Table S1. Bodyweight and growth rate data for control and T-2 toxin dosed rats [a]

treatment	Control	Low-dose	Moderate-dose	High-dose
bodyweight at d 0 (g)	193.53±.9	197.15±8.79	199.95±15.14	200.21±19.31
bodyweight at d 7 (g)	210.16±11.26	205.95±11.03	207.94±19.27	206.65±19.42
growth rate(7 days)	8.65%±0.04	4.53%±0.05*	3.93%±0.04*	3.29%±0.04*

[a] Data expressed as mean ± SD for each group (n=12 for all groups, except high-dose group n=7).

* Significantly different from control group ($p<0.05$)

Table S2. Clinical biochemistry parameters of rats exposed to different levels of T-2 toxin[a]

treatment	Control	Low	Moderate	High
ALT	55.58±15.48	53.41±8.36	54.50±24.62	43.57±18.96
AST	140.83±46.98	161.16±39.40	170.58±111.73	110.85±44.53
TP	63.20±2.03	65.85±2.98	65.38±3.38	62.54±4.46
ALB	26.70±1.13	29.06±1.71**	28.60±1.48**	25.17±3.02
ALKP	80.58±14.34	65.91±19.95	84.00±23.08	116.14±21.99**
GLC	6.91±0.94	7.07±0.96	7.81±0.75*	6.30±1.10
CREA	37.75±3.28	37.01±3.30	37.66±2.34	35.74±2.25
CHOL	2.10±0.33	1.72±0.22**	2.24±0.34	2.17±0.29
TRIG	0.69±0.54	0.57±0.18	0.65±0.18	0.52±0.08

[a] Data expressed as mean ± SD for each group (n=12 for all groups, except high-dose group n=7). * $p<0.05$, ** $p<0.01$

Table S3. NMR assignments of the metabolites in rat urine, thymus, stomach, spleen and liver aqueous tissue extracts (T: thymus; S: stomach; U: urine; L: liver; SP: spleen).

keys	metabolites	moieties	δ ^{1}H (multiplicity [a])	samples [b]
1	isoleucine	δCH_3	0.94(t)	T, S, SP, L
		γ'CH_3	1.01(d)	
		half γCH_2	1.26(m)	
		half γCH_2	1.47(m)	
		βCH	1.98(m)	
		αCH	3.67(d)	
2	leucine	δCH_3	0.95(d)	T, S, SP, L
		δCH_3	0.97(d)	
		γCH	1.71(m)	
		αCH	3.74(t)	
3	valine	γ'CH_3	0.99(d)	T, S, SP, L
		γCH_3	1.04(d)	
		βCH	2.27(m)	
		αCH	3.61(d)	
4	3-hydroxybutyrate	γCH_3	1.20(d)	T, S, SP, L
		half αCH_2	2.32(dd)	
		half αCH_2	2.40(dd)	
		βCH	4.15(m)	
5	lactate	βCH_3	1.33(d)	T, S, SP, L ,U
		αCH	4.11(q)	
6	threonine	γCH_3	1.33(d)	T, S, SP, L, U
		αCH	3.59(d)	
		βCH	4.25(m)	
7	alanine	βCH_3	1.48(d)	T, S, SP, L, U
		αCH	3.79(q)	

