

Supporting material.

Accumulation or production of arsenobetaine in humans?

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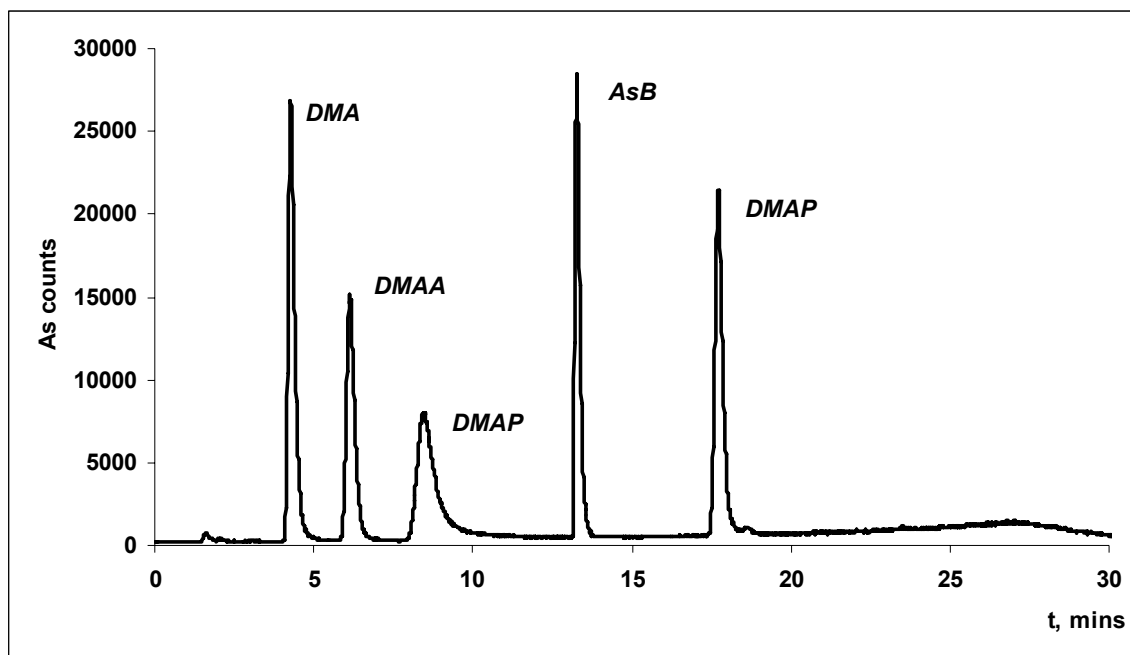


Figure S1. HPLC-ICPMS chromatogram of mixed 50 ng/mL standards in deionised water. Cation exchange chromatogram (Varian Ionspher cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1, detected by ICP-MS (m/z 75)

