Electronic Supplementary Information

Direct Multi-elemental Analysis of Whole Blood Samples by LA-ICP-MS Employing a Cryogenic Cell

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Cryogenic Ablation Cell

Figure S1(a) showed the structure of self-designed circular cryogenic ablation cell. The body of the ablation cell was made of aluminum alloy due to the excellent thermal conductivity provided by this material. The inner volume of the ablation cell was about 12.6 cm^3. The inlet and outlet diameters of this ablation cell were 1mm and 4mm, respectively. A 0.5 mm thick piece of calcium fluoride was installed in the center of the lid as the window to ensure efficient transmission of laser, and PEEK (polyether-ether-ketone) was used as the material for lid body, which relieved the fogging of the window surface. A copper plate, a Peltier element and a water-cooled platform were mounted on the bottom of ablation cell in turn. The backplane was used to hold and support the ablation cell. The blood samples would be injected into a microwell plate, then analyzed by CLA-ICP-MS, which enhances the analysis throughput of whole blood samples. Figure 1(b) showed the external refrigeration system. The chiller could maintain the low temperature of the refrigerant fluid (Ethylene glycol) and ensure its fast circulation throughout the water-cooled platform. The temperature control device was connected to the Peltier element by wires, which could adjust the temperature of the ablation cell. A temperature sensor was inserted into the copper plate to monitor the temperature of the ablation cell. When the system is working, the heat of the ablation cell will be extracted