keys	metabolites	moieties	δ ^{1}H (multiplicity [a])	samples [b]
8	lysine	γCH_2	1.47(m)	T, S, SP, L
		δCH_2	1.72(m)	
		βCH_2	1.91(m)	
		εCH_2	3.01(t)	
		αCH	3.76(t)	
9	glutamate	half βCH_2	2.06(m)	T, S, SP, L
		half βCH_2	2.13(m)	
		γCH_2	2.35(t)	
		αCH	3.76(t)	
10	glutamine	βCH_2	2.14(m)	L
		γCH_2	2.46(t)	
		αCH	3.77(t)	
11	succinate	CH_2	2.41(s)	S, SP, L, U
12	oxidized glutathione	βCH_2	2.16(m)	T, S, SP, L
		γCH_2	2.54(t)	
		αCH	3.79(t)	
		half βCH_2	2.98(m)	
		half βCH_2	3.31(m)	
		αCH	4.75(m)	
13	citrate	half CH_2	2.54(d)	T, SP, U
		half CH_2	2.66(d)	
14	aspartate	half βCH_2	2.68(dd)	T, S, SP, L
		half βCH_2	2.81(dd)	
		αCH	3.90(m)	
15	creatine	CH_3	3.03(s)	T, S, SP, L, U
		CH_2	3.93(s)	
16	creatinine	CH_3	3.04(s)	U
		CH_2	4.06(s)	
17	phosphocholine	CH_3	3.23(s)	T, S, SP, L
		NCH_2	3.60(t)	
		OCH_2	4.17(t)	
18	GPC	CH_3	3.23(s)	T, S, SP, L
		NCH_2	3.68(t)	
		OCH_2	4.33(t)	
19	choline	CH_3	3.21(s)	T, S, SP, L
		NCH_2	3.53(t)	
		OCH_2	4.07(t)	
20	PE	CH_2NH_2	3.22(t)	T, S, SP, L
		CH_2O	3.98(t)	
21	betaine	CH_3	3.26(s)	L, SP
		CH_2	3.91(s)	
22	taurine	CH_2S	3.27(t)	T, S, SP, L, U
		CH_2NH_2	3.42(t)	
23	TMAO	CH_3	3.28(s)	U
24	hypotaurine	CH_2S	2.65(t)	T, S, SP, L
		CH_2N	3.36(t)	
25	methanol	CH3	3.36(s)	SP, S, L
26	methionine	γCH_2	2.16(m)	S, SP
		βCH_2	2.65(t)	
		αCH	3.86(t)	
27	glycine	αCH_2	3.56(s)	T, S, SP, L
28	ethanolamine	CH_2NH_2	3.15(t)	T, S, SP, L
		CH_2OH	3.83(t)	
29	2-oxoglutarate	γCH_2	2.46(t)	U
		βCH_2	3.02(t)	
30	dimethylamine	CH_3	2.73(s)	U
31	dimethylglycine	CH_3	2.93(s)	U
32	myo-inositol	2-CH	3.28(t)	T , SP, S, L
		4,6-CH	3.55(q)	
		1,3-CH	3.63(t)	
		5-CH	4.08(t)	
33	arginine	γCH_2	1.72(m)	T, S, SP
		βCH_2	1.92(m)	
		δCH_2	3.25(d)	
		αCH	3.76(d)	
34	α-glucose	1-CH	5.24(d)	T, S, SP, L

