Supplementary material

Table A1. Overview of LOD and LOQ values (µg/L) of different studies by As species and detection frequencies (%)

	Analytical platform	LOD or LOQ	As(III)	%>	As(V)	%>	AB	%>	DMA	%>	MMA	%>	As_{tot}	%>	TRA	%>
Riksmaten adolescents (Sweden)	ICP-MS	LOQ	0.1	99	0.1	91	0.1	99	0.1	100	0.1	100	0.05	100	-	-
FLEHS IV (Belgium)	LC-ICP-MS	LOD	0.1	69	0.1	28	0.1	82	0.1	100	0.1	82	-	-	-	-
GerES V-sub (Germany)	LC-ICP-MS	LOQ	0.1	91	0.1	48	0.1	83	0.1	100	-	-	-	-	-	-
SLO CRP (Slovenia)	HPLC-HG-AFS	LOD	0.1	91	0.1	0	-	-	0.2	100	0.2	95	0.03	100	-	-
BEA (Spain)	ICP-MS	LOQ	0.1	94	0.1	86	0.1	99	0.1	100	0.1	100	0.05	100	-	
ESTEBAN (France)	(HPLC)-ICP-MS	LOD	-		-		-		-		-		0.01	100	0.15	100

TRA: Toxic relevant arsenic; ICP-MS: Inductively coupled plasma mass spectrometry; LC-ICP-MS: Liquid Chromatography-Inductively Coupled Plasma Mass spectrometry; HPLC-HG-AFS: high-performance liquid chromatography hydride generation atomic fluorescence spectrometry; HPLC-ICP-MS: high-performance liquid chromatography-Inductively coupled plasma mass spectrometry

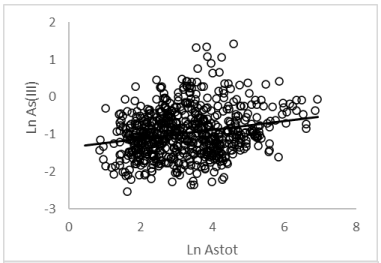
%> reports the percentage of samples above the reported LOD or LOQ

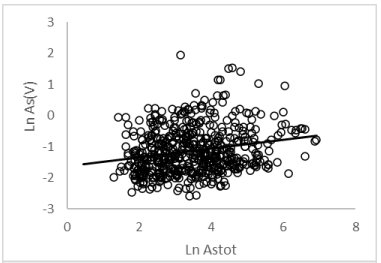
Table A2. Population characteristics and questionnaire answers

