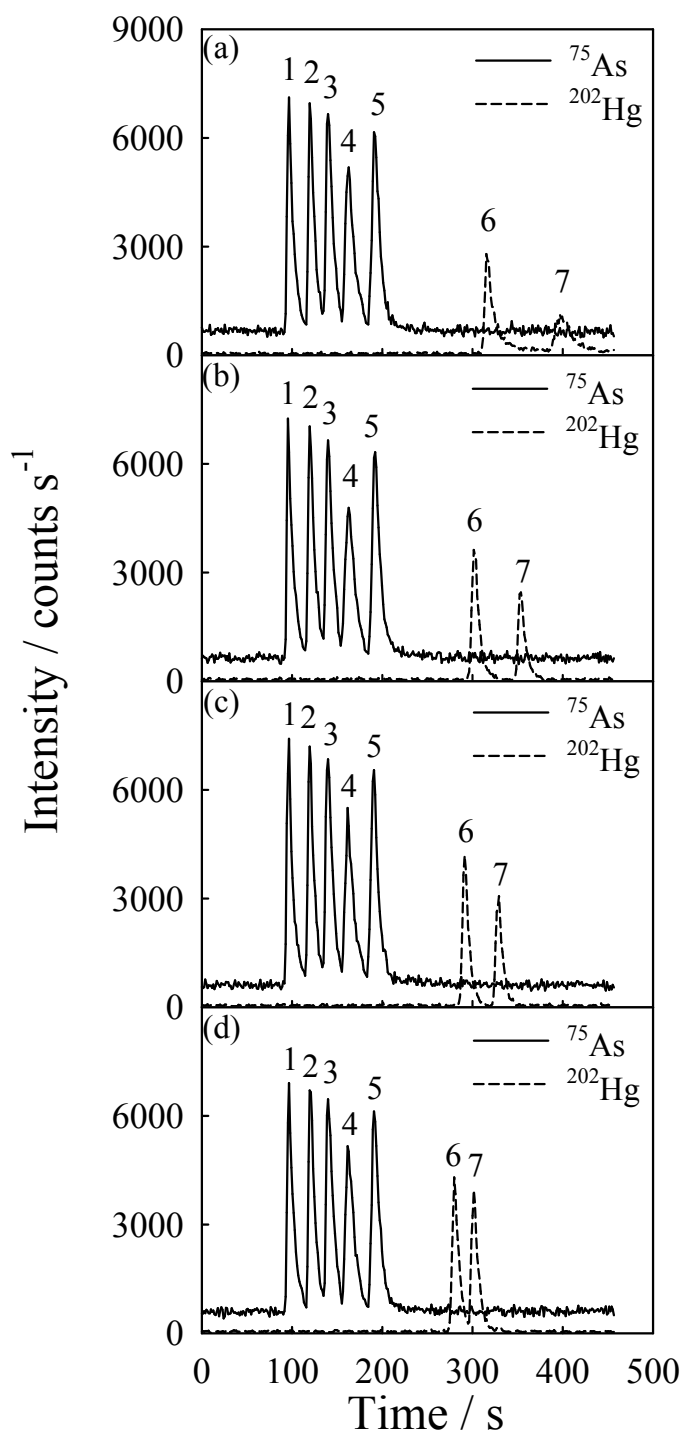


Fig. S3 Effect of the concentration of L-cysteine in mobile phase B on separation (a) 0.5, (b) 1, (c) 2 and (d) 3 mmol L⁻¹. Mobile phase A contained 5 mmol L⁻¹ sodium 1-octanesulfonate, 5 mmol L⁻¹ acetate buffer, and 1% (v/v) IPA at pH 4. Mobile phase B contained various concentration of L-cysteine in 1% (v/v) IPA (pH 4). Mobile phase flow rate was 1.2 mL min⁻¹. Injected solution contained 5 ng mL⁻¹ each of As standards and 10 ng mL⁻¹ each of Hg standards. For peak assignment, see Fig. 2.