by the Peltier element based on the Peltier effect, then transmitted to the circulating refrigerant fluid flowing in the water-cooled platform. The refrigerant fluid was re-cooled and re-pumped into the water-cooled platform by the chiller to maintain the low temperature of ablation cell.

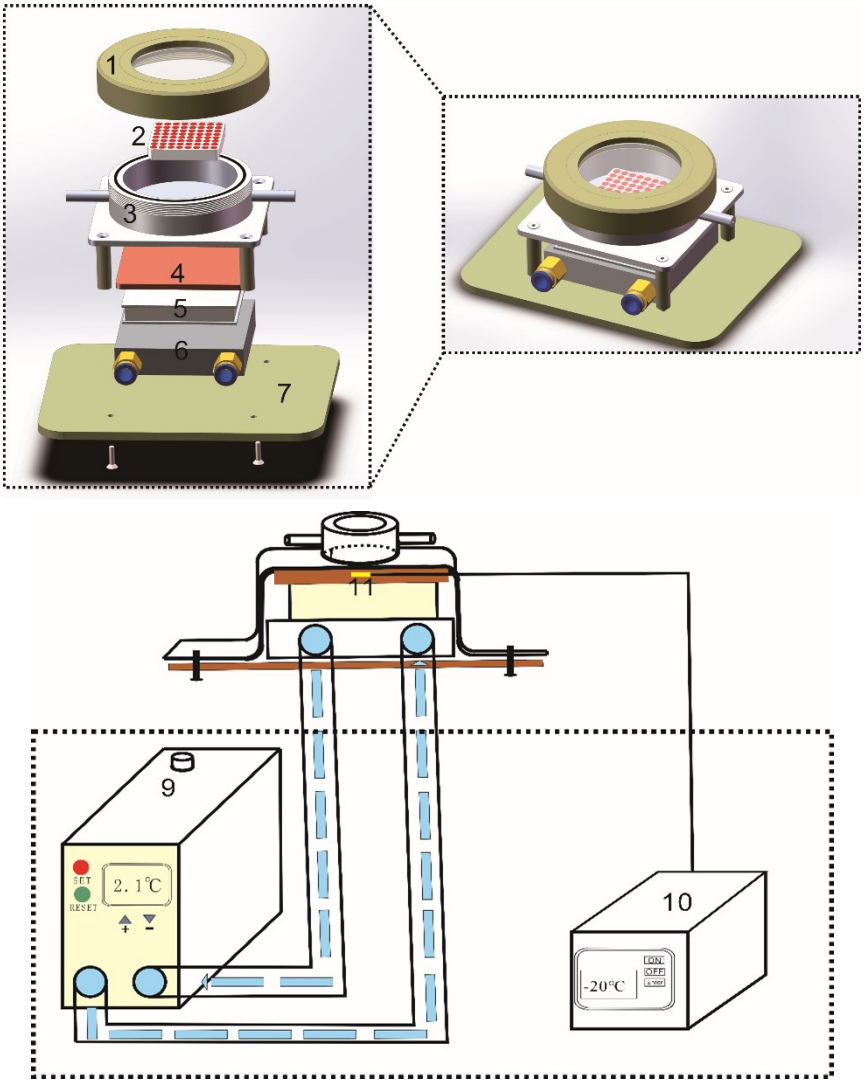

Figure S1 Schematic set-up of cryogenic ablation system. (a) Interior structure of the cryogenic ablation cell. (b) Ablation cell with the external refrigeration system. (1) The ablation cell. (2) Calcium fluoride window for laser transmission. (3) the lid made of PEEK, could relieves the fogging of the window surface. (4) The thermally conductive copper plate, (5) Peltier element for cooling ablation cell and (6) water-cooled platform for removing the heat generated by Peltier element are stacked under the ablation cell. (7) Backplate is used to support the ablation cell. (8) The microwell plate, for loading blood samples. (9) The chiller was used for maintain the low temperature and circulating of refrigerant fluid. (10) The temperature control device was used for adjust and control temperature of ablation cell, and a temperature sensor (11) was used for monitor the temperature of the ablation cell.

Table S1 The concentrations (in μg·L^{-1}) of 9 elements in fifty-seven whole blood samples determined by this method and SN-ICP-MS method.

	Li		Mg[a]		Al		Cr		Mn		Cu[a]		Zn[a]		Ba		Pb	
	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS	This method	SN-ICP-MS
1	12.3 ±0.6	11.0 ±0.3	49.2 ±1.3	45.8 ±1.9	14.2 ±1.9	12.8 ±1.6	20.5 ±0.3	18.4 ±0.2	89.3 ±6.9	83.1 ±5.5	8.5 ±0.6	7.9 ±0.9	12.4 ±0.9	11.5 ±1.3	38.0 ±0.7	34.2 ±1.0	21.8 ±1.2	19.6 ±1.0