keys	metabolites	moieties	δ ^{1}H (multiplicity [a])	samples [b]
35	β-glucose	1-CH	4.65(d)	T, S, SP, L
36	uracil	5-CH	5.80(d)	T, S, SP, L
		6-CH	7.55(d)	
37	uridine	1'-CH	4.34(#)	T, S, SP
		2'-CH	4.31(#)	
		5-CH	5.90(d)	
		2'-CH	5.92(d)	
		6-CH	7.88(d)	
38	cytidine	5-CH	6.07(d)	T, SP
		6-CH	7.85(d)	
39	UMP	5-CH	5.99(d)	S, SP, L
		6-CH	8.10(d)	
40	UDP	5-CH	5.97(d)	S, SP, L
		6-CH	7.95(d)	
41	adenosine	3'-CH	4.44(t)	T, S, SP, L
		1'-CH	6.10(d)	
		8-CH	8.24(s)	
		2-CH	8.35(s)	
42	fumarate	CH	6.52(s)	T, S, SP, L, U
43	tyrosine	2,6-CH	6.90(d)	T, S, SP, L
		3,5-CH	7.20(d)	
44	phenylalanine	2,6-CH	7.33(m)	T, S, SP, L
		4-CH	7.38(m)	
		3,5-CH	7.42(m)	
45	formate	CHO	8.46(s)	T, S, SP, L, U
46	hypoxanthine	2-CH	8.20(s)	T, S, SP, L
		8-CH	8.22(s)	
47	xanthine	8-CH	7.89(s)	T, S, SP, L
48	nicotinamide	5-CH	7.60(m)	T, S, SP, L
		4-CH	8.25(dd)	
		6-CH	8.72(dd)	
		2-CH	8.95(t)	
49	hippurate	CH_2NH	3.98(d)	U
		3,5-CH	7.55(t)	
		4-CH	7.64(t)	
		2,6-CH	7.83(d)	
50	phenylacetylglycine	1'-CH	3.68(s)	U
		4'-CH	3.76(s)	
		2,6-CH	7.36(m)	
		3,5-CH	7.42(m)	
51	1-methylnicotinate (Trigenelline)	N-CH_3	4.44(s)	U
		5-CH	8.09(m)	
		4,6-CH	8.84(m)	
		2-CH	9.12(s)	
52	1-methylnicotinamide	N-CH_3	4.48(s)	U
		5-CH	8.18(m)	
		4-CH	8.90(m)	
		6-CH	8.96(m)	
		2-CH	9.27(s)	
53	pseudouridine	CH	7.68(s)	U
54	p-cresol glucuronide	4-CH_3	2.29(s)	U
		2'-CH	5.08(d)	
		3-5-CH	7.05(d)	
		2,6-CH	7.22(d)	
55	p-cresol sulfate	4-CH_3	2.34(s)	U
		3,5-CH	7.21(d)	
		2,6-CH	7.28(d)	
56	2-PY	N-CH_3	3.65(s)	U
		3-CH	7.98(dd)	
		4-CH	6.67(d)	
		6-CH	8.34(d)	
57	4-PY	N-CH_3	3.90(s)	U
		2-CH	6.70(d)	
		3-CH	7.84(dd)	
		6-CH	8.56(d)	

keys	metabolites	moieties	δ ^{1}H (multiplicity [a])	samples [b]
58	4-hydroxyphenylacetate	3,5-CH	7.17(d)	U
		2,6-CH	6.86(d)	
59	isovalerylglycine	CH_3	0.94(d)	U
		CH	2.01(m)	
		CH_2	2.18(m)	
		NH_2	3.76(#)	
60	pantothenate	CH_3	0.89(s)	U
		CH_3’	0.93(s)	
		CH_2COOH	2.43(t)	
		CH_2NH	3.45(q)	
		CHOH	3.99(s)	
61	NAD	5-CH	8.18(m)	L
		6-CH	8.82(m)	
		4-CH	9.11(m)	
		2-CH	9.33(s)	
62	NADP	5-CH	8.19(m)	L
		6-CH	8.83(m)	
		4-CH	9.12(m)	
		2-CH	9.35(s)	
63	IMP	2-CH	8.24(s)	S, SP
		8-CH	8.58(s)	
64	AMP	1’’-CH	4.03(m)	S, SP, L
		4’-CH	4.38(m)	
		2’-CH	4.51(m)	
		1’-CH	6.15 (d)	
		2-CH	8.28 (s)	
		8-CH	8.61(s)	
	U1		9.35(s)	U
	U2		9.42(s)	U

[a]s, singlet; d, doublet; t, triplet; q, quartet; m, multiplet; dd, doublet of doublets.#: undetected.

[b]T: thymus; S: stomach; U: urine; L: liver; SP: spleen.

GPC:glycerophosphocholine; PE: O-phosphoethanolamine; TMAO:trimethylamineoxide; UMP:uridine monophosphate; UDP:uridine diphosphate; 2-PY: N'-Methyl-2-pyridone-5-carboxamide; 4-PY: N'-Methyl-4-pyridone-5-carboxamide; NAD:nicotinamide adenine dinucleotide; NADP: Nicotinamide adenine dinucleotide phosphate; IMP:inosine monophosphate; AMP: adenosine monophosphate; U1, U2: unknown.

Table S4. The significantly changed metabolites in the urine of low, moderate and high dosed rats.

