

Table S1 Identification of potential toxicity biomarkers by MS/MS

NO.	Rt	m/z determined	m/z calculated	Error (ppm)	Ion form	Molecular Formula	Metabolite Name	MS/MS
1	0.65	175.1190	175.1189	0.4	[M+H] ⁺	C ₆ H ₁₄ N ₄ O ₂	D-Arginine	158.0942/129.0972/ 112.0866/70.0656
2	0.66	203.0528	203.0526	0.8	[M+Na] ⁺	C ₆ H ₁₂ O ₆	3-Deoxyarabinohexonic acid	145.0473/85.0279
3	0.75	176.1030	176.1029	0.7	[M+H] ⁺	C ₆ H ₁₃ N ₃ O ₃	Argininic acid	158.0884/130.0925/ 70.0637
4	0.78	204.1234	204.1230	1.7	[M+H] ⁺	C ₉ H ₁₇ NO ₄	L-Acetylcarnitine	158.1258/144.1029/ 85.0278
5	0.91	116.0708	116.0706	1.4	[M+H] ⁺	C ₅ H ₉ NO ₂	D-Proline	116.0709/98.0838/ 70.0622
6	2.85	261.1446	261.1444	0.4	[M+H] ⁺	C ₁₁ H ₂₀ N ₂ O ₅	L-γ-glutamyl-L-leucine	244.1302/198.1122/ 130.0509
7	5.34	373.1985	373.1985	-0.2	[M+Na] ⁺	C ₂₀ H ₃₀ O ₅	Prostaglandin E ₃	502.3292/443.2432/ 315.2165/233.1172
8	5.94	449.2183	449.2169	2.9	[M+H] ⁺	C ₂₄ H ₃₂ O ₈	17-α-Estradiol-3-glucuronide	413.1964/215.1786
9	6.70	282.2795	282.2791	1.2	[M+H] ⁺	C ₁₈ H ₃₅ NO	Oleamide	264.2624/239.2760/ 209.1614
10	7.01	518.3241	518.3241	-0.1	[M+H] ⁺	C ₂₆ H ₄₈ NO ₇ P	LysoPC(18:3)	500.3081/184.0730/ 124.9987
11	7.34	482.3177	482.3241	1.7	[M+H] ⁺	C ₂₃ H ₄₈ NO ₇ P	LysoPE(18:0)	464.3096/339.2731/ 225.2174
12	7.51	542.3228	542.3241	-2.3	[M+H] ⁺	C ₂₈ H ₄₈ NO ₇ P	LysoPC(20:5)	524.3213/184.0725

13	7.84	774.5041	774.5044	-0.4	[M+Na] ⁺	C ₄₂ H ₇₄ NO ₈ P	PC(14:0/20:5)	184.0642/104.1075
14	7.92	494.3244	494.3241	0.6	[M+H] ⁺	C ₂₄ H ₄₈ NO ₇ P	LysoPC(16:1)	478.3249/184.0732
15	8.22	570.3566	570.3554	2.1	[M+H] ⁺	C ₃₀ H ₅₂ NO ₇ P	LysoPC(22:5)	552.3343/184.0725
16	8.28	431.3150	431.3155	-1.4	[M+H] ⁺	C ₂₇ H ₄₂ O ₄	24-Oxo-1 α ,25-dihydroxyvitamin D ₃	413.2956/395.2835/ 269.1863/121.0719
17	8.38	522.3566	522.3554	2.2	[M+H] ⁺	C ₂₆ H ₅₂ NO ₇ P	LysoPC(18:1)	504.3400/339.2873/ 258.1079/184.0726
18	9.04	536.3711	536.3710	0.1	[M+H] ⁺	C ₂₇ H ₅₄ NO ₇ P	LysoPE(22:1)	518.3781/395.3268
19	9.38	782.5701	782.5694	0.9	[M+H] ⁺	C ₄₄ H ₈₀ NO ₈ P	PC(16:0/20:4)	723.4807/599.4752/ 184.0733
20	9.73	549.3807	549.3788	2.2	[M+H] ⁻	C ₂₈ H ₅₆ NO ₇ P	LysoPC(20:1)	532.2589/367.3019/ 293.2693/184.0663
21	10.62	780.5528	780.5537	-1.1	[M+H] ⁺	C ₄₄ H ₇₈ NO ₈ P	PC(16:1/20:4)	721.4694/597.4785/ 184.0727/86.0964
22	10.91	832.5843	832.5850	-0.9	[M+H] ⁺	C ₄₈ H ₈₂ NO ₈ P	PC(18:1/22:6)	773.5029/649.5125/ 184.0737
23	10.91	760.5837	760.2850	-1.8	[M+H] ⁺	C ₄₂ H ₈₂ NO ₈ P	PC(18:0/16:1)	577.5287/86.0967
24	10.91	756.5533	756.5537	-0.6	[M+H] ⁺	C ₄₂ H ₇₈ NO ₈ P	PC(16:0/18:3)	698.4711/573.4726/ 313.2736/240.0968
25	11.16	512.5029	512.5037	-1.5	[M+H] ⁻	C ₃₂ H ₆₅ NO ₃	Cer(d18:0/14:0)	494.4837/266.3042
26	11.19	836.6157	836.6163	-0.8	[M+H] ⁺	C ₄₈ H ₈₆ NO ₈ P	PC(18:0/22:5)	778.6121/508.3563/ 184.0729
27	11.50	209.1149	209.1148	0.6	[M+Na] ⁺	C ₁₀ H ₁₈ O ₃	3-Oxodecanoic acid	170.9921/126.9539/ 100.9553/85.9345
28	11.53	927.7401	927.7436	-3.8	[M+H] ⁺	C ₆₁ H ₉₈ O ₆	TG(16:0/22:6/20:4)	623.4839/599.5016
29	11.53	772.5830	772.5850	-2.7	[M+H] ⁺	C ₄₃ H ₈₂ NO ₈ P	PE(18:0/20:2)	631.4818/341.0298