2	5.0 ±0.2	4.8 ±0.2	71.7 ±4.2	70.2 ±7.4	18.0 ±1.7	17.1 ±1.2	25.9 ±0.4	24.6 ±0.3	41.5 ±2.4	40.7 ±1.7	5.7 ±0.3	5.6 ±0.5	4.3 ±0.1	4.2 ±0.1	51.8 ±1.0	49.2 ±1.7	46.8 ±2.7	44.5 ±1.9
3	2.8 ±0.1	2.9 ±0.1	15.1 ±0.9	16.3 ±1.1	4.2 ±0.9	4.4 ±0.7	6.1 ±0.1	6.4 ±0.1	30.0 ±1.3	32.4 ±1.0	1.1 ±0.1	1.2 ±0.1	10.0 ±0.1	10.8 ±0.1	14.7 ±0.3	15.4 ±0.8	22.4 ±1.8	22.8 ±0.9
4	5.3 ±0.2	5.0 ±0.1	82.4 ±4.6	93.1 ±5.1	20.9 ±0.3	19.7 ±0.1	30.1 ±0.4	28.3 ±0.2	61.3 ±1.8	69.2 ±0.7	4.0 ±0.2	4.5 ±0.2	5.9 ±0.2	6.6 ±0.2	63.4 ±1.2	59.6 ±1.3	70.5 ±4.0	66.3 ±1.6
5	6.3 ±0.3	6.7 ±0.3	32.0 ±1.1	29.1 ±1.2	7.1 ±0.2	7.5 ±0.5	10.2 ±0.1	10.8 ±0.1	26.2 ±0.8	23.8 ±0.7	0.8 ±0.1	0.7 ±0.1	12.3 ±0.6	11.2 ±0.6	24.5 ±1.2	26.0 ±0.5	30.0 ±1.7	31.8 ±1.5
6	32.7 ±1.5	31.4 ±2.3	53.8 ±1.8	54.3 ±1.9	32.1 ±1.7	30.8 ±2.5	46.2 ±0.7	44.4 ±0.8	15.7 ±0.7	15.9 ±0.8	4.3 ±0.2	4.4 ±0.2	8.9 ±0.6	9.0 ±0.6	105.0 ±2.0	100.8 ±2.1	78.7 ±1.5	75.6 ±1.8
7	8.4 ±0.4	8.7 ±0.6	43.3 ±1.9	39.8 ±2.4	12.7 ±0.6	13.2 ±0.9	18.3 ±0.3	19.0 ±0.4	21.9 ±0.2	20.2 ±0.2	1.0 ±0.1	0.9 ±0.1	12.8 ±0.1	11.8 ±0.1	46.6 ±0.9	48.5 ±1.2	34.4 ±2.0	35.8 ±2.8
8	11.9 ±0.6	11.5 ±1.0	62.2 ±2.0	59.1 ±1.8	20.8 ±1.3	20.1 ±2.3	29.9 ±0.4	29.0 ±0.8	29.3 ±1.2	27.8 ±2.1	3.4 ±0.2	3.2 ±0.1	3.2 ±0.2	3.1 ±0.2	44.0 ±0.8	42.7 ±0.8	21.6 ±1.2	21.0 ±2.2
9	9.3 ±0.4	8.4 ±0.5	32.2 ±1.3	34.4 ±1.0	19.7 ±1.1	18.0 ±1.3	28.4 ±0.4	25.9 ±0.5	37.7 ±2.4	40.4 ±2.9	2.3 ±0.1	2.4 ±0.1	13.9 ±0.1	14.8 ±0.1	44.2 ±0.8	40.3 ±0.7	21.5 ±1.3	20.8 ±1.6
10	12.6 ±0.6	11.7 ±0.9	15.9 ±0.9	16.7 ±0.7	28.5 ±1.9	26.5 ±2.1	41.0 ±0.6	38.1 ±0.7	24.0 ±1.5	25.2 ±1.7	2.6 ±0.1	2.7 ±0.1	6.2 ±0.2	6.6 ±0.1	70.5 ±1.3	65.5 ±0.9	38.4 ±2.2	35.7 ±2.4
