Electronic Supplementary Information

Experimental conditions for urine speciation analysis:

An anionic exchange column was used with an ammonium phosphate (pH= 6.2) running buffer at a flow rate of 1 mL/min. A volume of 100 µL of urine was injected onto the column via an autosampler. After the column, internal standard solution (10 µg/L Rh in 2% nitric acid) was added using a peristaltic pump before detection by ICP-MS. Obtained signals were quantified based on peak area by WinFAAS 1.0 software (Kurt Kalcher, 1994).

Identification of As species has been performed by addition of Arsenobetaine (AB), dimethylarsenic Acid (DMA), monomethylarsonic acid (MA) and arsenate (AsV) to a sample of urine; for other samples, urinary arsenicals were identified by comparison of the elution times with the spiked urine sample. A slight shift of the peaks was seen during the run that did not affect the recognition of main arsenicals we considered.

Fig. S.1. Arsenic species in urine

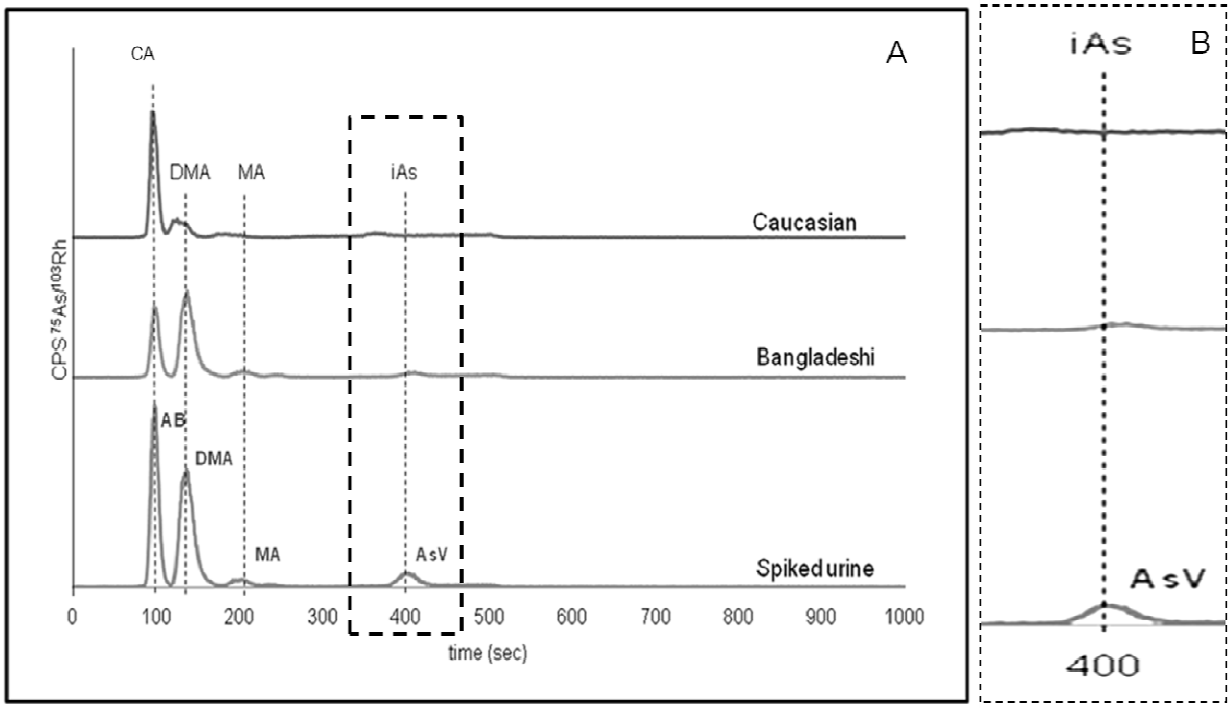

Figure S.1: A: stacked chromatograms obtained with anionic exchange on HPLC-ICP-MS for urine. Urinary chromatograms shown represents: a UK white Caucasian (on the top) subject and a UK Bangladeshi (in the middle). Identification of As species has been performed by addition of Arsenobetaine (AB), dimethylarsenic Acid (DMA), monomethylarsonic acid (MA) and arsenate (AsV) to urine (on the bottom); note that species eluting at the same retention time of AB are indicated as cationic compounds (CA).CPS: count per second; B: a zoom in the dotted region highlighted.

DMA Comparison:

Fig.s.2. shows a comparison based on geometric mean of urinary arsenicals of UK Bangladeshi group from this study and other ethnic groups previously reported in Leicester by Brima et al. [25]. All the volunteers in the latter and the current study were not occupationally exposed. UK Bangladeshis reported in the present study have the highest DMA% (79%) compared to Asians (22%), Somali (59%) and Caucasians (48%) in Leicester.