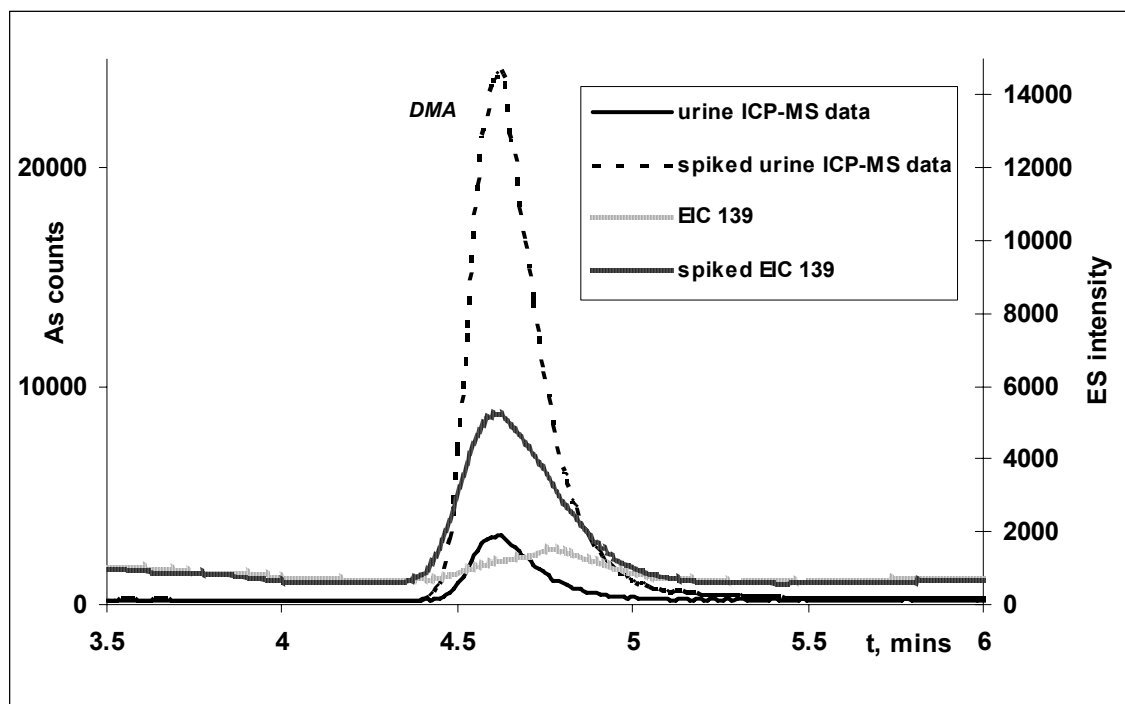


Figure S2. HPLC-ICPMS/ESMS chromatogram of urine. Rice feed trial urine data (volunteer 5, day 5, time 0800). Identity of DMA confirmed by spike and electrospray extracted ion chromatograms. Cation exchange chromatogram (Varian Ionspher cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75) and ESI-MS ($M+H^+ = 139$).

