

**Supplemental Table 4. The changes of kidney metabolite profiles**

**A**

Name	Mean			S.E.			Fold-change		P-value	
	Non	Low	High	Non	Low	High	Low/ Non	High/ Non	Low vs Non	High vs Non
1,5-Anhydro-D-glucitol	26	23	8.2	5.7	3.6	1.9	0.64	0.34	0.7	<b>0.018</b>
1-Methyl uracil	9.5	7.4	3.7	0.83	0.9	0.71	1.1	0.85	0.12	<b>&lt;0.001</b>
2-Aminoethanol	1.6	1.4	170	0.15	0.29	63	1.9	410	0.62	<b>0.03</b>
2-Aminoisobutyrate	13	13	9.3	0.91	2.1	1.4	2.3	1.6	0.76	<b>0.036</b>
2-Dehydro-D-gluconate_1	3.9	4.6	2.9	0.44	0.81	0.51	1.8	1.2	0.45	0.17
3-Hydroxypyruvate	610	540	710	61	94	120	1.5	2	0.57	0.47
3-Pyridylacetic acid	86	63	36	5.2	8.2	5.9	1.6	1.1	<b>0.037</b>	<b>&lt;0.001</b>
5-Aminovaleric acid	3	1.9	1.2	0.36	0.31	0.18	0.86	0.5	<b>0.034</b>	<b>&lt;0.001</b>
5-Hydroxyindoleacetate	1.1	1.8	1.2	0.27	0.45	0.3	1.6	1.1	0.23	0.88
Adenylosuccinic acid	1.1	1.4	0.52	0.18	0.28	0.09	1.6	0.51	0.56	<b>0.0097</b>
Anthracene	1.9	1.7	1	0.11	0.21	0.17	1.8	1.5	0.4	<b>&lt;0.001</b>
Arabinose-5-phosphate	2	2.7	0.98	0.37	0.43	0.14	1.2	0.38	0.27	<b>0.034</b>
α-Sorbopyranose (or Fructose)	39	42	40	5.1	9.1	5.8	1.8	1.1	0.77	0.83
Cadaverine	8.8	12	2.6	2.4	2.5	0.45	1	0.19	0.38	0.037
Citric acid + Isocitric acid	1.8	1.1	0.99	0.5	0.27	0.43	0.55	0.86	0.27	0.28
Coniferyl alcohol	340	200	320	38	33	97	0.88	2.6	<b>0.014</b>	0.86

Coniferyl aldehyde	130	71	4.8	20	14	0.69	0.7	0.034	<b>0.03</b>	<b>&lt;0.001</b>
Cysteine+Cystine	15	7.1	3.8	3.1	1.3	0.54	0.43	0.18	<b>0.043</b>	<b>0.0072</b>
Dihydroxyacetone	3.6	3.3	1.8	0.47	0.47	0.41	1	0.88	0.66	<b>0.016</b>
Ethionine	6	5.1	3.2	0.41	0.74	0.96	1.8	2.3	0.34	<b>0.022</b>
Fructose	110	25	17	10	4	2.9	0.4	0.29	<b>&lt;0.001</b>	<b>&lt;0.001</b>
Galactitol	2000	2400	2500	250	340	470	1.4	1.9	0.41	0.33
Galactosamine	17	21	11	2.4	2.5	1.9	1.1	0.78	0.3	0.063
Galactose	100	75	28	11	9.5	5.7	0.84	0.5	0.12	<b>&lt;0.001</b>
Galacturonic acid	3.9	2.5	2.2	0.55	0.28	0.41	0.5	0.75	<b>0.048</b>	<b>0.03</b>
$\gamma$ -Glutamyl cysteine	1	1	0.86	0.057	0.23	0.26	4	4.4	0.95	0.56
Glucosamine	2800	3400	3600	360	480	650	1.4	1.8	0.42	0.37
Glucosamine-6-Phosphate	2.1	3.2	2.1	0.23	1.2	0.53	5.2	2.3	0.43	0.98
Glucose	13000	14000	11000	1400	1900	1900	1.4	1.4	0.69	0.46
Heptanedioate	5.3	3.6	3.3	0.86	0.44	0.67	0.51	0.78	0.1	0.087
Kynurenate	2.2	1.2	1.4	0.79	0.15	0.63	0.19	0.81	0.28	0.49
Kynurenine	43	33	32	7	4.7	6.9	0.67	0.98	0.31	0.33
Maleamic acid	9.3	11	7.1	0.71	2	1.6	2.8	2.2	0.36	0.27
Maltose	5.4	7.2	4.6	0.77	1.4	0.88	1.8	1.1	0.29	0.54
Melibiose	12	5.6	4.4	3.2	0.46	0.8	0.14	0.25	0.083	<b>0.048</b>
Methionine sulfone	69	21	5.6	8.8	4.5	1.6	0.51	0.18	<b>&lt;0.001</b>	<b>&lt;0.001</b>
N-Acetyl-DL-valine	69	56	59	13	4.5	9.4	0.34	0.7	0.41	0.58
N-Acetyl-L-glutamate	6.6	5.7	3.1	0.78	0.82	0.54	1.1	0.7	0.48	<b>0.0032</b>
p-Coumaric acid	7.1	4.4	2.8	1.3	0.96	0.47	0.74	0.36	0.14	<b>0.013</b>