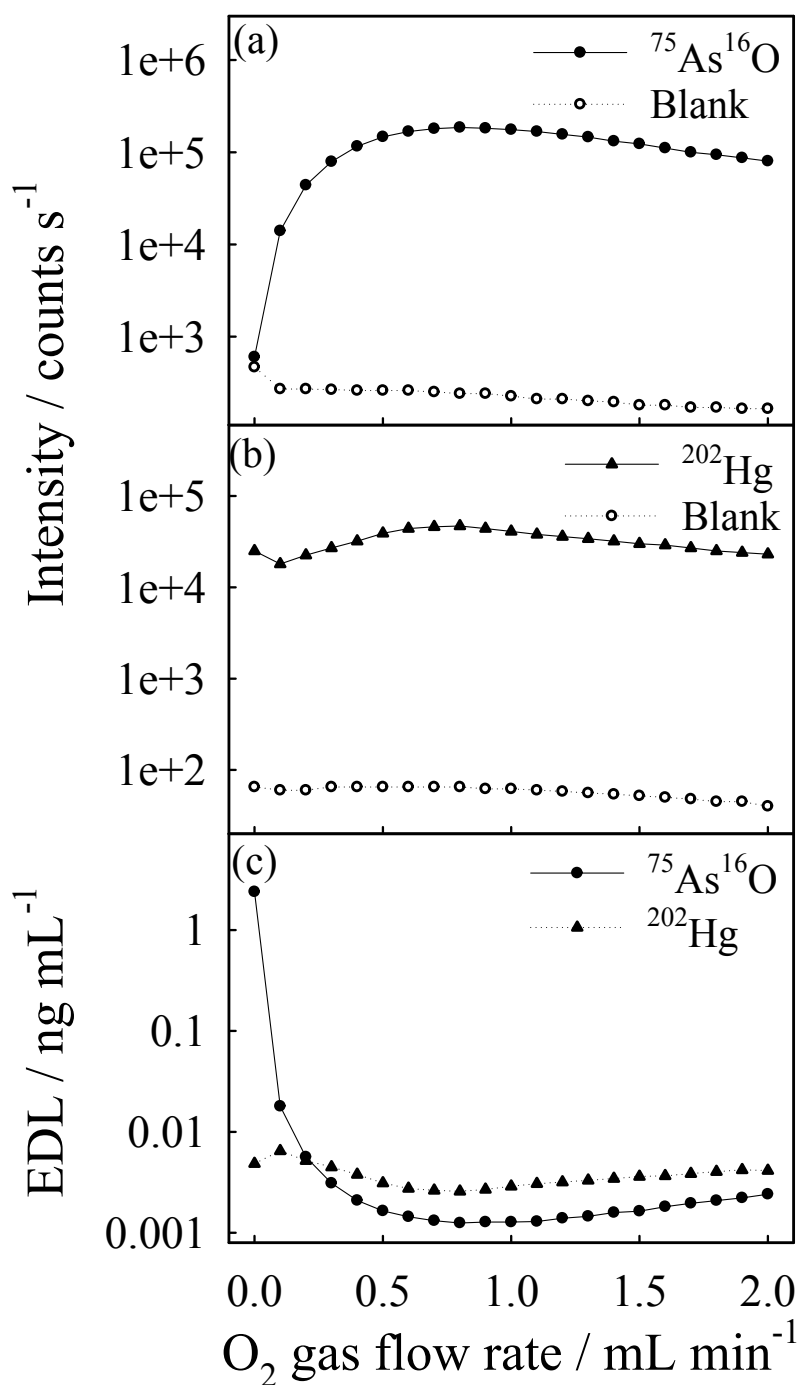


Fig. S4 Effect of flow rate of O₂ reaction gas on (a) the ion signals of ⁷⁵As¹⁶O⁺ and the blank at m/z 91, (b) the ion signals of ²⁰²Hg⁺ and the blank and (b) the EDL of ⁷⁵As¹⁶O⁺ and ²⁰²Hg⁺. Concentration of As and Hg was 5 ng mL⁻¹. Blank: mobile phase. Rejection parameters: $q = 0.4$; $a = 0.0$..