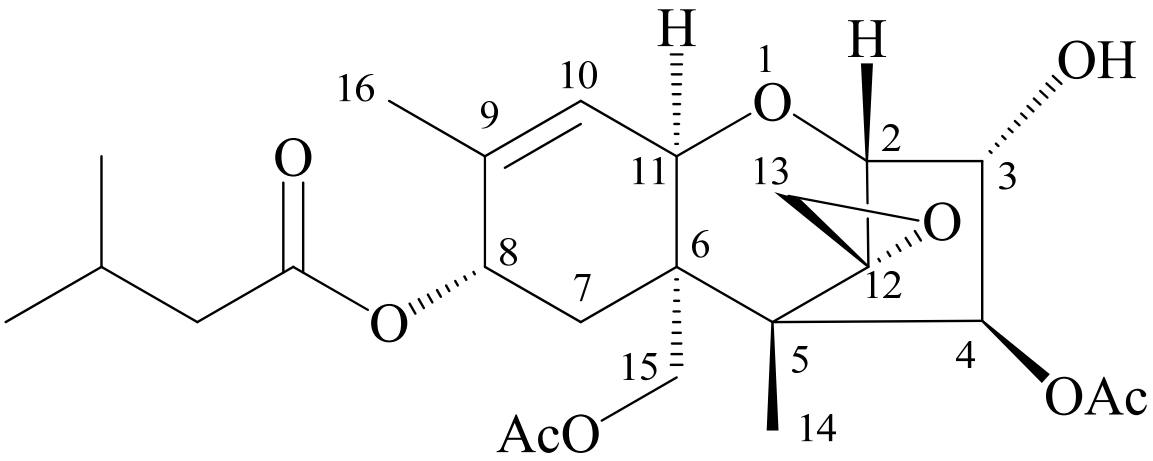
	Low-dose	Moderate-dose					High-dose					
metabolites	8h	8h	16h	1d	3d	4d	8h	16h	1d	2d	3d	4d
succinate	-[a]	-	-	-	-	-	-0.82[b]	-0.73	-	-0.71	-0.76	-0.84
citrate	-	-	-	-	0.76	0.74	-	-	-	-0.73	-	-
formate	-	-	-	-	-	-	-	-0.77	-	-	-	-0.70
creatine	-	-	-	-	-	-	-	-	-	0.74	-	-
creatinine	-	-	0.64	-	-0.77	-	-	-	-	0.85	-	-
taurine	-	0.59	-0.63	-	-	-	0.83	-	-	-0.74	-	-
1-methylnicotinamide	-	-	-0.61	-0.72	-	-	-	-	-0.78	-0.58	-	-
1-methylnicotinate	-0.85	-0.96	-0.87	-0.88	-	-	-0.96	-0.96	-0.94	-0.81	-	-
hippurate	-0.77	-0.94	-0.87	-0.85	-	-	-0.95	-0.95	-0.95	-0.75	-	-
dimethylglycine	-	-0.59	-0.58	-0.77	-	-	-0.61	-0.77	-0.80	-	-	-
p-cresol sulfate	-	0.58	0.65	-	-	-	0.62	0.95	0.94	0.77	0.64	-

p-cresol glucuronide	-	0.63	0.64	-	-	-	0.82	0.97	0.88	0.91	0.75	-
phenylacetylglycine	-	0.78	0.77	0.75	-	-	0.86	0.97	0.89	0.91	0.78	-
pseudouridine	-	-	0.93	0.83	-0.65	-	0.85	0.95	0.95	0.95	0.71	-
U1[c]	-0.82	-0.98	-0.90	-0.90	-	-	-0.99	-0.97	-0.96	-0.91	-	-
U2	-0.72	-0.78	-0.65	-0.84	-	-	-0.91	-0.91	-0.88	-0.86	-	-

