Environ. Chem. **2014**, *11*, 496-505
doi:10.1071/EN14039_AC

Supplementary material

Arsenic cycling in freshwater phytoplankton and zooplankton cultures

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doi:10.1071/EN14039_AC

Table S1. Concentrations of total arsenic and arsenic species in water from cultures (mg L^{-1})

Values are given as averages ± sum of errors (errors were 1 standard deviation) from duplicate cultures and duplicate analyses of each culture.

DMA, dimethylarsinate; SOS, sum of species; CR, column recovery (SOS ÷ Total As)

Experiment	Total As	DMA	As^{V}	SOS	CR (%)
Phytoplankton 10 ppb	0.019 ± 0.008		0.012 ± 0.004	0.012 ± 0.004	62 ± 10
Zooplankton 10 ppb	0.012 ± 0.002	0.0020 ± 0.0002	0.005 ± 0.001	0.007 ± 0.001	61 ± 18
Phytoplankton 200 ppb[A]	0.19 ± 0.09		0.098 ± 0.104	0.098 ± 0.104	51 ± 49
Zooplankton 200 ppb	0.20 ± 0.03		0.17 ± 0.02	0.17 ± 0.02	87 ± 6

[A]One culture had very low column recoveries, which may have been caused by incomplete injection of the sample.

Table S2. Averages (Avg.) and standard deviations (s.d.) in milligrams per kilogram dry weight of phytoplankton cultures exposed to 10 and 200 ppb of As^V, for analytical duplicate analyses

Analytical replicates could not be carried out on any other samples. SOS, sum of species; EE, extraction efficiency (extracted ÷ total); CR, column recovery (SOS ÷ extracted). The relative standard deviations (= s.d. ÷ Avg. × 100 %) range was 0.1–25 % (mean of 6 %) for total arsenic in extracts; 2.4–54 % (mean of 24%) for total arsenic in residues, and 0.9–39 % (mean of 14 %) for the sum (extract + residue) total arsenic. The relative standard deviations ranged from 0.4 to 49 % for arsenic species, with a mean of 19 %. These relative standard deviations were considered to be acceptable

Culture	Experiment	Extracted	Digestion	Total	As^V	Sugar 1	Sugar 2	SOS	EE (%)	CR (%)
Culture 1	Phyto 10 Avg.	1.08	1.2	2.3	1.10			1.10	46	102
Culture 1	Phyto 10 s.d.	0.02	0.1	0.1	0.05			0.05	3	3
Culture 2	Phyto 10 Avg.	1.7	1.6	3.3	2.1	trace		2.1	53	124
Culture 2	Phyto 10 s.d.	0.4	0.9	1.3	0.7			0.7	8	10
Culture 1	Phyto 200 Avg.	13.27	8.7	22	9.3	0.4	0.7	10.4	61	78
Culture 1	Phyto 200 s.d.	0.02	3.6	4	0.6	0.2	0.3	0.5	10	4
Culture 2	Phyto 200 Avg.	18.9	20	39	7.09	6.6	3.2	16.9	49	89
Culture 2	Phyto 200 s.d.	0.1	3	3	0.03	0.6	0.2	0.9	3	4

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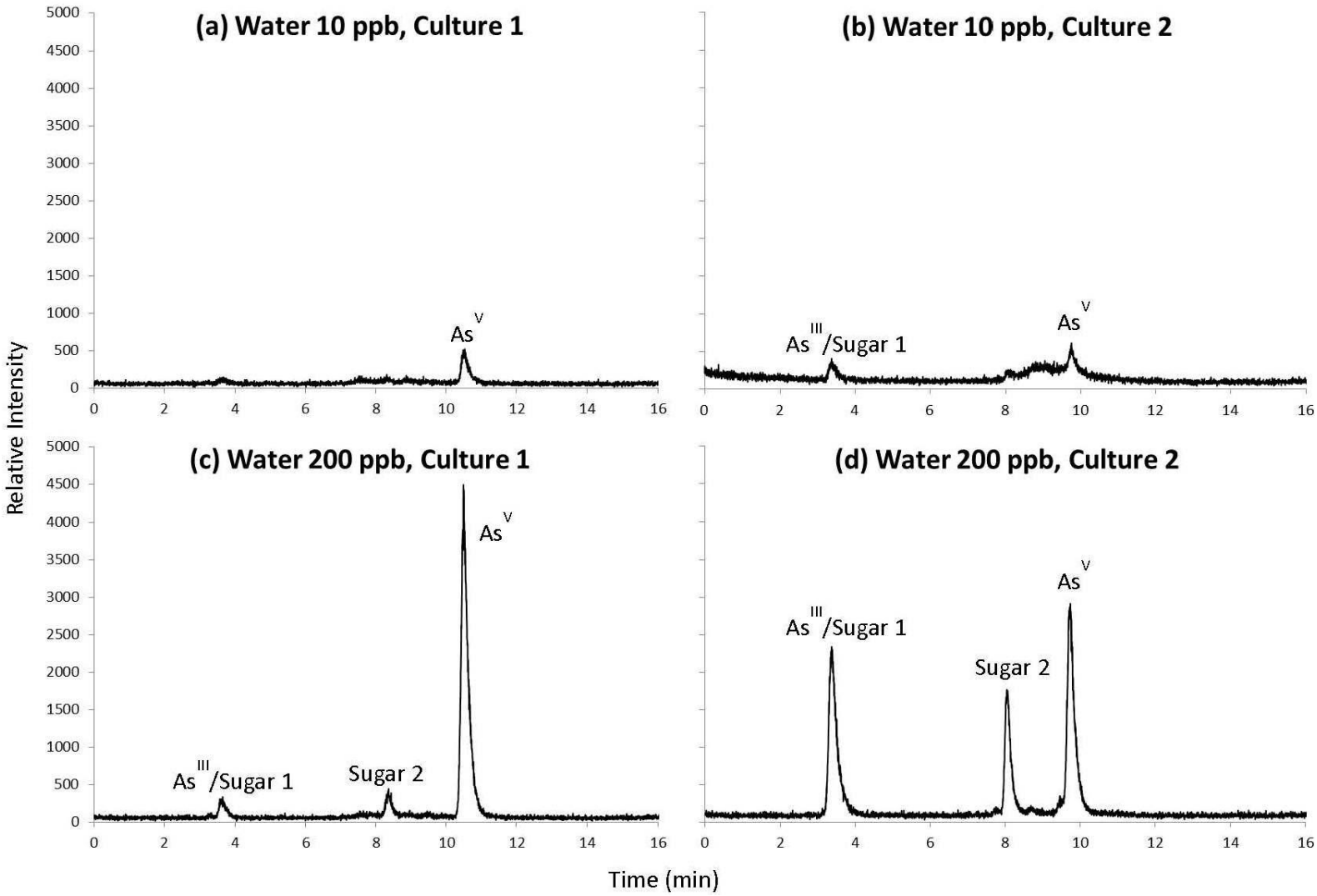