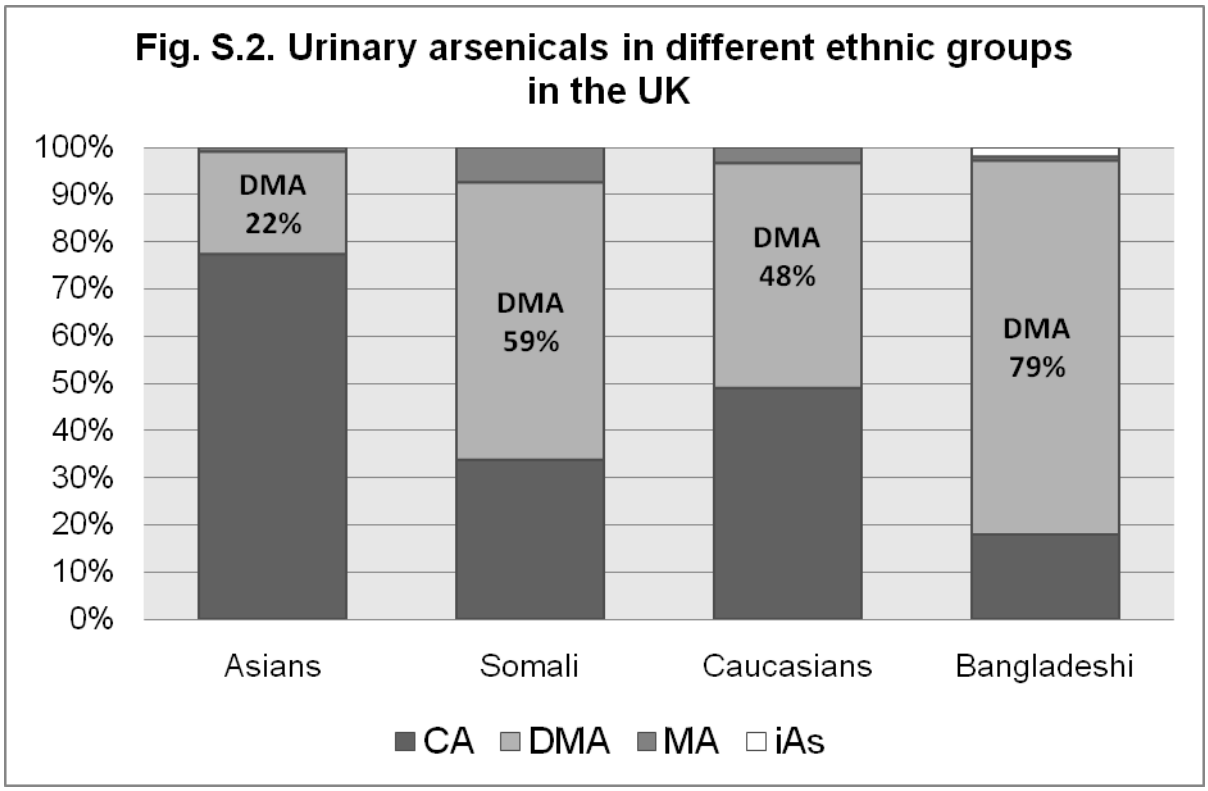

Figure s.2: comparison of relative proportion of urinary arsenicals found in UK Bangladeshi population (from this study) with other Asians (n=21), Somali (n=22) and Caucasians (n=20) living in the UK based on geometric mean reported by Brima et. al.[25]

Table t.s.1. Total arsenic in urine of the 49 volunteers involved in this study: Bangladeshi (Bangl) and Caucasians (Cauc) without specific gravity correction (seven measurements)