Phosphate	1.4	1.6	1.3	0.14	0.39	0.3	2.7	2.1	0.65	0.8
Psicose	11	29	11	2.7	5.6	2.6	2.1	0.94	<b>0.016</b>	0.92
Ribitol	460	190	91	73	29	17	0.4	0.23	<b>0.0068</b>	<b>&lt;0.001</b>
Thymine	2.5	2.3	1.3	0.39	0.47	0.26	1.2	0.65	0.69	<b>0.023</b>
Valine(2TMS)	3.6	2.1	1.7	0.36	0.38	0.4	1.1	1.1	<b>0.016</b>	<b>0.0031</b>

**B**

Name	Mean			S.E.			Fold-change		P-value	
	Non	Low	High	Non	Low	High	Low/Non	High/Non	Low vs Non	High vs Non
AC 16:0	0.14	0.086	0.11	0.045	0.027	0.033	0.61	0.77	<b>0.022</b>	0.18
AC 18:0	0.25	0.19	0.21	0.079	0.059	0.065	0.75	0.86	<b>0.0094</b>	0.26
AC 18:1	0.072	0.027	0.039	0.023	0.0086	0.012	0.38	0.55	0.067	0.17
AC 18:2	0.043	0.014	0.021	0.013	0.0045	0.0063	0.33	0.49	<b>0.0022</b>	<b>0.018</b>
FA 12:0	0.012	0.009	0.018	0.0036	0.0029	0.0055	0.78	1.6	0.5	0.057
FA 14:0	0.35	0.4	0.58	0.11	0.13	0.18	1.1	1.7	0.79	0.12
FA 14:1(n-5)	0.033	0.031	0.048	0.01	0.0099	0.015	0.94	1.5	0.9	0.27
FA 15:0	0.028	0.036	0.039	0.009	0.012	0.012	1.3	1.4	0.056	<b>0.017</b>
FA 16:0	21	26	32	6.6	8.1	9.6	1.2	1.5	0.16	<b>0.0031</b>
FA 16:1(n-7)	1.3	1.4	2.2	0.42	0.45	0.67	1.1	1.7	0.85	0.13
FA 17:0	0.23	0.32	0.33	0.072	0.1	0.098	1.4	1.4	<b>0.012</b>	<b>0.0079</b>
FA 17:1(n-7)	0.14	0.18	0.24	0.043	0.056	0.074	1.3	1.8	0.22	<b>&lt;0.001</b>
FA 18:1(n-9)c/18:1(n-7)c	7.1	9.9	14	2.3	3.1	4.3	1.4	2	0.21	<b>&lt;0.001</b>
FA 18:2(n-6)	11	14	18	3.5	4.5	5.5	1.3	1.7	0.26	<b>0.0012</b>