Fig. S1. Anion exchange high performance liquid chromatography–inductively coupled plasma–mass spectrometry (HPLC-ICP-MS) profiles for arsenic speciation in phytoplankton cultures.

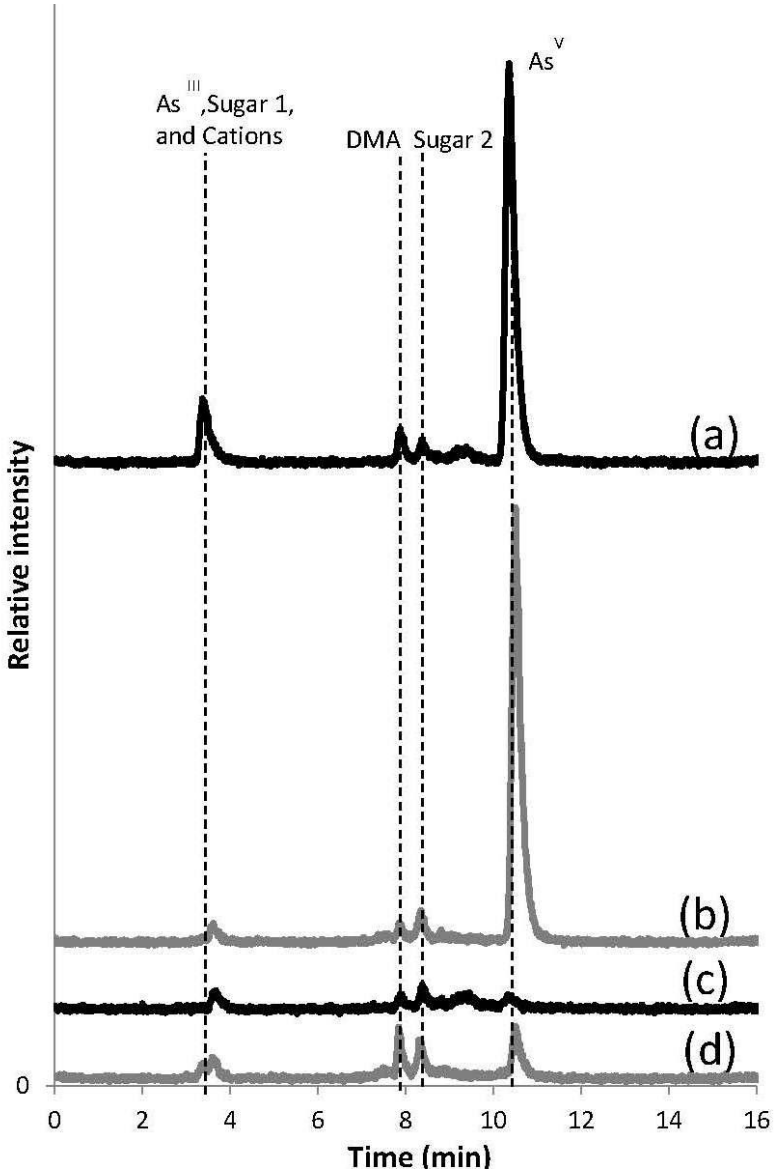

Fig. S2. Anion exchange high performance liquid chromatography–inductively coupled plasma–mass spectrometry (HPLC-ICP-MS) profiles for arsenic speciation in (a) *Daphnia* exposed to arsenic in sediments, (b) *Daphnia* exposed to 200 ppb arsenic in water, (c) *Daphnia* fed with contaminated phytoplankton and (d) *Daphnia* exposed to 10 ppb arsenic in water.