30	11.53	786.6010	786.6007	0.4	[M+H] ⁺	C ₄₄ H ₈₄ NO ₈ P	PC(18:0/18:2)	502.3232/184.0729
31	11.75	339.1809	339.1802	2.0	[M+H] ⁺	C ₁₈ H ₂₆ O ₆	ω-Carboxy-trinor-leukotriene B ₄	321.1131/303.1949/ 261.1527/135.0148
32	0.70	130.0509	130.0498	-0.8	[M-H] ⁻	C ₅ H ₉ NO ₃	4-Hydroxy-L-proline	114.0231/71.0129
33	1.58	167.0209	167.0199	-1.1	[M-H] ⁻	C ₅ H ₄ N ₄ O ₃	Uric acid	502.3292/443.2432/ 124.0177/96.0205/ 69.0086
34	2.09	163.0396	163.0389	-2.8	[M-H] ⁻	C ₉ H ₈ O ₃	Phenylpyruvic acid	145.0912/119.0515/ 93.0389
35	2.10	180.0663	180.0655	-1.7	[M-H] ⁻	C ₉ H ₁₁ NO ₃	L-Tyrosine	478.3292/313.2738/ 163.0410/119.4511/ 72.0072
36	2.47	137.0245	137.0233	0.7	[M-H] ⁻	C ₇ H ₆ O ₃	Gentisate aldehyde	553.2783/281.2486/ 120.9430/118.9419/ 107.0399/53.4798
37	2.52	164.0714	164.0706	-1.6	[M-H] ⁻	C ₉ H ₁₁ NO ₂	L-Phenylalanine	147.0447/103.0554/ 96.8230
38	2.84	159.0923	159.0916	-2.7	[M-H] ⁻	C ₁₀ H ₁₂ N ₂	Tryptamine	142.0911/130.0650/ 116.0513/71.0393
39	2.84	203.0825	203.0815	-0.7	[M-H] ⁻	C ₁₁ H ₁₂ N ₂ O ₂	D-Tryptophan	186.0564/159.0928/ 142.0665/74.0247
40	4.37	201.1125	201.1121	-3.5	[M-H] ⁻	C ₁₀ H ₁₈ O ₄	Heptylmalonic acid	157.1213/139.1105/ 111.0793/109.0628
41	5.51	498.2887	498.2883	-1.6	[M-H] ⁻	C ₂₆ H ₄₅ NO ₆ S	Taurochenodesoxycholic acid	329.2759/124.0053/ 106.9784
42	6.21	448.3064	448.3057	-1.0	[M-H] ⁻	C ₂₆ H ₄₃ NO ₅	Chenodeoxyglycocholic acid	430.2969/404.3165/