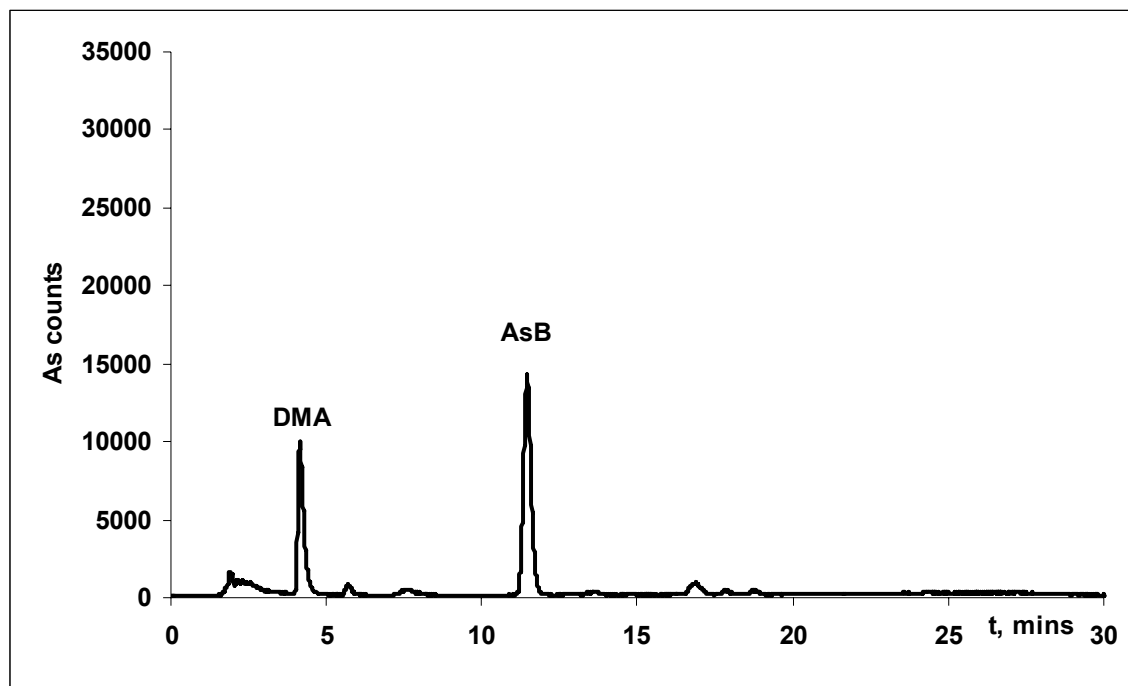


Figure S3. HPLC-ICP-MS chromatogram of NIES N°18 certified reference urine. Cation exchange chromatogram (Varian Ionspher cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75).

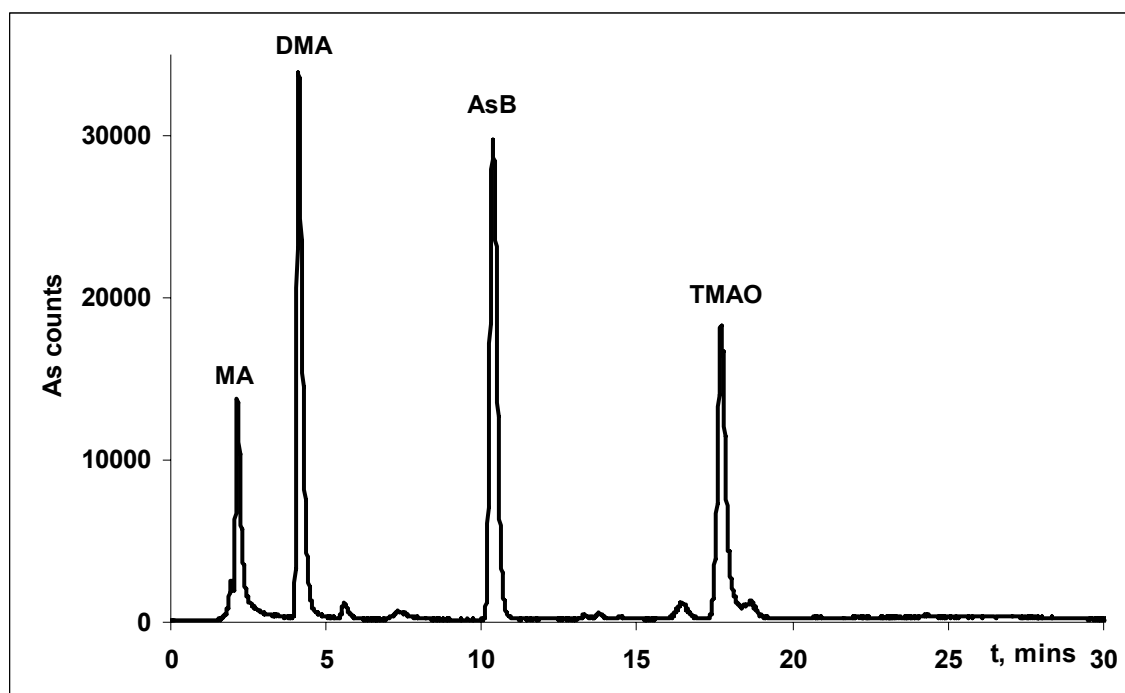


Figure S4. HPLC-ICP-MS chromatogram of NIES N^o18 certified reference urine spiked with MA, DMA, arsenobetaine and TMAO. Cation exchange chromatogram (Varian Ionspher cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75).