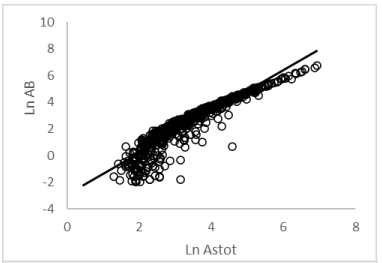
Variable	Study					
	ESTEBAN	BEA	SLO CRP	Riksmaten adolescents	GerES V sub	FLEHS IV
Sex (Female; Male)	F: N = 155; M: N = 145	F: N = 156; M: N = 144	F: N = 43; M: N = 54	F: N = 150; M: N = 150	F: N = 150; M: N = 150	F: N = 79; M: N = 69
BMI (mean)	20.19	21.15	21.1	21.3	20.67	20.79
Degree of urbanization	1: N = 79; 2: N = 76; 3: N = 145	1: N = 257; 2: N = 36; 3: N = 7	3: N = 97	1: N = 111; 2: N = 137; 3: N = 52	1: N = 84; 2: N = 117; 3: N = 99	1: N = 24; 2: N = 98; 3: N = 26
Sampling month	1: N = 22; 2: N = 27; 3: N = 31; 4: N = 42; 5: N = 11; 6: N = 17; 7: N = 27; 8: N = 23; 9: N = 6; 10: N = 44; 11: N = 8; 12: N = 42	2: N = 19; 4: N = 22; 5: N = 35; 11: N = 183; 12: N = 41	1: N = 40; 2: N = 28; 3: N = 29	1: N = 15; 2: N = 40; 3: N = 48; 4: N = 27; 5: N = 31; 9: N = 46; 10: N = 28; 11: N = 38; 12: N = 27	1: N = 30; 2: N = 41; 3: N = 31; 4: N = 19; 5: N = 32; 6: N = 30; 7: N = 21; 8: N = 3; 9: N = 28; 10: N = 23; 11: N = 31; 12: N = 11	1: N = 14; 2: N = 41; 3: N = 4; 4: N = 25; 5: N = 22; 10: N = 10; 11: N = 32
Sampling season	1: N = 71; 2: N = 60; 3: N = 71; 4: N = 98	1: N = 57; 3: N = 224; 4: N = 19	4: N = 97	1: N = 79; 2: N = 27; 3: N = 112; 4: N = 82	1: N = 74; 2: N = 50; 3: N = 77; 4: N = 99	1: N = 48; 3: N = 42; 4: N = 58
Frequency consumption of seafood	0: N = 7; 1: N = 21; 2: N = 174; 3: N = 68; 4: N = 5; 5: N = 1	0: N = 13; 1: N = 11; 2: N = 44; 3: N = 104; 4: N = 110; 5: N = 17	0: N = 43; 1: N = 22; 2: N = 32	1: N = 2; 2: N = 133; 3: N = 92; 4: N = 35; 5: N = 7	0: N = 67; 2: N = 221; 3: N = 10; 5: N = 1	2: N = 95; 3: N = 36; 5: N = 17
Frequency consumption of fish food	0: N = 30; 1: N = 34; 2: N = 193; 3: N = 20	0: N = 17; 1: N = 9; 2: N = 47; 3: N = 103; 4: N = 107; 5: N = 16	0: N = 14; 1: N = 17; 2: N = 59; 3: N = 6; 4: N = 1	0: N = 1; 1: N = 5; 2: N = 153; 3: N = 80; 4: N = 24; 5: N = 6	0: N = 72; 2: N = 217; 3: N = 10	2: N = 105; 5: N = 16
Frequency consumption of shellfish	0: N = 95; 1: N = 112; 2: N = 69; 3: N = 1	NA	0: N = 43; 1: N = 22; 2: N = 32	0: N = 54; 1: N = 163; 2: N = 48; 3: N = 1; 4: N = 2	0: N = 252; 2: N = 46; 3: N = 1	0: N = 71; 2: N = 74; 3: N = 2; 4: N = 1
Frequency consumption of meat	0: N = 2; 1: N = 5; 2: N = 17; 3: N = 48; 4: N = 85; 5: N = 120	0: N = 6; 1: N = 3; 2: N = 8; 3: N = 43; 4: N = 150; 5: N = 85	3: N = 15; 4: N = 47; 5: N = 35	NA	0: N = 13; 2: N = 94; 3: N = 86; 4: N = 34; 5: N = 70	2: N = 5; 3: N = 6; 4: N = 3; 5: N = 134
Frequency consumption of organ meat	0: N = 178; 1: N = 57; 2: N = 42	NA	0: N = 70; 1: N = 11; 2: N = 15; 3: N = 1	NA	0: N = 290; 2: N = 9	0: N = 134; 2: N = 12; 3: N = 2
Frequency consumption of poultry	0: N = 3; 1: N = 4; 2: N = 137; 3: N = 114; 4: N = 18; 5: N = 1	NA	2: N = 28; 3: N = 65; 4: N = 3; 5: N = 1	NA	0: N = 31; 2: N = 235; 3: N = 22; 4: N = 4; 5: N = 3	NA
Frequency consumption of milk	0: N = 25; 1: N = 10; 2: N = 37; 3: N = 18; 4: N = 26; 5: N = 160	0: N = 1; 1: N = 1; 2: N = 5; 3: N = 20; 4: N = 64; 5: N = 205	2: N = 1; 3: N = 7; 4: N = 19; 5: N = 70	NA	0: N = 22; 2: N = 81; 3: N = 31; 4: N = 30; 5: N = 132	0: N = 3; 2: N = 16; 3: N = 34; 4: N = 23; 5: N = 72
Frequency consumption of eggs	0: N = 14; 1: N = 11; 2: N = 198; 3: N = 48; 4: N = 5; 5: N = 1	NA	0: N = 1; 1: N = 1; 2: N = 35; 3: N = 44; 4: N = 12; 5: N = 4	NA	0: N = 20; 2: N = 248; 3: N = 23; 4: N = 3; 5: N = 2	0: N = 3; 2: N = 66; 3: N = 69; 4: N = 8; 5: N = 2
Vegetarian (no(0)/yes(1))	0: N = 256; 1: N = 1	NA	0: N = 97	0: N = 293; 1: N = 7	0: N = 268; 1: N = 30	NA
Frequency consumption of vegetables	1: N = 2; 2: N = 21; 3: N = 65; 4: N = 78; 5: N = 112	NA	2: N = 1; 3: N = 1; 4: N = 7; 5: N = 88	2: N = 35; 3: N = 99; 4: N = 59; 5: N = 106	0: N = 11; 2: N = 123; 3: N = 75; 4: N = 33; 5: N = 54	0: N = 1; 2: N = 1; 3: N = 6; 4: N = 38; 5: N = 102
Frequency consumption of fruit	1: N = 2; 2: N = 21; 3: N = 65; 4: N = 78; 5: N = 112	NA	2: N = 6; 3: N = 15; 4: N = 12; 5: N = 64	2: N = 22; 3: N = 151; 4: N = 44; 5: N = 82	0: N = 5; 2: N = 64; 3: N = 49; 4: N = 43; 5: N = 133	0: N = 4; 2: N = 9; 3: N = 39; 4: N = 36; 5: N = 60

