

Significant biotransformation of arsenobetaine into inorganic arsenic in mice

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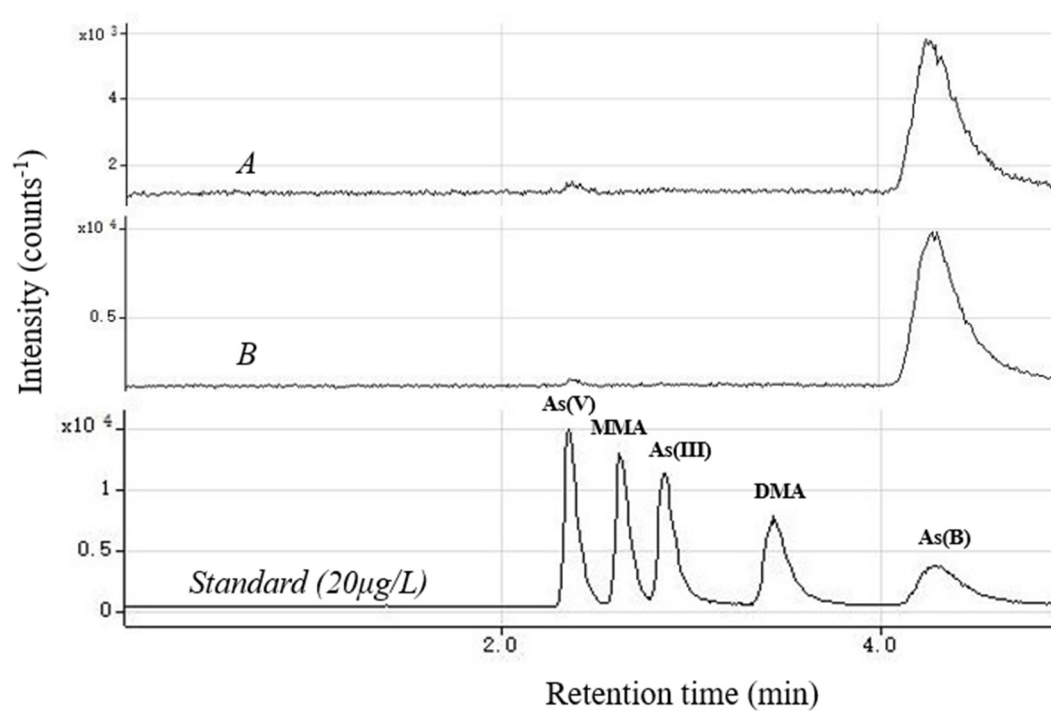


Table S1 Total As and As species concentrations ($\mu\text{g/g}$) in different tissues of mice. Below detection limit (BDL). Data as mean \pm SD (n=10).

Treatment	Tissues	Arsenic species concentrations ($\mu\text{g/g}$) and distribution (%) in tissues of mice					Total As (ICP-MS) extract	Column recovery (%)
		As(III)	As(V)	MMA	DMA	AsB		
Control	Stomach	0.00450 \pm 0.000424 (55.5 \pm 2.33)	0.000200 \pm 0.0000100 (2.47 \pm 0.00125)	0.00175 \pm 0.000710 (21.7 \pm 2.01)	0.00165 \pm 0.000710 (20.4 \pm 0.190)	BDL	0.00675 \pm 0.00167	120
	Intestine	0.00287 \pm 0.000777 (35.3 \pm 13.7)	0.00230 \pm 0.00200 (24.9 \pm 17.2)	0.00137 \pm 0.000252 (16.0 \pm 0.901)	0.00200 \pm 0.000100 (23.9 \pm 3.22)	BDL	0.00832 \pm 0.00151	102
	Heart	0.000100 \pm 0.00001 23 (8.28 \pm 0.0145)	0.000667 \pm 0.000208 (54.3 \pm 13.8)	0.000300 \pm 0.000100 (24.1 \pm 5.85)	0.000167 \pm 0.000115 (13.4 \pm 8.50)	BDL	0.00113 \pm 0.000191	109
	Liver	0.000958 \pm 0.00045 0 (23.0 \pm 9.05)	0.00107 \pm 0.000567 (26.3 \pm 11.7)	0.000740 \pm 0.000241 (18.0 \pm 3.44)	0.000620 \pm 0.000179 (15.1 \pm 1.50)	0.000680 \pm 0.000148 (17.6 \pm 5.67)	0.00396 \pm 0.00109	103
	Lung	0.00157 \pm 0.000519 (34.4 \pm 9.16)	0.000700 \pm 0.000141 (15.6 \pm 4.19)	0.00115 \pm 0.0000710 (25.5 \pm 0.167)	0.00110 \pm 0.000141 (24.5 \pm 4.80)	BDL	0.00424 \pm 0.000293	107
	Kidney	0.000300 \pm 0.00001 00 (8.86 \pm 0.00347)	0.00220 \pm 0.00125 (56.7 \pm 11.1)	0.000700 \pm 0.000100 (20.0 \pm 4.34)	0.000500 \pm 0.000100 (14.4 \pm 4.24)	BDL	0.00355 \pm 0.00130	104
	Muscle	0.00117 \pm 0.000376 (39.5 \pm 8.35)	0.000250 \pm 0.000178 (9.05 \pm 4.67)	0.000650 \pm 0.000127 (22.6 \pm 5.17)	0.000840 \pm 0.000158 (28.9 \pm 3.46)	BDL	0.00271 \pm 0.000514	107
As(III) exposure	Stomach	0.240 \pm 0.00270 (68.5 \pm 0.544)	0.0121 \pm 0.000743 (3.50 \pm 0.579)	BDL	0.0981 \pm 0.0104 (28.0 \pm 0.0358)	BDL	0.338 \pm 0.0448	104
	Intestine	0.239 \pm 0.0487 (64.1 \pm 2.73)	0.0147 \pm 0.00283 (3.99 \pm 0.880)	0.0118 \pm 0.00116 (3.28 \pm 0.740)	0.106 \pm 0.0138 (28.7 \pm 2.45)	BDL	0.377 \pm 0.0687	98.6
	Heart	0.00650 \pm 0.000707 (7.93 \pm 1.64)	0.0648 \pm 0.00679 (78.2 \pm 0.448)	BDL	0.0115 \pm 0.00212 (13.8 \pm 1.19)	BDL	0.0824 \pm 0.00981	100