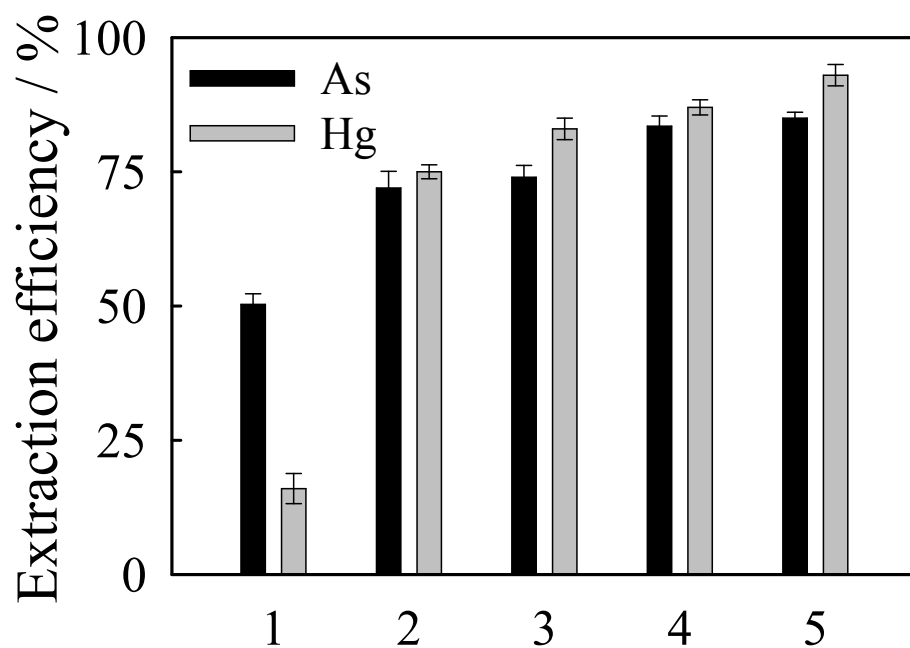


Fig. S5 Effect of extraction solution on extraction efficiency; (1) H₂O, (2) 1% (v/v) HNO₃, (3) 1% (v/v) HCl, (4) mixture of 1% (v/v) HNO₃ and 0.1% (m/v) Protease XIV, and (5) mixture of 1% (v/v) HCl and 0.1% (m/v) Protease XIV.

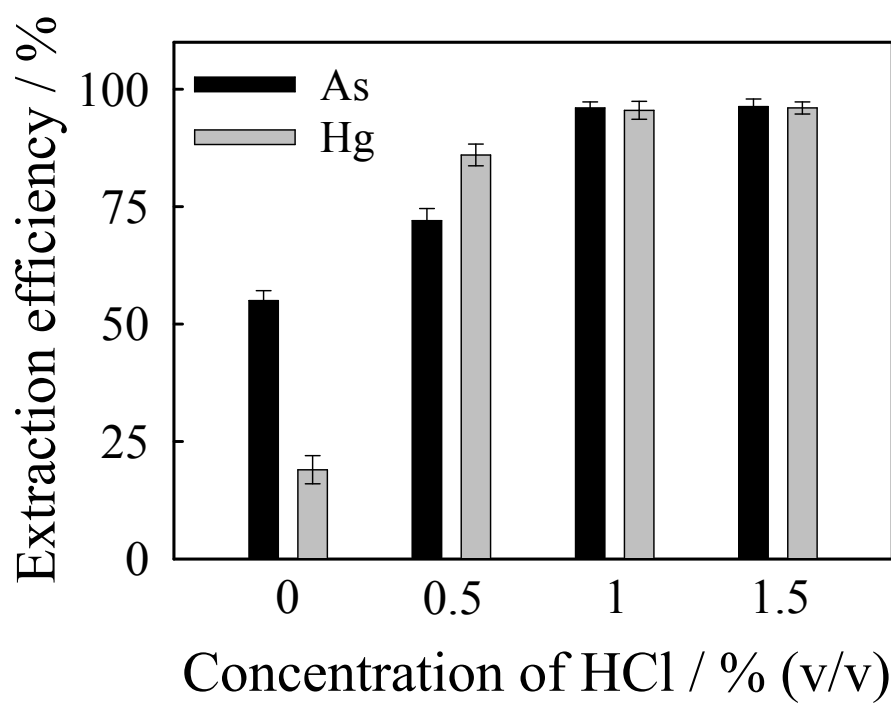


Fig. S6 Effect of HCl concentration on extraction efficiency. The extraction solution contained 0.1% (m/v) Protease XIV and various concentration of HCl.