

Electronic Supporting Information (ESI)

Multi-element analysis for identification of foodborne pathogenic bacteria

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Table S1 Results of major and minor elements in different types of foodborne pathogens by ICP-MS (ng/mL)

Element	<i>Staphylococcus</i> spp.				<i>Listeria</i> spp.				<i>Salmonella</i> spp.				<i>Shigella</i> spp.				<i>Escherichia</i> spp.				<i>Yersinia enterocolitica</i>				<i>Vibrio</i> spp.			
	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD
Ca*	673.1	570.1	804.1	84.6	1546.8	1459.9	1627.4	69.3	1362.5	1093	1638	262	1028.5	924	1087.8	90.8	1182	995.4	1452.7	673.1	570.1	804.1	84.6	1546.8	1459.9	1627.4	69.3	1362.5
Fe*	49.1	38.9	67.1	11.3	47.2	41.2	52.2	4.7	69.6	61.3	80	7.8	45.6	43.2	46.9	2.1	93.3	56.7	143.2	49.1	38.9	67.1	11.3	47.2	41.2	52.2	4.7	69.6
Si	143.6	128.9	149.7	8.4	187.8	172.4	207.8	16.6	155.4	151.8	163	5.2	131.3	117.	145.5	14.1	117.	109.2	124.6	143.6	128.9	149.7	8.4	187.8	172.4	207.8	16.6	155.4
										3								9										
Ti*	16.7	14.1	18.7	1.8	21.3	20.2	22.1	0.8	21	19.8	23.3	1.6	18.9	18.8	19.3	0.3	20	19.5	20.5	16.7	14.1	18.7	1.8	21.3	20.2	22.1	0.8	21
Zn	5.6	3.9	7.4	1.3	6.2	5.3	6.9	0.7	12.3	10.5	15	2.1	9.1	5.6	11.6	3.1	9.1	6	14.2	5.6	3.9	7.4	1.3	6.2	5.3	6.9	0.7	12.3
Mn	1.4	0.6	3	0.9	30.9	21.6	49.3	12.4	1.5	1.2	1.8	0.2	3	2.5	3.8	0.7	4.7	2.2	8.8	1.4	0.6	3	0.9	30.9	21.6	49.3	12.4	1.5
Sr	0.5	0.4	0.6	0.1	1	0.9	1.1	0.1	0.8	0.7	1	0.2	0.7	0.4	0.9	0.2	0.7	0.6	1.1	0.5	0.4	0.6	0.1	1	0.9	1.1	0.1	0.8
Ba	1.7	1.2	2.2	0.4	3.2	2.2	4.2	0.9	3.7	2.5	4.5	0.9	2.8	1.4	4.5	1.6	2.8	2	3.9	1.7	1.2	2.2	0.4	3.2	2.2	4.2	0.9	3.7
Cr	1.2	1	1.3	0.1	1.5	1.5	1.6	0.1	1.5	1.3	1.7	0.2	1.3	1.2	1.4	0.1	3.5	1.4	6.6	1.2	1	1.3	0.1	1.5	1.5	1.6	0.1	1.5
Pb	0.9	0.7	1.1	0.2	0.8	0.6	1.1	0.2	4	3	5.7	1.2	2.8	1.7	3.8	1	3.1	0.8	9.5	0.9	0.7	1.1	0.2	0.8	0.6	1.1	0.2	4
Cu	0.6	0.5	0.9	0.1	1.4	0.8	2	0.5	1.5	0.8	2.8	0.9	0.9	0.5	1.3	0.4	1.1	0.7	1.9	0.6	0.5	0.9	0.1	1.4	0.8	2	0.5	1.5

*, ⁴³Ca, ⁴⁷Ti and ⁵⁷Fe

Table S2 Results of trace elements in different types of foodborne pathogens by ICP-MS (ng/mL)