11	9.6 ±0.5	9.4 ±0.8	31.4 ±0.6	34.2 ±0.5	13.8 ±0.9	13.6 ±0.9	19.9 ±0.3	19.5 ±0.3	39.4 ±1.7	43.0 ±1.8	2.3 ±0.1	2.5 ±0.1	3.7 ±0.1	4.0 ±0.1	52.3 ±1.0	51.2 ±0.8	25.0 ±1.4	24.5 ±1.5
12	9.0 ±0.4	9.7 ±0.7	39.0 ±1.3	36.6 ±1.2	11.1 ±1.3	12.0 ±1.4	16.0 ±0.2	17.3 ±0.2	61.9 ±3.9	58.2 ±4.1	2.5 ±0.1	2.4 ±0.1	13.2 ±0.3	12.4 ±0.3	50.9 ±1.0	55.0 ±0.9	20.8 ±1.2	22.4 ±1.2
13	22.1 ±1.0	25.0 ±1.4	27.8 ±1.5	26.4 ±1.4	34.0 ±2.3	38.4 ±2.9	48.9 ±0.7	55.3 ±0.9	28.4 ±1.8	27.0 ±2.3	6.4 ±0.3	6.1 ±0.3	8.7 ±0.3	8.2 ±0.3	84.6 ±1.6	95.6 ±1.6	105.6 ±4.0	109.3 ±5.2
14	43.3 ±2.0	39.4 ±1.2	31.1 ±1.0	30.5 ±1.1	35.8 ±2.4	32.5 ±2.2	51.5 ±0.7	46.9 ±0.7	60.3 ±2.7	59.1 ±2.4	3.3 ±0.2	3.2 ±0.2	6.6 ±0.3	6.5 ±0.3	97.9 ±1.9	89.1 ±1.9	87.9 ±5.0	80.0 ±4.5
15	11.4 ±0.5	11.5 ±0.4	40.1 ±1.2	39.3 ±1.0	11.9 ±0.5	12.1 ±0.4	17.2 ±0.2	17.4 ±0.2	22.7 ±0.3	22.3 ±0.2	2.8 ±0.1	2.8 ±0.1	11.6 ±0.1	11.4 ±0.1	47.9 ±0.9	48.4 ±0.8	14.9 ±0.8	15.0 ±0.7
16	11.5 ±0.5	10.6 ±0.4	34.6 ±2.6	37.4 ±1.6	24.1 ±1.0	22.2 ±0.7	34.7 ±0.5	32.0 ±0.4	30.9 ±1.5	33.4 ±1.0	1.9 ±0.1	2.1 ±0.1	3.6 ±0.1	3.9 ±0.1	45.1 ±0.9	41.5 ±0.5	20.0 ±1.1	18.4 ±0.8
17	10.9 ±0.5	10.3 ±0.4	30.9 ±1.4	32.4 ±1.0	18.4 ±0.8	17.5 ±0.6	26.5 ±0.4	25.2 ±0.3	12.1 ±0.1	12.7 ±0.3	2.0 ±0.1	2.0 ±0.1	12.9 ±0.1	13.6 ±0.1	48.2 ±0.9	45.7 ±0.6	15.8 ±0.9	15.0 ±0.7
18	19.7 ±0.9	21.0 ±0.8	24.5 ±1.8	21.3 ±1.7	34.1 ±2.1	36.5 ±1.8	49.2 ±0.7	52.6 ±0.6	42.4 ±3.2	36.9 ±2.7	3.5 ±0.2	3.0 ±0.2	6.0 ±0.2	5.2 ±0.2	98.4 ±1.9	105.3 ±1.8	45.4 ±2.6	48.6 ±2.2
19	15.0 ±0.7	15.6 ±0.4	14.6 ±0.3	13.0 ±0.2	29.3 ±1.7	30.5 ±1.0	42.3 ±0.6	43.9 ±0.4	73.2 ±1.5	65.1 ±0.9	2.9 ±0.1	2.6 ±0.1	4.6 ±0.2	4.1 ±0.1	106.9 ±2.0	111.1 ±1.4	35.6 ±2.0	37.0 ±1.2
20	34.8 ±1.6	37.6 ±1.1	18.9 ±0.2	19.5 ±0.3	55.0 ±4.4	59.4 ±3.0	79.2 ±1.1	85.5 ±0.8	45.5 ±3.0	46.9 ±2.0	7.0 ±0.3	7.2 ±0.4	15.1 ±0.6	15.5 ±0.8	50.3 ±2.9	54.3 ±3.7	154.3 ±3.8	161.6 ±2.6