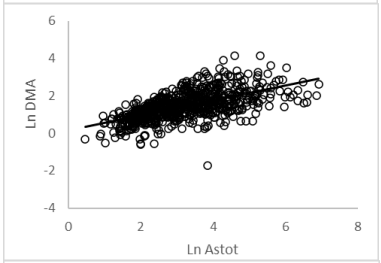
Frequency consumption of bread	1: N = 1; 2: N = 11; 3: N = 37; 4: N = 55; 5: N = 174	NA	2: N = 1; 3: N = 17; 4: N = 19; 5: N = 60	0: N = 2; 2: N = 41; 4: N = 257	0: N = 2; 2: N = 42; 3: N = 76; 4: N = 36; 5: N = 138	2: N = 2; 3: N = 7; 4: N = 19; 5: N = 119
Frequency consumption of cereals	0: N = 2; 2: N = 47; 3: N = 151; 4: N = 53; 5: N = 25	NA	2: N = 4; 3: N = 24; 4: N = 42; 5: N = 27	NA	0: N = 1; 2: N = 128; 3: N = 83; 4: N = 18; 5: N = 67	0: N = 23; 2: N = 39; 3: N = 38; 4: N = 15; 5: N = 33
Frequency consumption of rice	0: N = 2; 2: N = 47; 3: N = 151; 4: N = 53; 5: N = 25	NA	0: N = 2; 1: N = 1; 2: N = 71; 3: N = 22; 4: N = 1	NA	0: N = 30; 2: N = 245; 3: N = 15; 4: N = 3; 5: N = 3	NA
Recent consumption of rice (3 days before questionnaire) (no(0)/yes(1))	NA	NA	0: N = 60; 1: N = 37	0: N = 206; 1: N = 94	NA	0: N = 97; 1: N = 51
Recent consumption of seafood (3 days before questionnaire) (no(0)/yes(1))	0: N = 238; 1: N = 61	NA	0: N = 75; 1: N = 22	0: N = 203; 1: N = 97	0: N = 247; 1: N = 50	0: N = 88; 1: N = 60
Frequency consumption of juices	0: N = 12; 1: N = 29; 2: N = 59; 3: N = 49; 4: N = 39; 5: N = 88	NA	0: N = 22; 1: N = 10; 2: N = 40; 3: N = 12; 4: N = 6; 5: N = 7	NA	0: N = 20; 2: N = 128; 3: N = 56; 4: N = 20; 5: N = 72	NA
Frequency consumption of sugar drinks	0: N = 14; 1: N = 22; 2: N = 135; 3: N = 58; 4: N = 26; 5: N = 21	NA	0: N = 23; 1: N = 12; 2: N = 40; 3: N = 12; 4: N = 1; 5: N = 9	NA	0: N = 32; 2: N = 157; 3: N = 34; 4: N = 7; 5: N = 64	NA
Frequency consumption of local food	NA	NA	1: N = 2; 3: N = 4; 4: N = 6; 5: N = 85	NA	NA	0: N = 62; 5: N = 85
Frequency consumption of tea/coffee	0: N = 117; 1: N = 32; 2: N = 70; 3: N = 22; 4: N = 9; 5: N = 26	NA	0: N = 71; 1: N = 3; 2: N = 11; 3: N = 2; 4: N = 4; 5: N = 6	NA	0: N = 52; 2: N = 137; 3: N = 25; 4: N = 12; 5: N = 71	NA
Using vitamin B supplements (no(0)/yes(1))	NA	NA	0: N = 91; 1: N = 6	NA	NA	NA
Using folic acid supplements (no(0)/yes(1))	NA	NA	NA	NA	NA	NA
Using sea food supplements (no(0)/yes(1))	NA	NA	NA	NA	NA	NA
Use of pesticides indoor (no(0)/yes(1))	0: N = 73; 1: N = 216	NA	0: N = 39; 1: N = 58	NA	0: N = 279; 1: N = 21	0: N = 73; 1: N = 72
Type of drinking water (bottled, tap, ground, other)	1: N = 53; 2: N = 190; 3: N = 10; 4: N = 36	1: N = 107; 2: N = 136; 3: N = 2; 4: N = 55	1: N = 11; 2: N = 74; 3: N = 12	NA	NA	NA
Tap water source at home (public, private, both public & private)	NA	1: N = 255; 2: N = 3; 3: N = 2	1: N = 85; 2: N = 10; 3: N = 2	1: N = 257; 2: N = 39	1: N = 296	1: N = 45; 2: N = 1; 3: N = 1
Living close to waste incinerator (no(0)/yes(1)/do not know(2))	0: N = 298; 1: N = 2	0: N = 241; 1: N = 6; 2: N = 41	0: N = 95; 1: N = 2	NA	NA	NA
Smoking (no(0)/yes(1))	0: N = 89; 1: N = 10	0: N = 252; 1: N = 38	0: N = 97	0: N = 279; 1: N = 21	0: N = 288; 1: N = 12	0: N = 144; 1: N = 4
Passive smoking (no(0)/yes(1))	0: N = 202; 1: N = 96	0: N = 163; 1: N = 117	0: N = 72; 1: N = 25	NA	0: N = 279; 1: N = 19	0: N = 131; 1: N = 16
Use of alcohol (no(0)/yes(1))	NA	0: N = 2; 1: N = 291	0: N = 91; 1: N = 6	0: N = 180; 1: N = 86	0: N = 125; 1: N = 170	0: N = 94; 1: N = 54
ISCED	1: N = 17; 2: N = 116; 3: N = 167	1: N = 52; 2: N = 83; 3: N = 155	1: N = 21; 2: N = 34; 3: N = 42	1: N = 23; 2: N = 103; 3: N = 174	1: N = 20; 2: N = 110; 3: N = 170	1: N = 5; 2: N = 44; 3: N = 99
Income	1: N = 21; 2: N = 113; 3: N = 141; 4: N = 24	1: N = 23; 2: N = 109; 3: N = 11; 4: N = 155	1: N = 9; 2: N = 40; 3: N = 32	NA	NA	1: N = 26; 2: N = 27; 3: N = 81