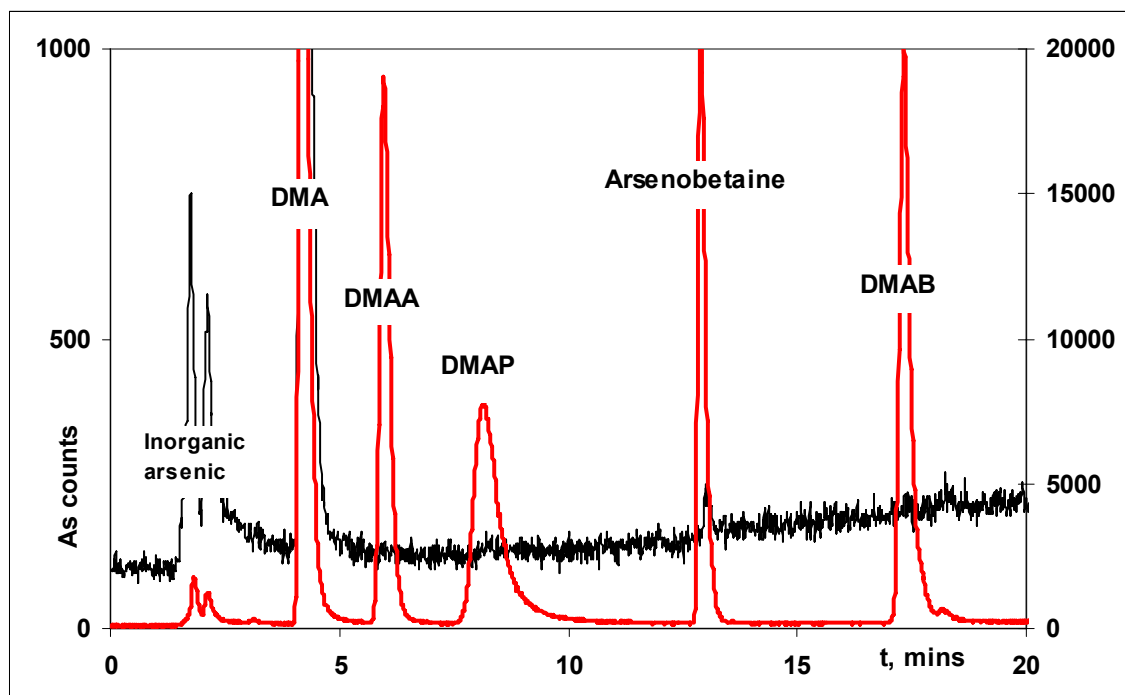


Figure S5. HPLC-ICPMS chromatogram of urine. Rice feed trial urine data (volunteer 5, day 5, time 0800) overlaid with data for same sample spiked with DMA, DMAA, DMAP, AsB, and DMAB. Cation exchange chromatogram (Varian Ionspher cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75).