FA 18:3(n-3)/18:3(n-6)	0.57	0.85	1.2	0.18	0.27	0.36	1.5	2.1	0.18	<b>0.0031</b>
FA 18:4(n-3)	0.035	0.045	0.069	0.011	0.014	0.021	1.3	2	0.13	<b>0.0028</b>
FA 19:0	0.041	0.06	0.082	0.013	0.019	0.025	1.5	2	<b>0.036</b>	<b>&lt;0.001</b>
FA 20:0	0.44	0.82	1.7	0.14	0.26	0.51	1.9	3.9	<b>0.0012</b>	<b>&lt;0.001</b>
FA 20:1(n-9)	1.1	2.4	3.6	0.34	0.77	1.1	2.3	3.4	<b>0.012</b>	<b>&lt;0.001</b>
FA 20:3(n-6)/20:3(n-9)	2	2.6	3.2	0.62	0.81	0.95	1.3	1.6	<b>0.0075</b>	<b>0.0012</b>
FA 20:4(n-6)	17	25	35	5.5	7.8	11	1.4	2	<b>0.0015</b>	<b>&lt;0.001</b>
FA 20:5(n-3)	0.75	0.85	1	0.24	0.27	0.31	1.1	1.4	0.38	<b>0.035</b>
FA 21:0	0.045	0.082	0.11	0.014	0.026	0.034	1.8	2.5	<b>0.007</b>	<b>&lt;0.001</b>
FA 22:0	0.46	0.81	1.5	0.15	0.26	0.45	1.7	3.2	<b>&lt;0.001</b>	<b>&lt;0.001</b>
FA 22:1(n-9)	0.15	0.35	0.53	0.049	0.11	0.16	2.2	3.5	<b>0.0014</b>	<b>&lt;0.001</b>
FA 22:4(n-6)	1.9	4.6	8.5	0.6	1.4	2.6	2.4	4.5	<b>&lt;0.001</b>	<b>&lt;0.001</b>
FA 22:5(n-6)	2.3	3.8	6.5	0.71	1.2	1.9	1.7	2.9	<b>0.0028</b>	<b>&lt;0.001</b>
FA 22:6(n-3)	2.3	3.1	4.9	0.73	0.98	1.5	1.3	2.1	<b>0.01</b>	<b>&lt;0.001</b>
FA 23:0	0.19	0.27	0.36	0.061	0.086	0.11	1.4	1.9	<b>0.0091</b>	<b>&lt;0.001</b>
FA 24:0	1.7	2.6	3.4	0.55	0.83	1	1.5	1.9	<b>&lt;0.001</b>	<b>0.0064</b>
FA 24:1(n-9)	1.2	2.4	2.8	0.38	0.75	0.84	1.9	2.3	<b>&lt;0.001</b>	<b>0.0015</b>
FA 25:0	0.11	0.15	0.17	0.036	0.047	0.052	1.3	1.5	<b>0.023</b>	<b>0.0032</b>
FA 26:0	0.21	0.24	0.23	0.066	0.075	0.07	1.1	1.1	0.11	0.33
FA 20:2(n-6)	1.4	2.6	4.2	0.43	0.83	1.3	1.9	3.1	<b>&lt;0.001</b>	<b>&lt;0.001</b>
LPC 14:0 (sn-1)	0.0082	0.0084	0.019	0.0026	0.0027	0.0058	1	2.4	0.9	<b>0.0095</b>
LPC 14:0 (sn-2)	0.022	0.021	0.055	0.007	0.0068	0.016	0.96	2.5	0.87	<b>&lt;0.001</b>
LPC 15 0 (sn-1)	0.011	0.013	0.022	0.0035	0.0042	0.0067	1.2	2	0.4	<b>0.0045</b>

LPC 15:0 (sn-2)	0.035	0.037	0.056	0.011	0.012	0.017	1.1	1.6	0.71	<b>0.015</b>
LPC 16:0 (sn-1)	2	2.4	5.4	0.63	0.76	1.6	1.2	2.7	0.37	<b>&lt;0.001</b>
LPC 16:0 (sn-2)	5.8	6	12	1.8	1.9	3.7	1	2.1	0.81	<b>&lt;0.001</b>
LPC 16:0e	0.0099	0.016	0.053	0.0031	0.0052	0.016	1.7	5.3	<b>0.02</b>	<b>&lt;0.001</b>
LPC 16:0p	0.022	0.05	0.14	0.0068	0.016	0.042	2.3	6.4	<b>0.0074</b>	<b>&lt;0.001</b>
LPC 16:1 (sn-1)	0.041	0.042	0.081	0.013	0.013	0.024	1	2	0.92	<b>0.02</b>
LPC 16:1 (sn-2)	0.05	0.055	0.13	0.016	0.017	0.04	1.1	2.7	0.69	<b>&lt;0.001</b>
LPC 17:0 (sn-1)	0.038	0.044	0.064	0.012	0.014	0.019	1.2	1.7	0.45	<b>0.018</b>
LPC 17:0 (sn-2)	0.096	0.11	0.22	0.031	0.035	0.066	1.1	2.3	0.55	<b>0.0023</b>
LPC 17:1 (sn-2)	0.0045	0.0054	0.014	0.0014	0.0017	0.0044	1.2	3.2	0.66	<b>&lt;0.001</b>
LPC 18:0 (sn-1)	0.76	0.81	1.8	0.24	0.26	0.55	1.1	2.4	0.71	<b>&lt;0.001</b>
LPC 18:0 (sn-2)	4.2	5	10	1.3	1.6	3.1	1.2	2.4	0.34	<b>&lt;0.001</b>
LPC 18:1 (sn-1)	1.4	1.2	2.5	0.43	0.37	0.76	0.86	1.9	0.71	<b>0.049</b>
LPC 18:1 (sn-2)	0.97	1.1	2.6	0.31	0.34	0.79	1.1	2.7	0.71	<b>&lt;0.001</b>
LPC 18:2 (sn-1)	1.5	1.8	3	0.46	0.58	0.9	1.3	2	0.64	<b>0.0054</b>
LPC 18:2 (sn-2)	0.47	0.5	1.1	0.15	0.16	0.32	1.1	2.3	0.87	<b>0.0025</b>
LPC 19:0 (sn-1)	0.021	0.027	0.026	0.0068	0.0085	0.0078	1.3	1.2	0.26	0.28
LPC 19:0 (sn-2)	0.031	0.033	0.058	0.0098	0.01	0.018	1.1	1.9	0.81	<b>0.021</b>
LPC 20:0 (sn-1)	0.022	0.018	0.024	0.0071	0.0056	0.0074	0.79	1.1	0.31	0.67
LPC 20:0 (sn-2)	0.13	0.097	0.19	0.04	0.031	0.057	0.76	1.5	0.43	0.17
LPC 20:1 (sn-1)	0.024	0.025	0.035	0.0074	0.0078	0.011	1	1.5	0.9	0.089
LPC 20:1 (sn-2)	0.083	0.089	0.2	0.026	0.028	0.06	1.1	2.4	0.85	<b>0.0072</b>
LPC 20:2 (sn-1)	0.049	0.06	0.094	0.015	0.019	0.028	1.2	1.9	0.62	<b>0.015</b>