	Sample name	Ethnicity	As_t [µg L^{-1}]
1	**NX 066**	Bangl	6.01 ± 1.48
2	**NX 002**	Bangl	66.1 ± 3.1
3	**NX 004**	Bangl	43.3 ± 5.5
4	**NX 005**	Bangl	41.4 ± 3.6
5	**NX 008**	Bangl	30.7 ±1.8
6	**NX 009**	Bangl	130 ± 5
7	**NX 011**	Bangl	61.7 ± 5.7
8	**NX 013**	Bangl	11.7 ± 2.3
9	**NX 017**	Bangl	151.2 ± 6.4
10	**NX 018**	Bangl	164 ± 7
11	**NX 019**	Bangl	19.7 ± 1.6
12	**NX 022**	Bangl	26.5 ± 2.6
13	**NX 025**	Bangl	56.2 ± 4.03
14	**NX 033A**	Bangl	25.6 ± 3.8
15	**NX 034**	Bangl	17.5 ± 2.8
16	**NX 042 B**	Bangl	26.6 ± 2.5
17	**NX 067**	Bangl	11.4 ± 2.0
18	**NX 081**	Bangl	44.1 ± 4.6
19	**O 31**	Bangl	21.3 ± 2.4
20	**O 19**	Bangl	4.54 ±1.52
21	**O 38**	Bangl	5.53 ± 0.99
22	**O 45**	Bangl	16.7 ± 2.6
23	**O 49**	Bangl	206 ± 10
24	**O10**	Bangl	8.64 ± 1.07
25	**O14**	Bangl	30.0 ± 3.0
26	**O18**	Bangl	22.4 ± 3.8
27	**O20**	Bangl	22.2 ± 1.6
28	**O22**	Bangl	22.7 ± 1.5
29	**O23**	Bangl	18.8 ± 2.9
30	**O24**	Bangl	13.5 ± 1.5
31	**O25**	Bangl	7.83 ± 0.52
32	**O30**	Bangl	25.9 ± 3.0
33	**O33**	Bangl	45.5 ± 2.0
34	**O46**	Bangl	73.0 ± 4.5
35	**O47**	Bangl	46.9 ± 2.9
36	**OO4**	Bangl	36.3 ±2.3
37	**OO7**	Bangl	41.8 ±1.7
38	**UK34**	Cauc	94.3 ± 8.8
39	**UK7**	Cauc	35.1 ± 8.1
40	**UK21**	Cauc	270 ± 6
41	**UK55**	Cauc	76.5 ± 4.57
42	**UK5**	Cauc	5.15 ± 1.01
43	**UK9**	Cauc	14.5 ± 2.7
44	**UK30**	Cauc	15.4 ± 1.5
45	**UK22**	Cauc	285 ± 67
46	**UK44**	Cauc	29.4 ± 3.5
47	**UK8**	Cauc	9.51 ± 3.11
48	**UK60**	Cauc	73.4 ± 17.1
49	**LEMR112ND**	Cauc	13.7 ± 2.4

Table t.s.2. Descriptive statistics and non parametric analysis of urinary arsenicals for Bangladeshi (Bangl) and Caucasians (Cauc) without specific gravity correction.

U-As: urinary arsenicals [μg/L]

	As_t		CA		DMA		MA		iAs	
	Bangl	**Cauc**	**Bangl**	**Cauc**	**Bangl**	**Cauc**	**Bangl**	**Cauc**	**Bangl**	**Cauc**
Mean	43.7	78.0	13.2	71.4	22.5	8.47	0.610	0.250	0.850	0.400
DS	46.4	99.2	30.9	98.0	22.6	8.47	0.920	0.460	0.710	0.320
Geoemean	28.7	36.6	3.51	27.6	15.3	5.66	0.120	0.0400	0.390	0.180
Median	26.5	30.8	2.61	21.7	17.2	5.11	0.280	<LOD	0.820	0.370
Min	4.55	5.15	0.470	1.77	2.17	1.93	<LOD	<LOD	<LOD	<LOD
25th %	17.5	14.3	1.04	11.03	8.07	2.48	<LOD	<LOD	0.350	0.110
75th %	45.5	81.0	6.96	85.6	27.5	10.0	0.830	0.380	1.05	0.690
Max	124	286	157	271	123	28.9	4.20	1.59	3.20	0.870
P (95% CI)		0.634		***<0.001***		***0.004***		0.117		*0.027*

Table t.s.3: Ratio of urinary CA/DMA for some reported groups

Country	Ethnicity	Population type	CA/DMA ratio	Reference
UK	*Bangladeshi*	general	0.23	This study
UK	*not specified*	timber workers	0.23	[37]
USA	*Mexican American*	general	0.25	[38]
USA	*mixed*	no sea food 24 h	0.25	[47]
USA	*Non-Hispanic white*	general	0.42	[38]
USA	*Non-Hispanic black*	general	0.54	[38]
Germany	*not specified*		0.54	[39]
UK	*Somali*	general	0.58	[25]
UK	*Caucasians*	general	1.03	[25]
Japan	*Japanese (males)*		1.44	[45]
USA	*mixed*	sea food 24 h	1.70	[47]
Japan	*NIES CRM*		1.88	[45]
UK	*not specified*	general	2.09	[37]
UK	*Asians*	general	3.52	[25]
UK	*Caucasians*	general fish 24h	**4.88**	This study
UK	*not specified*	general fish 24h	**5.39**	[37]