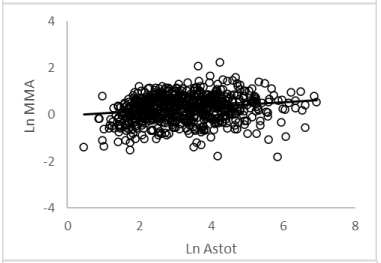
Table shows answers to questionnaires. Sometimes a combination of categories was taken for the statistical analysis to avoid categories with a small amount of participants.
NA: Not available
DEGURBA: 1= Densely populated area (cities), 2 = Intermediate density area (towns or suburbs), 3 = Thinly populated area (rural area)
Sampling month: 1 to 12 represents January to December
Sampling season: 1= spring, 2 = summer, 3 = autumn, 4 = winter
Frequency questions related to food consumption: 0 = Never, 1 =Rarely: <1 time / month, 2 = Sometimes: <= 1 time / week but >= 1 time/month, 3 = Often: 2-3 times / week, 4 = Very Often: 4-6 times / week, 5 = Everyday:> = 7 times / week
Type of drinking water: 1 = bottled water, 2 = tap water, 3 = ground, 4 = other
Tap water source at home: 1 = public, 2 = private well, 3 = both public & private well
ISCED (highest education level of the household of the subject): 1 = Low education (ISCED 0-2), 2 = Medium education (ISCED 3-4), 3 = High education (ISCED >=5)
Income (monthly total gross income of household at time of sampling): 1=low, 2=medium, 3=high, 4=don't know/don't want to share (defined by studies itself)