LPC 20:2 (sn-2)	0.054	0.06	0.14	0.017	0.019	0.042	1.1	2.6	0.77	<b>0.0048</b>
LPC 20:3 (sn-1)	0.17	0.17	0.24	0.054	0.052	0.072	0.97	1.4	0.95	0.16
LPC 20:3 (sn-2)	0.032	0.029	0.056	0.01	0.0092	0.017	0.92	1.8	0.77	<b>0.011</b>
LPC 20:4 (sn-1)	2.2	2.8	4.5	0.7	0.88	1.4	1.3	2	0.6	<b>0.0054</b>
LPC 20:5 (sn-1)	0.046	0.04	0.06	0.015	0.013	0.018	0.86	1.3	0.74	0.26
LPC 22:0 (sn-1)	0.0097	0.0069	0.0083	0.0031	0.0022	0.0025	0.71	0.85	0.05	0.34
LPC 22:0 (sn-2)	0.023	0.017	0.03	0.0073	0.0054	0.0091	0.73	1.3	0.11	0.17
LPC 22:4 (sn-1)	0.056	0.093	0.21	0.018	0.029	0.065	1.7	3.9	0.17	<b>&lt;0.001</b>
LPC 22:4 (sn-2)	0.014	0.017	0.058	0.0045	0.0053	0.018	1.2	4.1	0.74	<b>&lt;0.001</b>
LPC 22:6 (sn-1)	0.4	0.63	0.77	0.13	0.2	0.23	1.6	1.9	0.55	<b>0.019</b>
LPE 16:0 (sn-1)	0.38	0.55	1.7	0.12	0.18	0.52	1.5	4.6	0.055	<b>&lt;0.001</b>
LPE 16:0 (sn-2)	0.89	1.2	2.9	0.28	0.39	0.89	1.4	3.3	<b>0.02</b>	<b>&lt;0.001</b>
LPE 17:0 (sn-1)	0.017	0.03	0.064	0.0052	0.0096	0.019	1.8	3.9	<b>&lt;0.001</b>	<b>&lt;0.001</b>
LPE 17:0 (sn-2)	0.081	0.12	0.32	0.025	0.039	0.096	1.5	3.9	0.052	<b>&lt;0.001</b>
LPE 18:0 (sn-1)	1.9	3	7.6	0.61	0.95	2.3	1.6	4	<b>0.019</b>	<b>&lt;0.001</b>
LPE 18:0 (sn-2)	4.4	6.3	14	1.4	2	4.1	1.4	3.1	<b>0.0053</b>	<b>&lt;0.001</b>
LPE 18:1 (sn-1)	0.55	0.59	1.3	0.17	0.19	0.41	1.1	2.4	0.76	<b>&lt;0.001</b>
LPE 18:1 (sn-2)	1.2	1.5	4.4	0.37	0.49	1.3	1.3	3.8	0.22	<b>&lt;0.001</b>
LPE 18:2 (sn-1)	0.38	0.36	0.52	0.12	0.11	0.16	0.95	1.4	0.84	0.077
LPE 18:2 (sn-2)	0.17	0.21	0.6	0.054	0.067	0.18	1.2	3.5	0.43	<b>&lt;0.001</b>
LPE 20:0 (sn-1)	0.016	0.02	0.071	0.005	0.0065	0.021	1.3	4.5	0.37	<b>&lt;0.001</b>
LPE 20:0 (sn-2)	0.066	0.083	0.28	0.021	0.026	0.085	1.3	4.3	0.45	<b>&lt;0.001</b>
LPE 20:1 (sn-1)	0.0074	0.0098	0.016	0.0023	0.0031	0.005	1.3	2.2	0.22	<b>&lt;0.001</b>