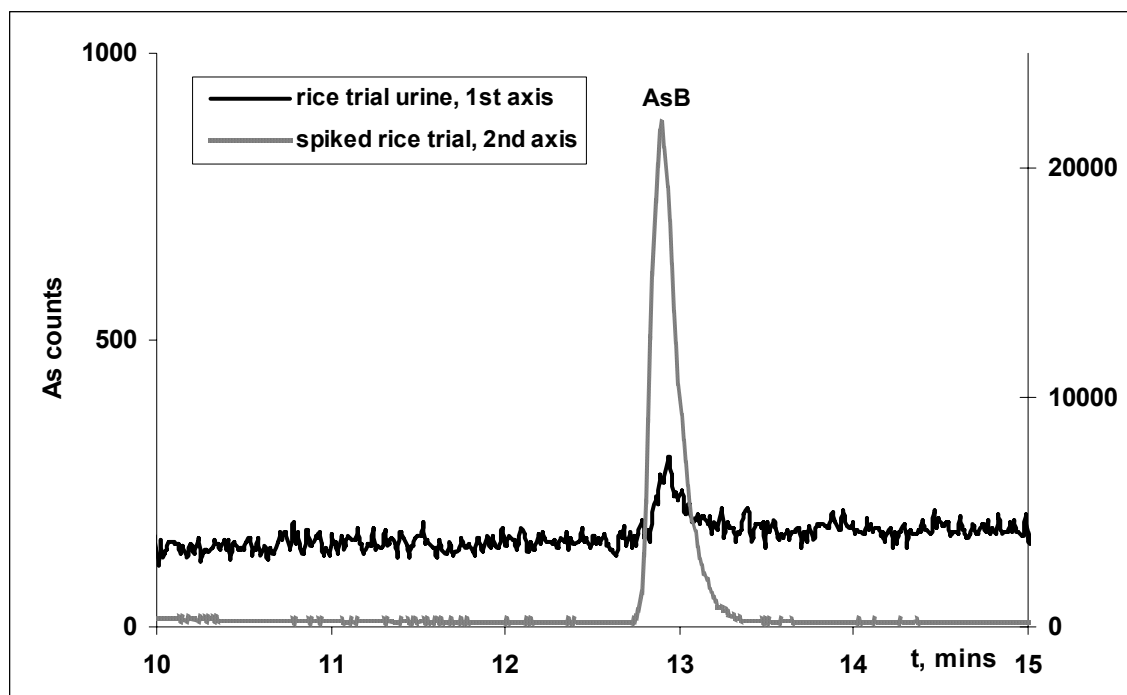


Figure S6. HPLC-ICP-MS chromatogram for rice trial urine overlaid with data for same sample spiked with AsB. Column conditions as above. Cation exchange chromatogram (Varian Ionspher cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75).

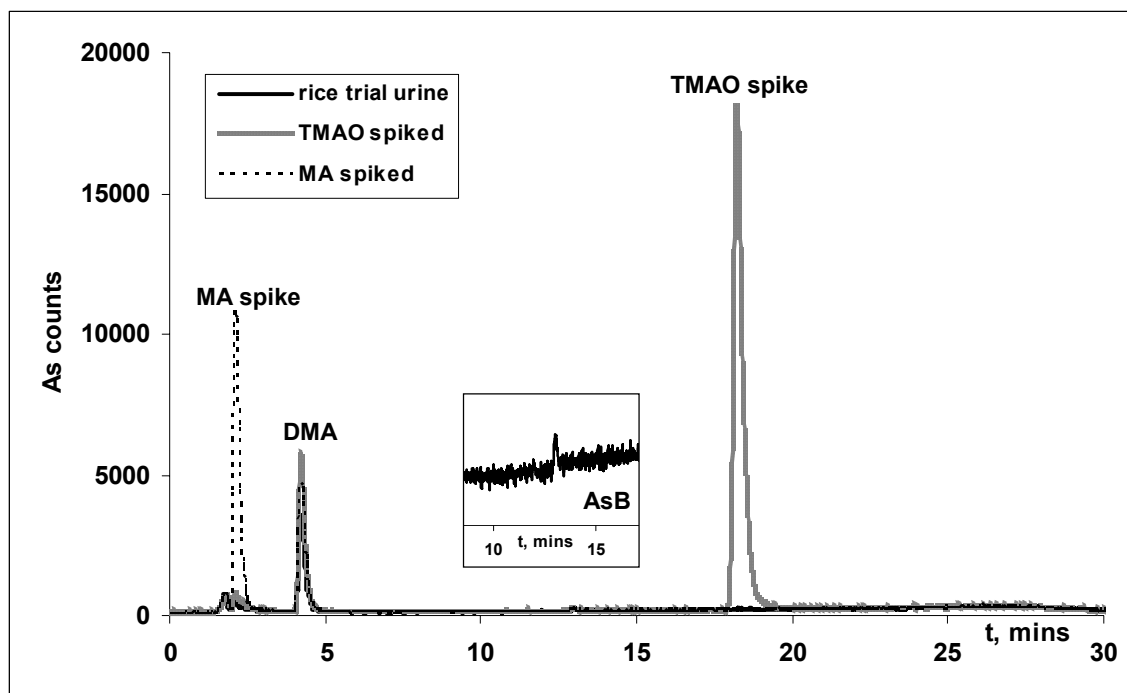


Figure S7. HPLC-ICP-MS chromatogram for rice trial urine spiked with MA and TMAO. Inset shows retention time for arsenobetaine. Cation exchange chromatogram (Varian Ionsphere cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75).