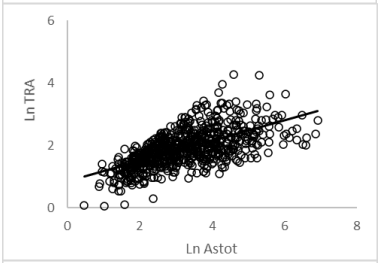

Ln As(III)
Ln Astot


Ln As(V)
Ln Astot


Ln AB
Ln Astot


Ln DMA
Ln Astot


Ln MMA
Ln Astot


Ln TRA
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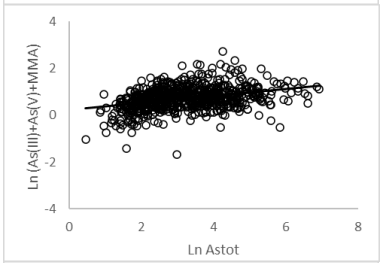
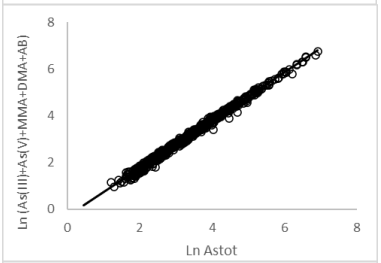
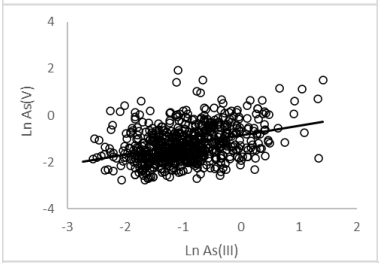
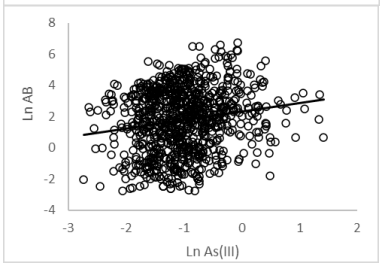
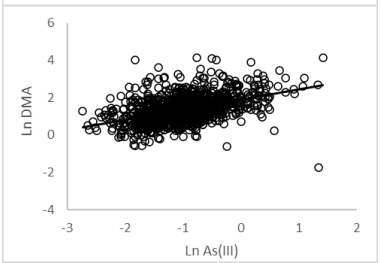
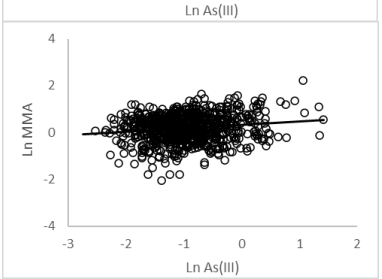