Element	<i>Staphylococcus</i> spp.				<i>Listeria</i> spp.				<i>Salmonella</i> spp.				<i>Shigella</i> spp.				<i>Escherichia</i> spp.				<i>Yersinia enterocolitica</i>				<i>Vibrio</i> spp.						
	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max	SD	mean	min	max
Se*	0.596	0.38	0.715	0.144	0.745	0.67	0.905	0.108	0.705	0.455	0.885	0.185	0.763	0.595	0.86	0.146	0.783	0.67	0.905	0.596	0.38	0.715	0.144	0.745	0.67	0.905	0.108	0.705			
Th	0.399	0.3	0.58	0.108	0.248	0.215	0.29	0.033	0.226	0.205	0.25	0.019	0.198	0.17	0.225	0.028	0.228	0.175	0.3	0.399	0.3	0.58	0.108	0.248	0.215	0.29	0.033	0.226			
W	0.226	0.12	0.33	0.085	0.199	0.075	0.37	0.124	0.514	0.06	1.105	0.52	0.06	0.04	0.09	0.026	0.363	0.05	1.745	0.226	0.12	0.33	0.085	0.199	0.075	0.37	0.124	0.514			
Sb	0.279	0.235	0.345	0.046	0.32	0.275	0.365	0.037	0.423	0.25	0.845	0.283	0.268	0.22	0.335	0.06	0.187	0.145	0.27	0.279	0.235	0.345	0.046	0.32	0.275	0.365	0.037	0.423			
Mo	0.143	0.025	0.38	0.141	0.024	0.005	0.035	0.014	0.245	0.125	0.405	0.136	0.155	0.06	0.25	0.095	0.309	0.16	0.475	0.143	0.025	0.38	0.141	0.024	0.005	0.035	0.014	0.245			
Zr	0.153	0.115	0.185	0.03	0.15	0.13	0.17	0.018	0.183	0.155	0.23	0.034	0.138	0.125	0.16	0.019	0.153	0.115	0.22	0.153	0.115	0.185	0.03	0.15	0.13	0.17	0.018	0.183			
Sn	0.084	0.07	0.1	0.011	0.113	0.075	0.19	0.053	0.141	0.1	0.195	0.046	0.11	0.075	0.155	0.041	0.091	0.075	0.125	0.084	0.07	0.1	0.011	0.113	0.075	0.19	0.053	0.141			
V	0.043	0.03	0.06	0.011	0.051	0.045	0.06	0.006	0.075	0.05	0.125	0.034	0.055	0.05	0.065	0.009	0.072	0.04	0.115	0.043	0.03	0.06	0.011	0.051	0.045	0.06	0.006	0.075			
Hg	0.107	0.07	0.15	0.03	0.05	0.035	0.065	0.012	0.12	0.1	0.135	0.018	0.065	0.06	0.075	0.009	0.086	0.05	0.125	0.107	0.07	0.15	0.03	0.05	0.035	0.065	0.012	0.12			
Ce	0.074	0.02	0.125	0.042	0.091	0.085	0.105	0.009	0.16	0.125	0.195	0.031	0.058	0.05	0.07	0.01	0.063	0.04	0.075	0.074	0.02	0.125	0.042	0.091	0.085	0.105	0.009	0.16			
As	0.047	0.035	0.065	0.012	0.055	0.05	0.06	0.004	0.073	0.055	0.091	0.018	0.067	0.055	0.075	0.01	0.066	0.055	0.085	0.047	0.035	0.065	0.012	0.055	0.05	0.06	0.004	0.073			
Nb	0.032	0.025	0.04	0.006	0.058	0.035	0.095	0.027	0.036	0.03	0.045	0.006	0.032	0.03	0.035	0.003	0.037	0.035	0.04	0.032	0.025	0.04	0.006	0.058	0.035	0.095	0.027	0.036			
Co	0.015	0.01	0.035	0.011	0.041	0.015	0.12	0.053	0.131	0.015	0.475	0.229	0.017	0.01	0.025	0.008	0.036	0.01	0.07	0.015	0.01	0.035	0.011	0.041	0.015	0.12	0.053	0.131			
La	0.016	0.005	0.025	0.007	0.016	0.01	0.03	0.009	0.041	0.025	0.055	0.013	0.033	0.025	0.045	0.01	0.034	0.02	0.04	0.016	0.005	0.025	0.007	0.016	0.01	0.03	0.009	0.041			
Cd	0.027	0.015	0.04	0.009	0.044	0.03	0.055	0.011	0.051	0.03	0.065	0.015	0.035	0.02	0.055	0.018	0.026	0.015	0.035	0.027	0.015	0.04	0.009	0.044	0.03	0.055	0.011	0.051			
Nd	0.013	0.01	0.02	0.004	0.013	0.01	0.015	0.003	0.038	0.025	0.05	0.01	0.03	0.02	0.035	0.009	0.025	0.015	0.035	0.013	0.01	0.02	0.004	0.013	0.01	0.015	0.003	0.038			
Y	0.024	0.005	0.08	0.032	0.01	0.01	0.01	0	0.016	0.015	0.02	0.003	0.013	0.01	0.015	0.003	0.013	0.01	0.015	0.024	0.005	0.08	0.032	0.01	0.01	0.01	0	0.016			
Bi	0.017	0.01	0.035	0.01	0.051	0.035	0.07	0.017	0.013	0.005	0.025	0.009	0.022	0.015	0.03	0.008	0.008	0.005	0.02	0.017	0.01	0.035	0.01	0.051	0.035	0.07	0.017	0.013			
U	0.015	0.005	0.025	0.008	0.029	0.01	0.075	0.031	0.016	0.01	0.025	0.006	0.012	0.01	0.015	0.003	0.014	0.01	0.025	0.015	0.005	0.025	0.008	0.029	0.01	0.075	0.031	0.016			
Ag	0.024	0.015	0.045	0.012	0.021	0.015	0.03	0.006	0.016	0.015	0.02	0.003	0.015	0.01	0.02	0.005	0.012	0.01	0.015	0.024	0.015	0.045	0.012	0.021	0.015	0.03	0.006	0.016			
Hf	0.013	0.01	0.015	0.003	0.011	0.01	0.015	0.003	0.014	0.01	0.02	0.005	0.012	0.01	0.015	0.003	0.012	0.005	0.015	0.013	0.01	0.015	0.003	0.011	0.01	0.015	0.003	0.014			
Er	0	0	0	0	0	0	0	0	0.004	0	0.005	0.003	0.01	0.01	0.01	0	0.012	0.005	0.02	0	0	0	0	0	0	0	0	0.004			
Dy	0.002	0	0.005	0.003	0.003	0	0.005	0.003	0.008	0.005	0.01	0.003	0.015	0.005	0.035	0.017	0.005	0	0.005	0.002	0	0.005	0.003	0.003	0	0.005	0.003	0.008			