21	12.7 ±0.6	13.3 ±0.2	21.6 ±1.1	21.2 ±1.4	20.3 ±1.2	21.3 ±1.2	29.2 ±0.4	30.7 ±0.4	66.6 ±4.6	65.3 ±2.4	2.7 ±0.1	2.6 ±0.2	4.5 ±0.2	4.4 ±0.2	77.3 ±1.5	81.2 ±1.9	64.6 ±3.7	67.8 ±3.5
22	12.4 ±0.6	13.6 ±0.4	17.9 ±0.3	18.1 ±0.3	21.1 ±1.5	23.0 ±1.0	30.4 ±0.4	33.2 ±0.3	34.9 ±1.0	35.2 ±0.7	2.6 ±0.1	2.6 ±0.2	11.8 ±0.1	11.9 ±0.1	46.9 ±0.9	51.1 ±1.2	12.9 ±0.7	14.0 ±0.5
23	25.2 ±1.2	23.7 ±2.0	28.0 ±1.2	26.9 ±1.3	29.0 ±2.6	27.2 ±3.3	41.7 ±0.6	39.2 ±0.8	59.5 ±2.6	57.1 ±3.3	2.4 ±0.1	2.3 ±0.1	3.2 ±0.1	3.1 ±0.1	70.3 ±1.3	66.1 ±1.4	37.0 ±2.1	34.8 ±2.7
24	77.0 ±3.6	73.2 ±6.3	19.0 ±0.5	18.1 ±0.6	43.8 ±3.1	41.6 ±3.5	63.1 ±0.9	60.0 ±1.0	41.1 ±2.3	39.0 ±2.6	5.1 ±0.2	4.9 ±0.3	8.6 ±0.3	8.2 ±0.4	21.8 ±1.0	20.7 ±1.1	172.2 ±2.8	163.6 ±3.2
25	108.4±5.1	112.9 ±6.5	13.4 ±0.3	12.9 ±0.4	88.7 ±4.0	89.1 ±2.6	81.2 ±1.8	79.3 ±2.3	46.2 ±1.4	44.9 ±1.8	7.4 ±0.3	7.1 ±0.4	17.1 ±0.6	17.3 ±0.7	19.5 ±0.5	20.2 ±0.6	82.7 ±2.5	84.4 ±4.1
26	63.6 ±3.0	62.4 ±3.9	31.4 ±2.0	30.1 ±2.1	77.2 ±4.0	75.6 ±1.3	111.1 ±1.6	108.9 ±2.1	78.9 ±5.4	75.8 ±14.9	7.1 ±0.3	6.9 ±0.4	10.6 ±0.4	10.2 ±0.4	26.0 ±0.9	25.5 ±1.0	87.9 ±5.0	86.1 ±6.6
27	40.1 ±1.9	43.4 ±2.9	46.3 ±1.4	44.0 ±1.6	41.1 ±2.5	44.4 ±1.7	59.2 ±0.9	64.0 ±0.9	65.1 ±4.4	61.8 ±9.8	4.7 ±0.2	4.4 ±0.3	6.5 ±0.3	6.2 ±0.3	54.4 ±2.4	58.7 ±2.7	51.3 ±2.9	55.4 ±3.1
28	19.6 ±0.9	20.6 ±1.0	54.6 ±1.9	52.9 ±2.0	39.9 ±1.3	41.9 ±5.0	57.5 ±0.8	60.4 ±2.5	35.8 ±2.1	34.7 ±13.2	3.0 ±0.1	3.0 ±0.2	5.8 ±0.2	5.6 ±0.2	55.2 ±2.1	57.9 ±2.1	92.5 ±5.3	97.1 ±5.8
29	28.9 ±1.4	25.1 ±2.6	22.4 ±2.4	22.6 ±2.3	46.2 ±2.6	40.2 ±4.7	66.5 ±1.0	57.9 ±1.1	38.0 ±1.7	38.4 ±1.9	6.7 ±0.3	6.7 ±0.3	10.4 ±0.4	10.5 ±0.4	38.5 ±1.3	33.5 ±1.2	210.3 ±8.0	182.9 ±9.0