Ln (As(III)+As(V)+MMA)
Ln Astot

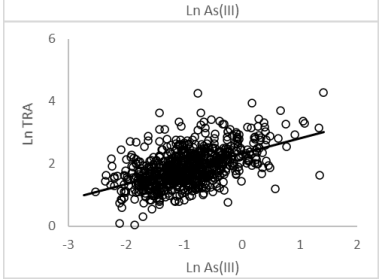

Ln (As(III)+As(V)+MMA+DMA+AB)
Ln Astot


Ln As(V)
Ln As(III)


Ln AB
Ln As(III)


Ln DMA
Ln As(III)


Ln MMA
Ln As(III)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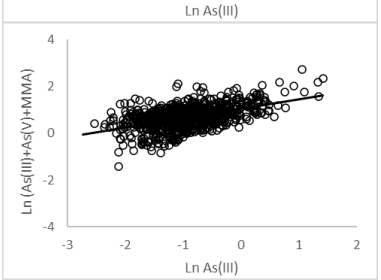
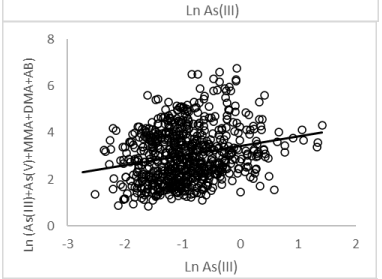
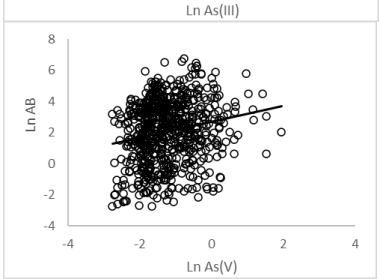
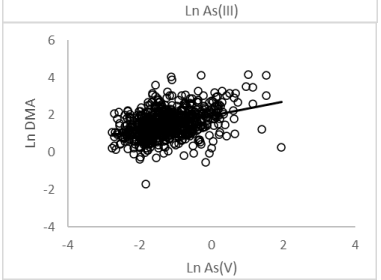
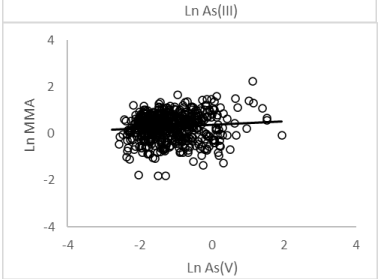
Ln As(III)

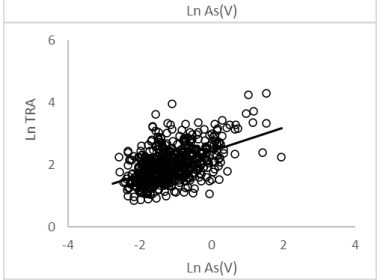

Ln (As(III)+As(V)+MMA)
Ln As(III)

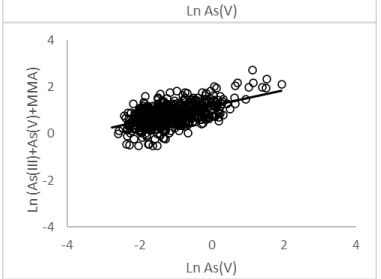

Ln (As(III)+As(V)+MMA+DMA+AB)
Ln As(III)

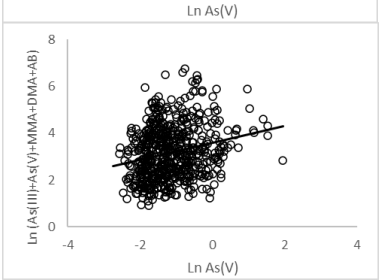

Ln AB
Ln As(V)