	Liver	0.0940±0.0110 (55.7±1.61)	0.0163±0.00769 (9.47±3.88)	BDL	0.0317±0.00519 (18.9±3.08)	0.0268±0.00212 (16.0±2.13)	0.0936±0.0119	180
	Lung	0.0470±0.00990 (35.7±0.470)	0.0426±0.00481 (32.7±2.80)	BDL	0.0420±0.0113 (31.7±2.33)	BDL	0.130±0.0253	101
	Kidney	0.0398±0.00854 (47.7±5.55)	0.0140±0.00285 (17.2±4.53)	0.0123±0.00126 (15.0±2.62)	0.0168±0.00403 (20.1±3.81)	BDL	0.0768±0.00317	108
	Muscle	0.0461±0.00646 (66.2±7.34)	0.00600±0.00283 (8.77±4.34)	BDL	0.0181±0.00911 (25.1±9.75)	BDL	0.0667±0.0124	105
As(V) exposure	Stomach	0.00450±0.00212 13.1±3.30	0.0225±0.00212 68.3±9.52	BDL	0.00200±0.00141 5.63±2.91	0.00450±0.00212 13.1±3.30	0.0330±0.00762	102
	Intestine	0.00650±0.00129 19.3±1.87	0.0178±0.00386 52.7±7.47	BDL	0.00450±0.000577 13.7±3.16	0.00475±0.00189 14.4±5.97	0.0332±0.00407	101
	Heart	0.00250±0.000577 17.6±6.55	0.0125±0.00379 82.4±6.55	BDL	BDL	BDL	0.0150±0.00331	100
	Liver	0.00586±0.000900 46.1±2.82	0.00214±0.000690 16.7±3.97	BDL	0.00114±0.000378 9.04±2.56	0.00357±0.000787 11.4±6.90	0.0139±0.00342	91.4
	Lung	0.00500±0.000100 16.4±0.00102	0.0205±0.00212 67.1±2.29	BDL	0.00300±0.00141 9.78±4.41	0.00200±0.00141 6.51±4.49	0.0287±0.0000798	106
	Kidney	0.00350±0.00100 14.1±1.67	0.0218±0.00732 85.9±1.67	BDL	BDL	BDL	0.0251±0.00806	101
	Muscle	0.00233±0.000577 12.9±1.97	0.0100±0.00173 56.0±10.8	BDL	0.00267±0.00115 14.5±4.78	0.00300±0.00100 16.6±4.81	0.0202±0.00348	89.1
Fish exposure (YJ)	Stomach	0.0290±0.00849 17.1±0.293	0.0400±0.00566 24.1±3.32	BDL	0.0115±0.00495 6.65±1.09	0.0885±0.0276 52.1±1.93	0.125±0.0559	135
	Intestine	0.0194±0.00295 7.73±1.41	0.0532±0.00813 21.1±2.69	BDL	0.00577±0.00209 2.25±0.620	0.176±0.0337 68.9±3.49	0.242±0.0323	105