30	37.8 ±1.8	33.7 ±3.3	34.9 ±2.5	35.2 ±2.3	41.2 ±1.4	36.7 ±1.9	59.3 ±0.9	52.8 ±0.9	16.6 ±0.6	16.8 ±0.6	4.9 ±0.2	5.0 ±0.2	5.5 ±0.2	5.6 ±0.2	60.7 ±3.1	57.0 ±2.8	44.8 ±2.6	39.8 ±2.7
31	24.4 ±1.2	21.0 ±1.9	50.9 ±1.0	49.4 ±0.9	24.2 ±1.2	20.9 ±1.4	34.9 ±0.5	30.0 ±0.6	25.3 ±2.0	24.5 ±2.3	43.4 ±2.1	42.1 ±1.9	5.7 ±0.2	5.5 ±0.2	25.6 ±1.0	23.1 ±0.9	90.5 ±5.2	87.8 ±5.8
32	58.0 ±2.7	54.5 ±3.9	34.3 ±1.3	34.7 ±1.2	30.8 ±2.4	29.0 ±2.5	44.4 ±0.6	41.7 ±0.7	51.5 ±1.2	52.0 ±1.2	2.4 ±0.1	2.3 ±0.1	4.8 ±0.2	4.8 ±0.2	66.7 ±1.9	63.7 ±1.7	171.8 ±4.8	167.5 ±4.9
33	33.1 ±1.6	31.4 ±0.9	18.8 ±1.0	19.0 ±1.0	29.0 ±0.6	27.5 ±0.6	41.8 ±0.6	39.7 ±0.6	27.7 ±1.1	28.0 ±1.0	2.8 ±0.1	2.6 ±0.1	4.4 ±0.2	4.4 ±0.2	75.9 ±1.5	73.1 ±1.4	88.2 ±5.0	83.7 ±4.9
34	9.7 ±0.5	9.4 ±0.2	77.9 ±2.0	79.5 ±1.0	21.0 ±0.4	20.4 ±0.2	30.2 ±0.4	29.3 ±0.2	19.1 ±1.5	19.5 ±0.7	2.9 ±0.1	3.1±0.1	3.9 ±0.2	4.0 ±0.1	88.5 ±1.7	85.9 ±0.8	24.0 ±1.4	23.2 ±0.6
35	89.8 ±4.2	90.7 ±1.8	32.6 ±1.6	34.9 ±0.7	71.0 ±4.7	71.7 ±2.0	102.2 ±1.5	103.3 ±0.6	35.3 ±2.7	37.7 ±1.2	8.8 ±0.4	9.4 ±0.2	11.3 ±0.4	12.0 ±0.2	31.5 ±0.8	31.8 ±0.3	171.8 ±7.8	173.5 ±3.4
36	17.3 ±0.8	17.5 ±0.5	68.5 ±1.7	67.8 ±1.5	35.3 ±0.3	35.7 ±0.3	50.9 ±0.7	51.4 ±0.6	19.6 ±1.6	19.4 ±1.4	5.7 ±0.3	5.7 ±0.2	8.1 ±0.3	8.0 ±0.6	44.9 ±1.8	45.4 ±1.5	123.0 ±4.0	124.2 ±3.5
37	25.7 ±1.2	26.2 ±0.9	69.6 ±2.3	68.2 ±1.7	36.1 ±1.5	36.8 ±1.1	52.0 ±0.7	53.0 ±0.6	24.0 ±0.5	23.5 ±0.3	3.4 ±0.2	3.4 ±0.1	6.5 ±0.3	6.4 ±0.2	15.7 ±0.2	16.0 ±0.2	13.9 ±0.8	14.1 ±0.6
38	18.0 ±0.9	19.3 ±0.5	49.9 ±1.3	44.9 ±0.8	130.1 ±2.4	139.2 ±1.5	187.4 ±2.7	200.5 ±1.7	25.1 ±1.5	22.6 ±0.9	4.4 ±0.2	4.0 ±0.1	6.8 ±0.3	6.1 ±0.2	22.2 ±1.5	23.7 ±0.9	101.4 ±5.1	108.5 ±3.2