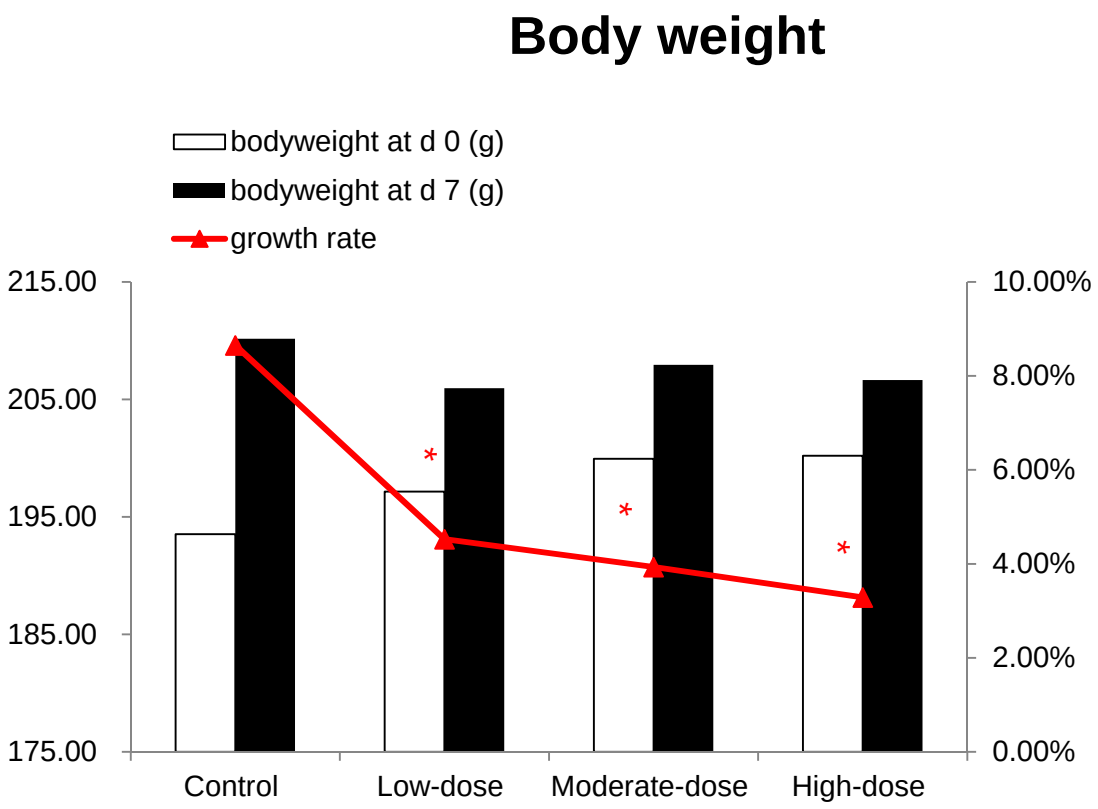
a: No difference between control and T-2 toxin dose group.

b: Metabolite with positive or negative correlation coefficient indicate an increase or decrease after T-2 toxin exposure.