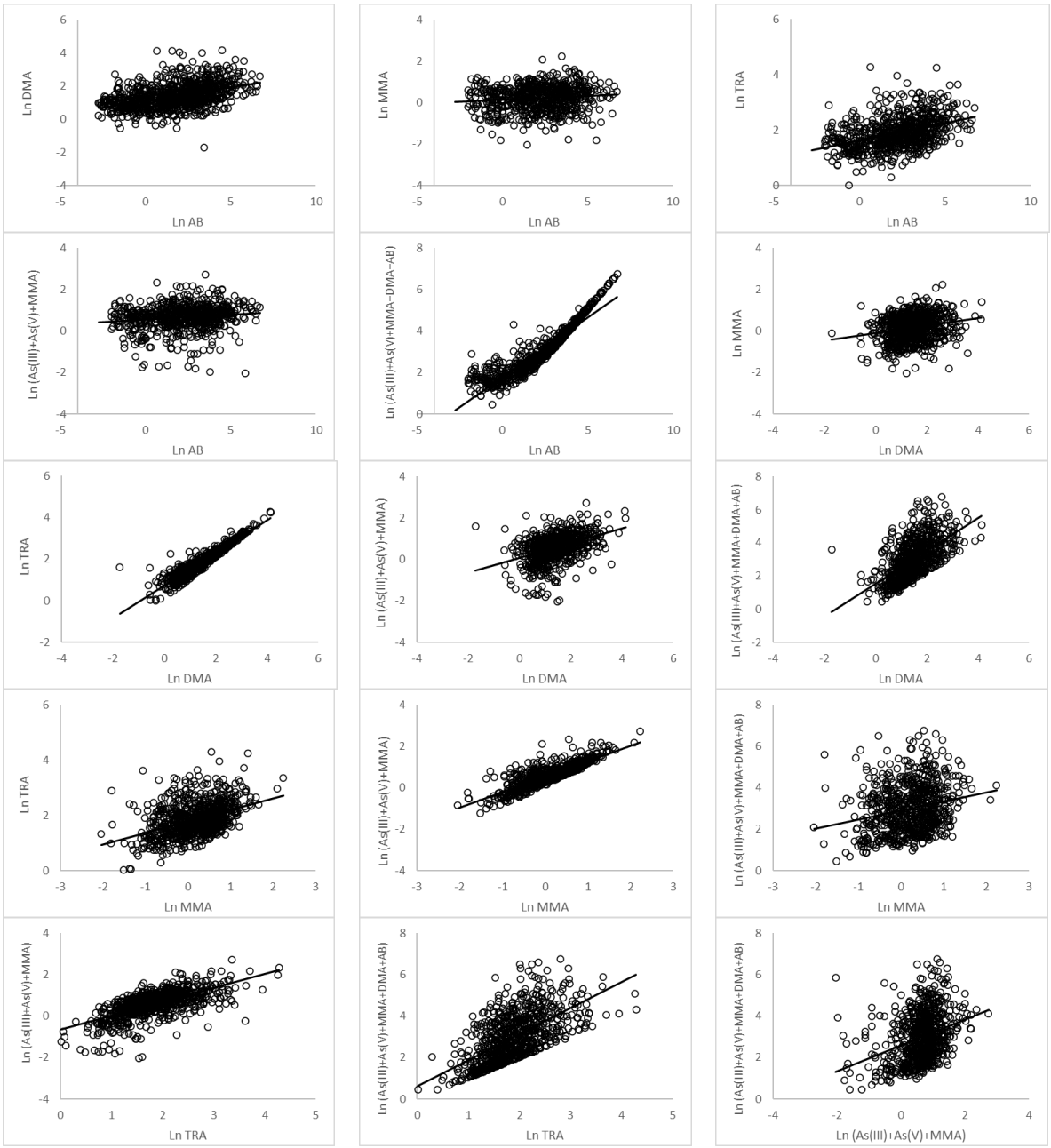

Ln DMA
Ln As(V)


Ln MMA
Ln As(V)


Ln TRA
Ln As(V)


Ln (As(III)+As(V)+MMA)
Ln As(V)


Ln (As(III)+As(V)+MMA+DMA+AB)
Ln As(V)



FigureA1. Associations between different As species. Not imputed values were used. Data below LOQ not included.

Data of ESTEBAN were not included as no sg normalised values were available.