39	46.3 ±2.2	45.8 ±1.0	21.2 ±1.3	21.0 ±0.6	25.7 ±1.3	25.5 ±0.6	37.1 ±0.5	36.7 ±0.2	28.5 ±1.5	28.1 ±0.7	4.7 ±0.2	4.6 ±0.1	5.4 ±0.2	5.0 ±0.1	34.3 ±1.6	33.9 ±0.7	33.3 ±0.6	33.0 ±0.3
40	41.1 ±1.9	40.3 ±1.0	28.8 ±1.2	27.7 ±0.6	35.8 ±2.4	35.1 ±1.3	51.6 ±0.7	50.6 ±0.4	23.1 ±1.8	22.1 ±1.0	6.1 ±0.3	5.8 ±0.2	8.6 ±0.3	8.2 ±0.2	21.9 ±1.1	21.4 ±0.6	61.6 ±3.5	60.4 ±1.9
41	50.6 ±2.4	45.5 ±1.6	50.6 ±3.4	48.6 ±2.2	36.4 ±2.6	32.8 ±1.7	52.5 ±0.8	47.2 ±0.5	21.9 ±1.6	21.1 ±1.0	2.5 ±0.1	2.4 ±0.1	7.1 ±0.3	6.8 ±0.2	72.6 ±4.3	69.2 ±0.9	57.2 ±3.3	51.5 ±2.1
42	20.1 ±0.9	19.8 ±0.6	40.5 ±2.1	40.1 ±1.4	28.9 ±1.0	28.5 ±0.7	41.6 ±0.6	41.1 ±0.4	18.1 ±0.4	17.9 ±0.3	4.9 ±0.2	5.0 ±0.2	6.1 ±0.2	6.0 ±0.4	86.8 ±1.7	85.7 ±1.1	37.0 ±1.1	36.6 ±0.8
43	25.7 ±1.2	24.6 ±0.7	44.1 ±3.2	42.3 ±1.9	41.3 ±2.6	39.7 ±1.5	59.5 ±0.9	57.2 ±0.5	14.5 ±0.5	13.9 ±0.3	4.7 ±0.2	4.6 ±0.1	8.6 ±0.3	8.2 ±0.1	29.6 ±0.5	28.4 ±0.3	81.2 ±4.6	78.0 ±2.7
44	24.7 ±1.2	23.7 ±0.7	40.1 ±2.2	43.7 ±1.3	39.4 ±0.9	37.8 ±0.5	56.7 ±0.8	54.4 ±0.5	15.6 ±0.2	17.0 ±0.1	3.6 ±0.2	3.9 ±0.1	6.1 ±0.2	6.7 ±0.1	77.7 ±1.5	74.6 ±0.9	23.9 ±1.4	22.9 ±0.8
45	25.2 ±1.2	27.5 ±0.3	50.9 ±4.6	47.3 ±3.7	41.5 ±1.6	45.2 ±0.4	59.8 ±0.9	65.1 ±0.2	27.9 ±1.7	26.0 ±0.4	12.7 ±0.6	11.8 ±0.5	11.3 ±0.5	10.5 ±0.4	42.6 ±0.9	46.4 ±0.7	80.2 ±4.6	87.4 ±1.1
46	13.5 ±0.6	12.6 ±0.6	54.0 ±7.0	50.7 ±4.9	14.1 ±0.9	13.1 ±0.9	20.3 ±0.3	18.9 ±0.3	49.1 ±1.5	46.1 ±1.4	7.0 ±0.3	6.6 ±0.2	3.1 ±0.1	2.9 ±0.1	54.4 ±1.0	50.6 ±0.7	43.1 ±2.5	40.1 ±2.4
47	93.2 ±4.4	87.6 ±6.7	19.0 ±1.3	17.2 ±1.0	36.6 ±1.6	34.4 ±1.8	52.7 ±0.8	49.5 ±0.9	38.0 ±0.9	34.6 ±1.0	2.2 ±0.1	2.0 ±0.1	5.9 ±0.2	5.4 ±0.1	68.6 ±1.3	64.5 ±1.0	19.5 ±1.1	18.3 ±1.2
48	21.1 ±1.0	19.2 ±1.4	16.4 ±1.8	15.1 ±1.5	33.8 ±1.0	30.7 ±3.9	48.6 ±0.7	44.2 ±0.8	27.8 ±1.2	25.6 ±1.4	4.9 ±0.2	4.5 ±0.2	7.6 ±0.3	7.0 ±0.4	28.1 ±0.9	25.6 ±0.8	153.7 ±5.9	139.9 ±6.6