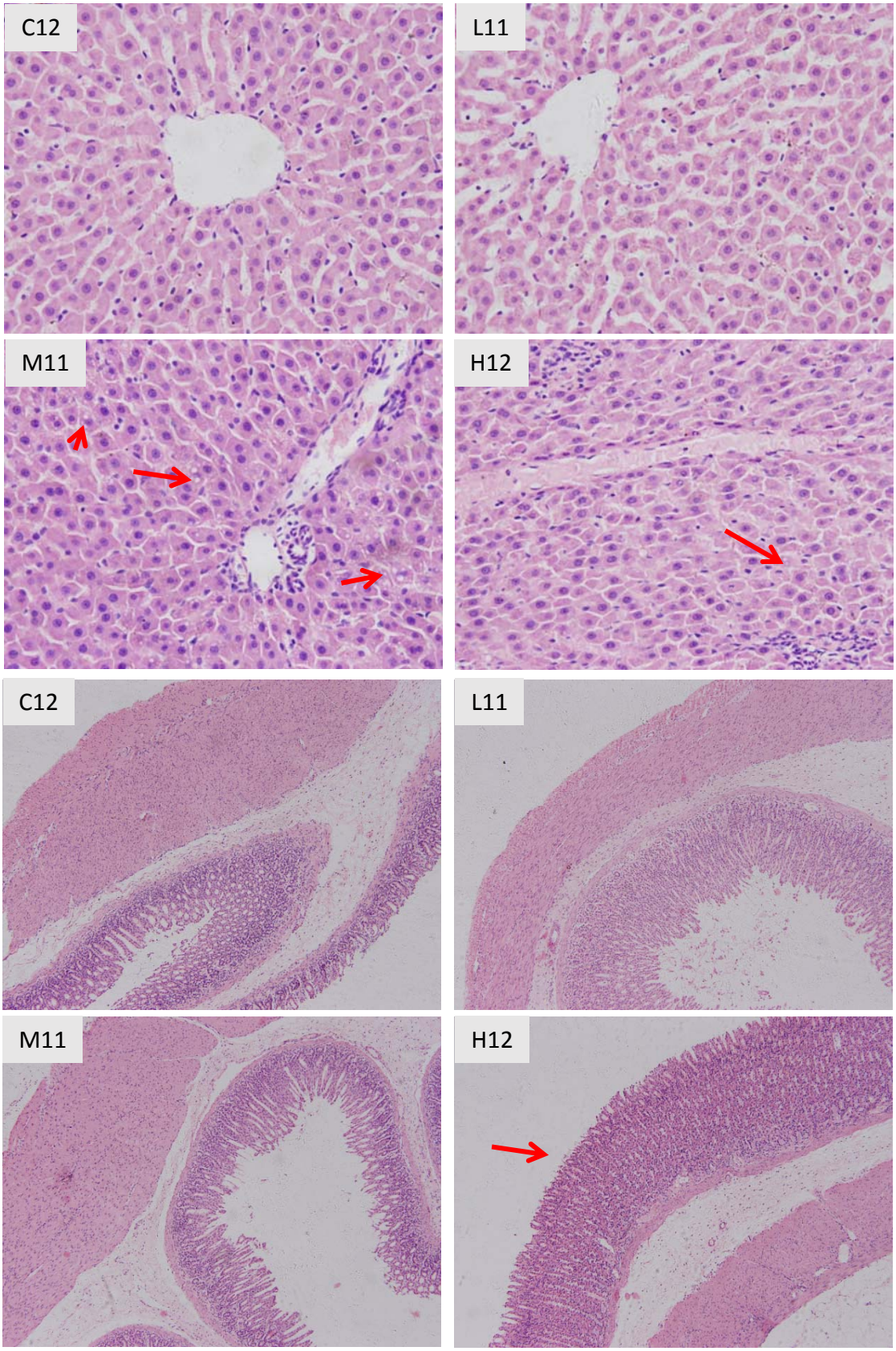
c: unknown metabolite.



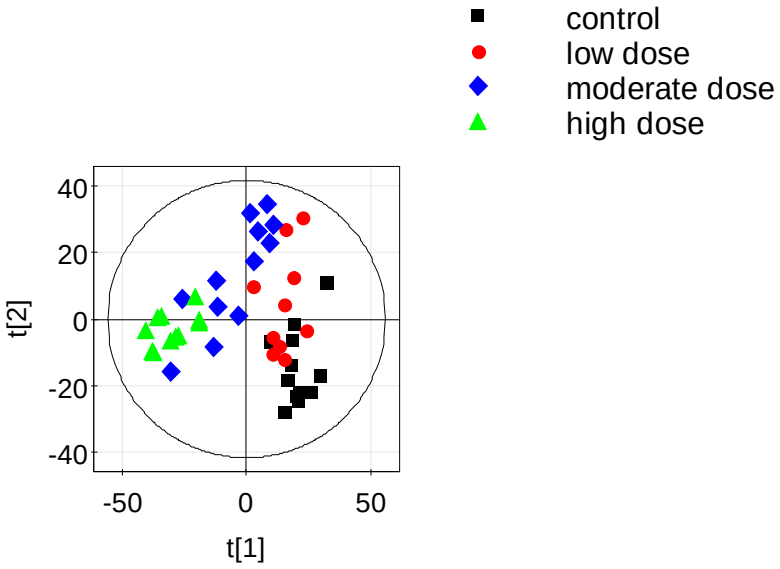
Supplementary Figure 1



Supplementary Figure 2



Supplementary Figure 3



Supplementary Figure 4