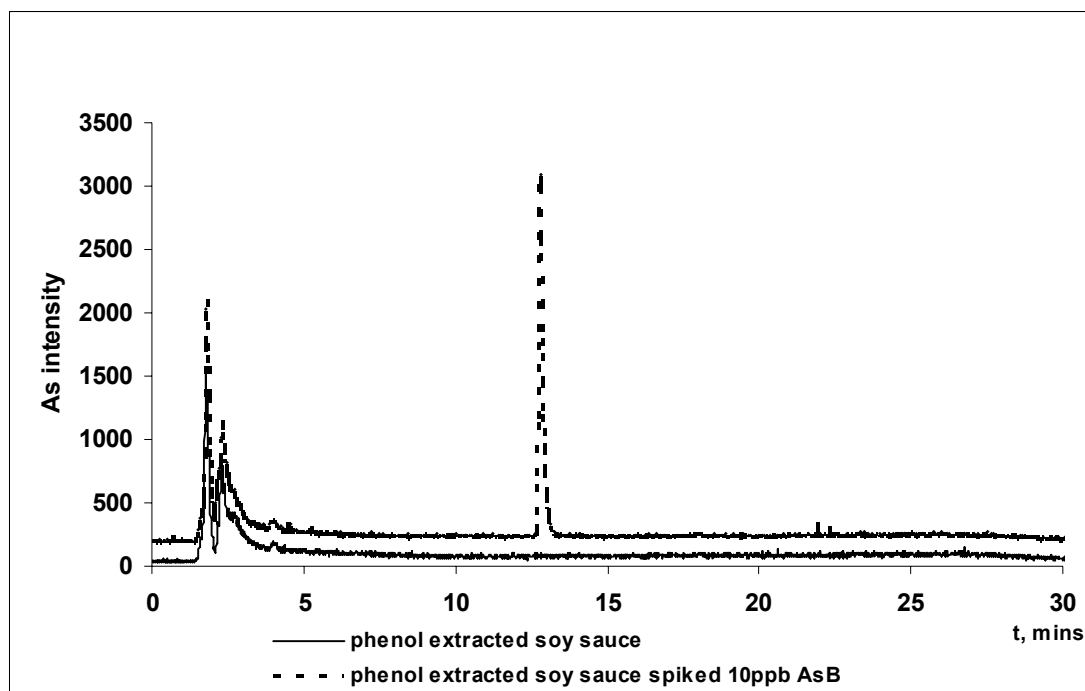


Figure S8. HPLC-ICP-MS chromatogram of a phenol extracted soy sauce overlaid with same sample spiked with arsenobetaine confirming no arsenobetaine above detection limits in the sauce. Cation exchange chromatogram (Varian Ionsphere cation exchange column (250 x 4.6mm), 50mM pyridine adjusted to pH 2.7 with formic acid, flow rate 1.0mL/min, buffer gradient as table 1. Detected by ICP-MS (m/z 75).

Table S1: Total arsenic concentration in 'first urine of the day' for volunteers over the 5 day trial period. The average arsenic concentration from all five volunteers increase over the first 4 days linearly ($As (\mu\text{g/L}) = 20.16 \cdot \text{days} - 8.15$, $R^2 = 0.9983$).

day	V1	V2	V3	V4	V5	AVG	SD
1	6.9	20.8	21.7	1.0	4.6	11.0	9.6
2	64.5	32.1	31.0	16.3	24.4	33.7	18.4
3	22.2	126	41.6	23.9	48.3	52.4	42.6
4	90.2	49.0	41.8	127	51.6	72.0	36.2
5	79.3	148	34.0	51.0	35.0	69.5	47.6