									402.3012/386.3039/ 74.0251
43	6.58	287.2015	287.2005	-0.4	[M-H] ⁻	C ₁₉ H ₂₈ O ₂	Dehydroepiandrosterone		271.1699/269.1859/ 243.1954/215.1161
44	6.64	378.2409	378.2403	-1.5	[M-H] ⁻	C ₁₈ H ₃₈ NO ₅ P	Sphingosine 1-phosphate		333.2058/287.1999/ 78.9569
45	6.97	317.2116	317.2111	-1.9	[M-H] ⁻	C ₂₀ H ₃₀ O ₃	5-HEPE		299.2021/273.2095/ 253.1959/69.0297
46	7.09	253.2166	253.2162	-3.0	[M-H] ⁻	C ₁₆ H ₃₀ O ₂	Palmitoleic acid		235.2053/209.2298
47	7.11	466.2938	466.2928	-0.3	[M-H] ⁻	C ₂₂ H ₄₆ NO ₇ P	LysoPC(14:0)		184.0739
48	7.37	391.2851	391.2842	-0.7	[M-H] ⁻	C ₂₄ H ₄₀ O ₄	Deoxycholic acid		373.2742/347.2954/ 327.2696
49	7.37	327.2320	327.2318	-2.8	[M-H] ⁻	C ₂₂ H ₃₂ O ₂	Docosahexaenoic acid		297.1835/283.2448/ 267.2113/59.0130
50	7.87	452.2777	452.2771	-1.3	[M-H] ⁻	C ₂₁ H ₄₄ NO ₇ P	LysoPE(16:0)		409.3082/255.2337/ 214.0484/196.0384/ 152.9967/78.9587
51	8.14	281.2479	281.2475	-2.6	[M-H] ⁻	C ₁₈ H ₃₄ O ₂	Oleic acid		265.2165/237.2220/ 59.0133
52	8.26	478.2931	478.2928	-1.7	[M-H] ⁻	C ₂₃ H ₄₆ NO ₇ P	LysoPE(18:1)		460.3160/281.2489/ 263.2357/196.0380/ 122.0015
53	8.29	436.2826	436.2822	-1.8	[M-H] ⁻	C ₂₁ H ₄₄ NO ₆ P	PE(P-16:0e/0:0)		393.2413/375.2305/ 239.2385/196.0386/ 140.0122
54	8.35	417.2400	417.2400	0	[M-H] ⁻	C ₂₁ H ₃₉ O ₆ P	CPA(18:1)		399.2482/281.2473/

55	9.45	283.2639	283.2631	-1.2	[M-H] ⁻	C ₁₈ H ₃₆ O ₂	Stearic acid	152.9933/134.9817 267.2540/211.2125/ 594.3717/508.2411/ 367.1596
56	9.49	640.2911	640.2898	0.2	[M-H] ⁻	C ₃₀ H ₄₇ N ₃ O ₁₀ S	12-Oxo-c-LTB ₃	281.2484/253.1532/ 437.2664/419.2626/ 283.2611/78.9599 528.3095/457.2360/ 283.2463/271.2277/ 255.2224/ 259.2085/241.1066/ 233.2065
57	9.53	299.2011	299.2005	-1.9	[M-H] ⁻	C ₂₀ H ₂₈ O ₂	4-OH-Retinal	261.2205/59.0139 311.2379/285.2589/ 267.2349/203.1787/ 237.2170/213.2682
58	9.97	522.3554	522.3554	-2.1	[M-H] ⁻	C ₂₆ H ₅₄ NO ₇ P	LysoPC(18:0)	
59	10.17	301.2166	301.2162	-2.4	[M-H] ⁻	C ₂₀ H ₃₀ O ₂	Isopimaric acid	
60	10.34	277.2166	277.2162	-2.4	[M-H] ⁻	C ₁₈ H ₃₀ O ₂	Linolenelaidic acid	
61	10.90	279.2324	279.2318	-1.8	[M-H] ⁻	C ₁₈ H ₃₂ O ₂	Linoleic acid	
62	11.16	329.2480	329.2475	-1.8	[M-H] ⁻	C ₂₂ H ₃₄ O ₂	Docosapentaenoic acid	
63	11.52	255.2322	255.2318	-2.9	[M-H] ⁻	C ₁₆ H ₃₂ O ₂	Isopalmitic acid	

FIGURE S1 Representative photomicrographs of heart, liver, spleen, lung and kidney sections stained with hematoxylin-eosin in mice from control, CW, ZCW, YNBY, and QCW groups.