LPE 20:1 (sn-2)	0.043	0.07	0.21	0.013	0.022	0.063	1.6	4.9	0.14	<b>&lt;0.001</b>
LPE 20:3 (sn-1)	0.049	0.054	0.066	0.016	0.017	0.02	1.1	1.4	0.8	0.12
LPE 20:3 (sn-2)	0.0067	0.01	0.018	0.0021	0.0032	0.0054	1.5	2.7	0.26	<b>&lt;0.001</b>
LPE 20:4 (sn-1)	1.4	1.3	1.8	0.43	0.43	0.55	0.99	1.3	0.96	<b>0.047</b>
LPE 20:5 (sn-1)	0.026	0.025	0.018	0.0082	0.0081	0.0055	0.98	0.71	0.96	0.093
LPE 22:6 (sn-1)	0.11	0.19	0.19	0.034	0.06	0.057	1.8	1.8	0.44	<b>0.037</b>
PC 14:0-16:1	42	42	43	13	13	13	1	1	0.93	0.52
PC 14:0/18:2/16:1-16:1	4.5	5	4.6	1.4	1.6	1.4	1.1	1	0.21	0.77
PC 14:0-20:3	2.7	3.8	3	0.87	1.2	0.9	1.4	1.1	<b>0.007</b>	0.18
PC 14:0-20:5	0.15	0.12	0.1	0.047	0.038	0.031	0.81	0.7	0.11	<b>0.017</b>
PC 14:0-22:5 /16:1-20:4/16:0-20:5	4.5	3.8	4	1.4	1.2	1.2	0.84	0.88	0.057	0.18
PC 15:0-16:1	0.35	0.39	0.22	0.11	0.12	0.067	1.1	0.63	0.11	<b>&lt;0.001</b>
PC 15:0-18:1/16:0-17:1	0.77	0.84	0.72	0.24	0.27	0.22	1.1	0.93	0.19	0.28
PC 15:0-18:2	1.5	1.5	1.2	0.47	0.47	0.35	1	0.8	0.84	0.0014
PC 15:0-20:4	1.2	1.4	1.1	0.37	0.43	0.32	1.2	0.9	<b>0.0079</b>	0.052
PC 15:0-20:5	0.2	0.14	0.089	0.062	0.044	0.027	0.71	0.45	<b>0.023</b>	<b>&lt;0.001</b>
PC 15:0-22:6	0.22	0.21	0.12	0.069	0.067	0.037	0.97	0.56	0.77	<b>&lt;0.001</b>
PC 16:0-14:0	7.3	9.9	9	2.3	3.1	2.7	1.4	1.2	<b>&lt;0.001</b>	<b>0.0038</b>
PC 16:0-15:0	1.6	1.7	0.99	0.52	0.54	0.3	1	0.61	0.59	<b>&lt;0.001</b>
PC 16:0-18:0	21	26	27	6.6	8.2	8.2	1.2	1.3	<b>0.00048</b>	<b>0.0013</b>
PC 16:0-18:2/16:1-18:1	33	34	36	11	11	11	1	1.1	0.61	0.052
PC 16:0-22:2	1.6	1.2	0.99	0.51	0.38	0.3	0.73	0.61	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0e-16:0	2.3	2.4	2	0.73	0.75	0.6	1	0.87	0.68	<b>0.047</b>