	Heart	0.00900±0.00300 11.5±3.71	0.0213±0.00586 26.9±1.70	BDL	0.00500±0.00100 6.36±0.27	0.0437±0.0110 55.2±2.24	0.0673±0.0277	117
	Liver	0.0227±0.00409 7.39±1.18	0.0511±0.00562 16.7±1.81	BDL	0.00425±0.000957 1.38±0.282	0.228±0.0168 74.5±3.15	0.237±0.0549	129
	Lung	0.0142±0.001702 5.94±1.99	0.0405±0.00357 16.5±2.20	BDL	0.0152±0.00248 6.18±0.360	0.178±0.0503 71.4±4.55	0.251±0.0482	98.8
	Kidney	0.0143±0.00403 7.60±0.550	0.0297±0.0143 15.5±3.76	BDL	0.00814±0.00192 4.39±0.424	0.134±0.0201 72.6±4.36	0.181±0.0371	103
	Muscle	0.00787±0.00222 11.0±1.55	0.0133±0.00377 18.6±2.69	BDL	0.00805±0.00165 11.6±2.47	0.0414±0.00653 58.9±2.11	0.0725±0.0155	97.4
Fish exposure (ZJ)	Stomach	0.0183±0.00327 16.1±4.34	0.0396±0.00764 34.2±3.42	BDL	0.0219±0.00157 19.0±0.422	0.0355±0.00487 30.8±1.34	0.0976±0.0415	118
	Intestine	0.0195±0.00683 11.2±2.00	0.0360±0.00983 21.1±5.51	BDL	0.0207±0.00390 12.1±1.63	0.0945±0.0130 55.6±5.55	0.172±0.0223	99.2
	Heart	0.0144±0.000635 17.8±1.28	0.0320±0.00283 39.2±1.09	BDL	0.0143±0.00329 17.3±1.90	0.0210±0.00283 25.7±0.481	0.0794±0.0126	103
	Liver	0.0157±0.00308 7.60±2.58	0.0316±0.0107 14.4±3.46	BDL	0.0144±0.00267 6.67±0.536	0.156±0.0416 71.3±4.51	0.182±0.0556	120
	Lung	BDL	0.0432±0.00445 21.5±0.315	BDL	0.0304±0.00226 15.2±0.662	0.127±0.0169 63.3±0.977	0.200±0.0211	100
	Kidney	0.0169±0.00550 13.0±0.662	0.0380±0.0113 29.3±0.651	BDL	0.0153±0.00464 11.8±0.33	0.0591±0.0143 46.0±1.64	0.145±0.0520	89.2
	Muscle	0.00765±0.00411 12.3±7.27	0.0133±0.00390 21.1±5.80	BDL	0.0181±0.00503 28.6±5.49	0.0237±0.00430 38.0±7.21	0.0652±0.00971	96.2

Table S2 Total As, As species concentrations ($\mu\text{g/g}$) and distribution (%) in As(III) diet, As(V) diet, Fish diet (YJ), Fish diet (ZJ), and Control diet. S1
Data as mean \pm SD (n = 10).

Treatments	Arsenic species concentrations ($\mu\text{g/g}$) and distribution (%) in diets					Total As ($\mu\text{g/g}$) (ICP-MS extract)	Column recovery (%)
	As(III)	As(V)	MMA	DMA	AsB		
Control diet	0.00229 \pm 0.000126	0.0162 \pm 0.00229	BDL	0.00101 \pm 0.000166	0.00837 \pm 0.00160	0.0289 \pm 0.00154	93.1
	(8.29 \pm 0.688)	(58.0 \pm 3.51)	BDL	(3.63 \pm 0.534)	(30.0 \pm 3.42)		
As(III) diet	0.843 \pm 0.0356	0.190 \pm 0.0119	BDL	BDL	0.0387 \pm 0.00154	1.09 \pm 0.0611	98.3
	(78.6 \pm 1.21)	(17.8 \pm 1.08)	BDL	BDL	(3.64 \pm 0.401)		
As(V) diet	0.0263 \pm 0.000187	0.191 \pm 0.0391	BDL	0.00542 \pm 0.000640	0.0626 \pm 0.00714	0.301 \pm 0.0213	94.7
	(9.29 \pm 1.12)	(66.6 \pm 5.65)	BDL	(1.94 \pm 0.463)	(22.2 \pm 4.16)		
Fish diet (YJ)	0.00719 \pm 0.000329	0.0592 \pm 0.00739	BDL	0.0133 \pm 0.00109	1.36 \pm 0.0405	1.44 \pm 0.0486	99.9
	(0.497 \pm 0.0760)	(4.10 \pm 0.370)	BDL	(0.925 \pm 0.105)	(94.5 \pm 0.342)		
Fish diet (ZJ)	0.0317 \pm 0.00368	0.0762 \pm 0.00463	0.0645 \pm 0.0253	0.0287 \pm 0.00510	0.950 \pm 0.147	1.26 \pm 0.0455	91.4
	(2.76 \pm 0.496)	(6.70 \pm 1.10)	(5.76 \pm 2.77)	(2.50 \pm 0.411)	(82.3 \pm 4.29)		

Values are means \pm SD (n=10), BDL means below detection limit.