Ga	0.005	0.005	0.005	0	0.014	0.01	0.015	0.003	0.028	0.005	0.085	0.038	0.007	0.005	0.01	0.003	0.007	0.005	0.01	0.005	0.005	0.005	0	0.014	0.01	0.015	0.003	0.028
Yb	0	0	0	0	0	0	0	0	0.001	0	0.005	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001
Ta	0.007	0.005	0.015	0.004	0.009	0.005	0.01	0.003	0.008	0.005	0.015	0.005	0.005	0.005	0	0.005	0.005	0.005	0.007	0.005	0.015	0.004	0.009	0.005	0.01	0.003	0.008	
Gd	0.001	0	0.005	0.002	0.001	0	0.005	0.003	0.009	0.005	0.015	0.005	0.007	0.005	0.01	0.003	0.006	0	0.01	0.001	0	0.005	0.002	0.001	0	0.005	0.003	0.009
Pr	0.002	0	0.005	0.003	0.004	0	0.005	0.003	0.009	0.005	0.01	0.003	0.005	0.005	0.005	0	0.006	0.005	0.01	0.002	0	0.005	0.003	0.004	0	0.005	0.003	0.009
Sm	0.002	0	0.005	0.003	0.004	0	0.005	0.003	0.008	0.005	0.01	0.003	0.005	0.005	0.005	0	0.005	0	0.01	0.002	0	0.005	0.003	0.004	0	0.005	0.003	0.008
Ho	0	0	0	0	0	0	0	0	0.001	0	0.005	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001
Lu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu	0.001	0	0.005	0.002	0	0	0	0	0	0	0	0	0.002	0	0.005	0.003	0	0	0	0.001	0	0.005	0.002	0	0	0	0	0
Tb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*⁸²Se