PC 16:0e-18:2	0.79	0.95	0.97	0.25	0.3	0.29	1.2	1.2	<b>0.011</b>	<b>0.022</b>
PC 16:0e-20:2	0.28	0.4	0.42	0.087	0.13	0.13	1.4	1.5	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0e 20:5	6.5	12	14	2	3.7	4.2	1.8	2.1	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0e-22:5/18:0e-20:5	1.9	3.2	3.1	0.6	1	0.94	1.7	1.6	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0e-22:6	2.1	3.5	3.6	0.67	1.1	1.1	1.7	1.7	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0p-16:0	0.36	0.57	0.54	0.11	0.18	0.16	1.6	1.5	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0p-20:4	6.5	12	14	2	3.7	4.2	1.8	2.1	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:0p-22:6	0.59	1.1	1.3	0.19	0.34	0.4	1.8	2.2	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 16:1-18:2/16:0-18:3	2.3	2.1	1.8	0.73	0.66	0.54	0.9	0.78	0.39	0.074
PC 16:1-18:3/14:0-20:4	2.8	3	2.9	0.88	0.94	0.86	1.1	1	0.38	0.77
PC 16:1-20:5	0.83	0.68	0.56	0.26	0.21	0.17	0.82	0.67	0.086	<b>0.0038</b>
PC 16:1e-18:1	1.2	1.7	2.2	0.37	0.53	0.66	1.4	1.9	<b>0.014</b>	<b>&lt;0.001</b>
PC 16:1e-20:3	3	4.9	5.7	0.95	1.6	1.7	1.6	1.9	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 17:0-16:0/18:0-15:0	0.87	1	0.93	0.27	0.33	0.28	1.2	1.1	<b>0.019</b>	0.35
PC 17:0-18:1 /17:1-18:0/16:0-19:1	1.9	1.7	1.8	0.61	0.55	0.54	0.9	0.92	0.49	0.61
PC 17:0-20:3/19:1-18:2	0.12	0.094	0.066	0.039	0.03	0.02	0.76	0.53	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PC 17:0-20:4	1.4	1.2	0.97	0.43	0.39	0.29	0.9	0.71	0.15	<b>&lt;0.001</b>
PC 17:0-20:5/17:1-20:4	0.76	0.69	0.57	0.24	0.22	0.17	0.9	0.75	0.071	<b>&lt;0.001</b>
PC 17:0-22:6	0.15	0.12	0.1	0.046	0.038	0.031	0.82	0.7	0.088	<b>0.0073</b>
PC 17:1-18:1/17:0-18:2	0.99	0.92	0.8	0.31	0.29	0.24	0.93	0.81	0.32	<b>0.0065</b>
PC 17:1-18:2	0.62	0.54	0.48	0.19	0.17	0.14	0.88	0.78	0.11	<b>0.0035</b>
PC 18:0-18:0	0.37	0.45	0.77	0.12	0.14	0.23	1.2	2.1	0.3	<b>&lt;0.001</b>
PC 18:0-20:2	8.1	6.9	6.6	2.6	2.2	2	0.85	0.82	0.27	0.2



PC 18:0-20:5	16	15	14	5	4.9	4.1	0.98	0.86	0.51	<0.001
PC 18:0-22:5	4.4	4.5	4.9	1.4	1.4	1.5	1	1.1	0.65	0.12
PC 18:0-22:6	4.3	3.8	4	1.4	1.2	1.2	0.89	0.94	0.23	0.52
PC 18:0e-16:0	1.8	1.9	1.7	0.58	0.61	0.53	1.1	0.95	0.48	0.57
PC 18:0e-20:4	1.5	2.2	2.4	0.47	0.71	0.72	1.5	1.6	<0.001	<0.001
PC 18:0p-18:1/18:1e-18:1	0.55	0.76	0.78	0.17	0.24	0.24	1.4	1.4	<0.001	<0.001
PC 18:0p-20:4	1.9	3.3	3.7	0.59	1	1.1	1.8	2	<0.001	<0.001
PC 18:0p-22:5	0.66	0.8	0.83	0.21	0.25	0.25	1.2	1.3	<b>0.0044</b>	<b>0.0046</b>
PC 18:1-18:1/18:0-18:2	39	37	41	12	12	12	0.95	1.1	0.34	0.21
PC 18:1-18:2 /16:0-20:3/18:0-18:3	21	19	19	6.6	5.9	5.7	0.88	0.91	<b>0.012</b>	0.084
PC 18:1-20:2/18:0-20:3	18	13	11	5.7	4.3	3.4	0.74	0.61	<0.001	<0.001
PC 18:1-20:3	1.6	1.6	1.3	0.5	0.49	0.41	0.98	0.85	0.71	<b>0.0011</b>
PC 18:1-20:4	3.9	3.2	2.9	1.2	1	0.87	0.82	0.75	<b>0.041</b>	<b>0.0043</b>
PC 18:1-22:0	0.073	0.077	0.082	0.023	0.024	0.025	1	1.1	0.44	<b>0.033</b>
PC 18:1-22:6	0.71	0.61	0.67	0.23	0.19	0.2	0.85	0.94	0.082	0.49
PC 18:1e-16:0/18:0e-16:1	8.4	10	8.9	2.7	3.2	2.7	1.2	1.1	<b>0.019</b>	0.4
PC 18:1e-18:2	0.25	0.34	0.35	0.078	0.11	0.11	1.4	1.4	<0.001	<0.001
PC 18:1e-20:3	0.45	1.2	1.5	0.14	0.36	0.46	2.5	3.4	<0.001	<0.001
PC 18:1e-22:6	0.37	0.46	0.46	0.12	0.14	0.14	1.2	1.2	<b>0.0048</b>	<b>0.012</b>
PC 18:2-18:2/18:1-18:3	18	14	13	5.6	4.3	3.8	0.78	0.72	<b>0.014</b>	<b>0.0036</b>
PC 18:2-18:3	4.1	3.7	2.8	1.3	1.2	0.84	0.91	0.68	0.29	<0.001
PC 18:2-20:4/16:0-22:6	30	26	24	9.4	8.2	7.2	0.87	0.8	0.18	<b>0.023</b>
PC 18:2-20:5/16:1-22:6	3.7	2.6	1.6	1.2	0.82	0.48	0.7	0.43	<b>0.018</b>	<0.001