49	27.7 ±1.3	25.4 ±1.7	25.5 ±1.9	23.0 ±1.1	30.1 ±6.3	27.7 ±2.3	43.4 ±0.6	39.9 ±0.8	12.2 ±0.4	10.9 ±0.5	3.6 ±0.2	3.2 ±0.1	4.0 ±0.2	3.6 ±0.4	44.4 ±2.2	40.8 ±1.3	32.7 ±1.9	30.1 ±2.5
50	17.8 ±0.8	17.7 ±1.2	37.2 ±0.7	38.0 ±1.5	17.7 ±0.9	17.5 ±1.2	25.5 ±0.4	28.3 ±0.5	18.5 ±1.5	18.8 ±2.1	31.7 ±1.5	32.4 ±1.0	4.2 ±0.2	4.3 ±0.1	18.7 ±0.7	18.6 ±0.5	66.2 ±3.8	65.5 ±5.2
51	42.4 ±2.0	38.1 ±3.0	25.1 ±1.0	27.4 ±0.9	22.5 ±1.8	20.3 ±2.6	32.5 ±0.5	29.2 ±0.7	37.7 ±0.9	41.0 ±1.3	1.7 ±0.1	1.9 ±0.1	3.5 ±0.1	3.8 ±0.1	48.8 ±1.4	43.9 ±1.3	125.6 ±3.5	113.0 ±4.2
52	24.2 ±1.1	24.6 ±1.5	13.7 ±0.7	14.4 ±0.5	21.2 ±0.5	21.6 ±0.6	30.5 ±0.4	31.1 ±0.6	20.2 ±0.8	21.2 ±1.0	2.0 ±0.1	2.1 ±0.1	3.2 ±0.1	3.4 ±0.1	55.5 ±1.1	56.6 ±0.7	64.4 ±3.7	65.7 ±4.7
53	7.1 ±0.3	7.7 ±0.4	56.9 ±1.5	63.8 ±1.9	15.4 ±0.3	16.7 ±0.3	22.1 ±0.3	24.1 ±0.4	14.0 ±1.1	15.7 ±1.3	2.1 ±0.1	2.4 ±0.1	2.9 ±0.1	3.2 ±0.1	64.7 ±1.2	70.5 ±1.6	17.5 ±1.0	19.1 ±1.2
54	65.6 ±3.1	68.9 ±3.5	23.9 ±1.1	25.8 ±1.3	51.9 ±3.5	54.5 ±4.3	74.7 ±1.1	78.5 ±1.2	25.8 ±2.0	27.8 ±2.2	6.4 ±0.3	6.9 ±0.4	8.2 ±0.3	8.9 ±0.4	23.0 ±0.6	24.2 ±0.6	125.6 ±5.7	131.9 ±6.5
55	12.6 ±0.6	14.2 ±0.6	50.1 ±1.3	45.6 ±1.6	25.8 ±0.2	28.9 ±2.3	37.2 ±0.5	41.7 ±0.6	14.3 ±1.2	13.0 ±1.2	4.2 ±0.2	3.8 ±0.3	5.9 ±0.2	5.4 ±0.3	32.8 ±1.3	36.8 ±1.6	89.9 ±2.9	100.7 ±3.1
56	18.8 ±0.9	20.3 ±0.9	50.8 ±1.7	51.4 ±1.9	26.4 ±1.1	28.5 ±2.1	38.0 ±0.5	41.0 ±0.6	17.6 ±0.3	17.7 ±0.3	2.5 ±0.1	2.5 ±0.1	4.7 ±0.2	4.8 ±0.2	11.4 ±0.2	12.4 ±0.2	10.1 ±0.6	10.9 ±0.6
57	13.2 ±0.6	12.0 ±0.3	36.4 ±0.9	36.1 ±1.0	95.1 ±1.8	86.5 ±1.2	137.0 ±2.0	124.6 ±1.8	18.3 ±1.1	18.2 ±1.0	3.2 ±0.2	3.2 ±0.2	5.0 ±0.2	4.9 ±0.2	16.2 ±1.1	14.8 ±1.2	74.1 ±3.7	67.5 ±3.4

a: $\mu g \cdot mL^{-1}$.