

**Table S1** Significant biomarkers of differentially expressed metabolites in crucian under CA exposures using high-throughput metabolomics analysis based on UPLC-ESI-QTOF-MS

No.	Ion mode	Rt(min)	Name	Formula	m/z	error	HMDB
1	M-H	0.98	L-Leucine	C <sub>6</sub> H <sub>13</sub> NO <sub>2</sub>	130.09	-3.9741	HMDB00687
2	M-H	7.23	Arachidonic acid	C <sub>20</sub> H <sub>32</sub> O <sub>2</sub>	303.23	1.2435	HMDB01043
3	M-H	4.50	Cer(d18:0/18:0)	C <sub>36</sub> H <sub>73</sub> NO <sub>3</sub>	566.55	-2.3542	HMDB11761
4	M+H	0.96	Citric acid	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	215.02	-4.5676	HMDB00094
5	M-H	6.39	Corticosterone	C <sub>21</sub> H <sub>30</sub> O <sub>4</sub>	345.21	4.7271	HMDB01547
6	M-H	0.87	Asparagine	C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> O <sub>3</sub>	131.05	5.9467	HMDB33780
7	M+H	2.11	Glucose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	181.07	4.9133	HMDB00122
8	M+H	2.46	Homocysteine	C <sub>4</sub> H <sub>9</sub> NO <sub>2</sub> S	136.04	-4.2862	HMDB00742
9	M+H	1.03	Isocitric acid	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	215.01	4.7010	HMDB00193
10	M+H	0.60	Arginine	C <sub>6</sub> H <sub>14</sub> N <sub>4</sub> O <sub>2</sub>	175.12	-2.1115	HMDB00517
11	M-H	1.71	Glutamine	C <sub>5</sub> H <sub>10</sub> N <sub>2</sub> O <sub>3</sub>	145.06	-5.7520	HMDB00641
12	M+H	4.07	Lysine	C <sub>6</sub> H <sub>14</sub> N <sub>2</sub> O <sub>2</sub>	147.11	-9.2258	HMDB00182
13	M+H	6.05	Phenylalanine	C <sub>9</sub> H <sub>11</sub> NO <sub>2</sub>	166.08	-6.2631	HMDB00159
14	M-H	0.88	Tyrosine	C <sub>9</sub> H <sub>11</sub> NO <sub>3</sub>	180.07	0.1284	HMDB0000158
15	M-H	0.55	Valine	C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub>	116.07	2.0329	HMDB00883
16	M-H	6.35	LysoPC(15:0)	C <sub>23</sub> H <sub>48</sub> NO <sub>7</sub> P	480.31	-6.6735	HMDB10381
17	M-H	8.55	LysoPC(18:0)	C <sub>26</sub> H <sub>54</sub> NO <sub>7</sub> P	522.36	-3.7906	HMDB10384
18	M-H	7.51	LysoPC(18:1(9Z))	C <sub>26</sub> H <sub>52</sub> NO <sub>7</sub> P	520.34	6.3940	HMDB02815
19	M+H	7.41	LysoPE(0:0/20:0)	C <sub>25</sub> H <sub>52</sub> NO <sub>7</sub> P	510.36	-2.3125	HMDB11481
20	M+H	8.52	Palmitic amide	C <sub>16</sub> H <sub>33</sub> NO	256.26	0.6928	HMDB12273
21	M-H	5.48	Pyruvic acid	C <sub>3</sub> H <sub>4</sub> O <sub>3</sub>	87.01	0.6928	HMDB00243
22	M+H	4.30	Sphingosine	C <sub>18</sub> H <sub>38</sub> NO <sub>5</sub> P	380.26	-1.2722	HMDB0000277
23	M-H	4.29	Taurocholic acid	C <sub>26</sub> H <sub>45</sub> NO <sub>7</sub> S	514.28	1.7544	HMDB00036
24	M+H	1.39	Uric acid	C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> O <sub>3</sub>	169.04	-8.5142	HMDB00289
25	M-H	0.65	Uridine	C <sub>9</sub> H <sub>12</sub> N <sub>2</sub> O <sub>6</sub>	243.06	-5.7807	HMDB00296
26	M-H	0.66	Lactic acid	C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>	89.02	2.8609	HMDB01311
27	M+H	3.89	Glycerophosphocholine	C <sub>8</sub> H <sub>20</sub> NO <sub>6</sub> P	258.11	0.3502	HMDB00086