PC 18:2e-18:1	0.37	0.6	0.59	0.12	0.19	0.18	1.6	1.6	<0.001	<0.001
PC 19:0-18:1/18:0-19:1	0.94	0.8	0.78	0.3	0.25	0.24	0.85	0.84	0.33	0.29
PC 19:0-20:3	0.3	0.28	0.25	0.096	0.089	0.076	0.93	0.83	0.4	0.082
PC 19:0-22:6	0.16	0.14	0.1	0.052	0.044	0.031	0.86	0.63	<b>0.022</b>	<0.001
PC 19:1-18:1/19:0-18:2	1.3	1.1	0.83	0.4	0.35	0.25	0.88	0.65	0.11	<0.001
PC 20:1-20:3/18:0-22:4	2.1	3.4	3.9	0.68	1.1	1.2	1.6	1.8	<0.001	<0.001
PC 20:2-20:4/18:1-22:5	1.6	1.5	1.7	0.51	0.48	0.5	0.94	1	0.6	0.76
PC 20:3-20:4	2.6	2	1.9	0.83	0.62	0.58	0.74	0.73	<0.001	<0.001
PC 20:4-20:4	5.6	4.7	4.2	1.8	1.5	1.3	0.84	0.75	<b>0.023</b>	<b>0.0011</b>
PE 14:0-18:2	0.087	0.076	0.061	0.027	0.024	0.018	0.87	0.7	0.2	<b>0.003</b>
PE 15:0-18:1	0.014	0.013	0.0078	0.0043	0.0042	0.0023	0.97	0.57	0.69	<0.001
PE 16:1-18:2	0.027	0.029	0.024	0.0085	0.0092	0.0071	1.1	0.88	0.47	0.26
PE 16:0-16:0	0.14	0.13	0.11	0.044	0.041	0.033	0.95	0.8	0.55	<b>0.011</b>
PE 16:0-16:1/14:0-18:1	0.34	0.35	0.36	0.11	0.11	0.11	1	1.1	0.77	0.55
PE 16:0-18:0	0.14	0.18	0.19	0.043	0.058	0.056	1.3	1.4	<0.001	<0.001
PE 16:0-18:1	1.9	1.6	1.2	0.61	0.5	0.36	0.82	0.62	<b>0.024</b>	<0.001
PE 16:0-18:3	0.018	0.018	0.014	0.0055	0.0056	0.0043	1	0.81	0.94	0.27
PE 16:0-20:1/18:0-18:1	3.2	3.3	3.3	1	1	1	1	1	0.95	0.77
PE 16:0-20:4	5	4.1	3.2	1.6	1.3	0.96	0.81	0.63	<0.001	<0.001
PE 16:0-20:5	0.099	0.014	0.028	0.031	0.0044	0.0085	0.14	0.29	0.08	0.14
PE 16:0-22:4	0.35	0.24	0.18	0.11	0.077	0.055	0.7	0.53	<0.001	<0.001
PE 16:0-22:6/16:1-22:5/20:2-18:4	1.9	1.9	1.6	0.6	0.61	0.47	1	0.83	0.79	0.054
PE 16:0e-18:1	0.14	0.12	0.14	0.043	0.038	0.043	0.88	1	0.24	0.7

