

Supporting Information on

**Comparison of a Chemical and Enzymatic Extraction of Arsenic from Rice and an Assessment of the Arsenic Absorption from Contaminated Water by Cooked Rice**

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Table SI-1. Summary of separation conditions.

Pump:	Agilent 1100
Flow rate:	1.0 mL/min
Separation A	Isocratic (TFA Chromatography)
Column:	PRP-X100 (Hamilton, Reno, NV)
Mobile phase:	10 mM $\text{NH}_4\text{NO}_3$ , 10 mM $\text{NH}_4\text{H}_2\text{PO}_4$ , pH 6.0 [ $\text{NH}_4\text{NO}_3$ (JM Scientific, Buffalo, NY), $\text{NH}_4\text{H}_2\text{PO}_4$ (Fisher, Fair Lawn, NJ)]
Injection volume:	25 $\mu\text{L}$
Separation B	Isocratic (Enzyme Chromatography)
Column:	PRP-X100 (Hamilton, Reno, NV)
Mobile phase:	25 mM $(\text{NH}_4)_2\text{CO}_3$ , pH 8.6 [ $(\text{NH}_4)_2\text{CO}_3$ (Sigma-Aldrich, A.C.S. Reagent, St. Louis, MO), $\text{NH}_4\text{OH}$ (Fisher Scientific Trace Metal, Pittsburg, PA)]
Injection volume:	100 $\mu\text{L}$
Separation C	Isocratic (Confirmation)
Column:	ION-120 (Interaction, San Jose, CA)
Mobile phase:	20 mM $(\text{NH}_4)_2\text{CO}_3$ , pH 9.0
Injection volume:	100 $\mu\text{L}$
Detection system:	Hewlett-Packard 4500 series ICP-MS
m/z monitored:	75, 77

## **Estimating Labware and Cookware Blank Considerations**

### *Blank Control for Extraction*

All glassware was cleaned with 10% HNO<sub>3</sub> and rinsed with 18MΩ water prior to use. Three cookware blanks and two labware blanks were prepared each day that samples were extracted. The cookware blanks consisted of DDI carried through the rice-preparation procedure and the TFA extraction. The labware blanks were only carried through the TFA extraction. Enzymatic extraction blanks were prepared by carrying DDI through the entire extraction procedure. Reagent blanks for the enzymatic extraction were prepared by mixing the solutions used in the enzymatic extraction to create a solution containing the appropriate amount of each component.

### *Blank Control for TFA Extract*

Each sample set included 5 blanks. These consisted of 3 cookware blanks, which were carried through both the cooking and extraction procedures, and 2 labware blanks, which were exposed to all the labware used in the extraction procedure. A total of 25 blanks were run on nonconsecutive days. Of these, 15 were cookware blanks, and 10 were labware blanks. Eight of the cookware blanks and 6 of the labware blanks contained levels of arsenic that were below the detection limit of 21 ng/kg.

The blank control issue was primarily a concern for inorganic arsenic, because cookware, labware and reagents would not be expected to be contaminated with organic arsenicals. In fact, all of the cookware and labware blanks analyzed were found to be below the limit of detection for DMA and MMA.

### *Blank Control for Enzyme Extract*

Unlike the TFA extraction where the sources of arsenic contamination were

relatively few, the enzymatic extraction involved numerous reagents. Several of these reagents contained trace levels of inorganic arsenic. While the amount of arsenic in each solution was not significant, the cumulative effect resulted in a measurable arsenic signal, amounting to approximately 19% of the inorganic arsenic in the rice sample used in the enzymatic extraction study. Therefore, the data in Table 2 was blank subtracted.