PE16:0p-18:1	0.082	0.097	0.1	0.026	0.031	0.031	1.2	1.2	<b>0.014</b>	<b>0.0011</b>
PE 16:0p-20:3/16:0e-20:4	0.3	0.35	0.45	0.096	0.11	0.14	1.2	1.5	0.12	< <b>0.001</b>
PE 16:0p-20:4	0.5	0.51	0.57	0.16	0.16	0.17	1	1.1	0.5	<b>0.014</b>
PE 16:0p-20:5	0.04	0.035	0.053	0.013	0.011	0.016	0.86	1.3	0.23	<b>0.047</b>
PE 16:0p-22:6	0.062	0.061	0.059	0.02	0.019	0.018	0.98	0.95	0.78	0.45
PE 16:1-18:1/16:0-18:2	1.7	1.3	0.81	0.53	0.42	0.24	0.78	0.48	<b>0.0059</b>	< <b>0.001</b>
PE 16:1-18:2	0.27	0.2	0.12	0.084	0.063	0.035	0.74	0.43	<b>0.02</b>	< <b>0.001</b>
PE 16:1-20:5	0.11	0.069	0.033	0.034	0.022	0.01	0.63	0.31	< <b>0.001</b>	< <b>0.001</b>
PE 16:1-22:6/18:2-20:5	0.59	0.38	0.16	0.19	0.12	0.047	0.64	0.27	< <b>0.001</b>	< <b>0.001</b>
PE 17:0-18:1	0.1	0.084	0.079	0.032	0.026	0.024	0.82	0.77	0.13	0.071
PE 17:0-18:2	0.098	0.073	0.038	0.031	0.023	0.012	0.74	0.39	<b>0.0038</b>	< <b>0.001</b>
PE 17:0-20:4	0.31	0.24	0.15	0.097	0.075	0.045	0.78	0.49	<b>0.0017</b>	< <b>0.001</b>
PE 17:0-22:5	0.01	0.0095	0.0052	0.0032	0.003	0.0016	0.93	0.51	0.62	< <b>0.001</b>
PE 17:1-18:2	0.047	0.034	0.03	0.015	0.011	0.0091	0.72	0.65	<b>0.019</b>	<b>0.02</b>
PE 17:1-20:4	0.096	0.067	0.068	0.03	0.021	0.02	0.7	0.71	<b>0.048</b>	0.068
PE 18:0-20:1	0.24	0.21	0.28	0.075	0.068	0.086	0.91	1.2	0.72	0.49
PE 18:0-20:3	0.82	0.59	0.35	0.26	0.19	0.1	0.72	0.42	< <b>0.001</b>	< <b>0.001</b>
PE 18:0-20:4	9.3	8.1	6.5	2.9	2.6	2	0.88	0.7	0.056	< <b>0.001</b>
PE 18:0-20:5	4.6	3.3	2.4	1.5	1	0.72	0.72	0.52	< <b>0.001</b>	< <b>0.001</b>
PE 18:0-22:4/20:0-20:4	0.96	1.1	1.1	0.3	0.33	0.33	1.1	1.2	0.19	0.07
PE 18:0-22:5	0.34	0.36	0.37	0.11	0.11	0.11	1.1	1.1	0.37	0.23
PE 18:0-22:6	0.21	0.24	0.23	0.065	0.075	0.069	1.2	1.1	0.15	0.15
PE 18:0e-18:1	0.14	0.13	0.13	0.045	0.04	0.039	0.89	0.91	0.41	0.6

PE 18:0e-18:2	0.15	0.13	0.12	0.048	0.04	0.036	0.85	0.8	0.31	0.16
PE 18:0p-18:1	0.13	0.13	0.15	0.042	0.04	0.044	0.95	1.1	0.83	0.58
PE 18:0p-20:4	0.73	0.75	0.81	0.23	0.24	0.24	1	1.1	0.4	<b>0.017</b>
PE 18:0p-20:5 /18:1p-20:4/16:0e-22:6	0.38	0.37	0.35	0.12	0.12	0.11	0.97	0.92	0.65	0.29
PE 18:0p-22:5/18:1p-22:4	0.077	0.077	0.092	0.024	0.024	0.028	1	1.2	0.94	<b>0.029</b>
PE 18:0p-22:6/18:1p-22:5	0.047	0.045	0.048	0.015	0.014	0.015	0.96	1	0.67	0.75
PE 18:1-18:1/18:0-18:2	3.2	2.4	2	1	0.77	0.61	0.77	0.64	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PE 18:1-18:2	2.6	1.9	1.1	0.81	0.59	0.35	0.73	0.45	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PE 18:1-20:1	0.079	0.053	0.03	0.025	0.017	0.0091	0.68	0.38	<b>0.0017</b>	<b>&lt;0.001</b>
PE 18:1-20:3/18:2-20:2	7.3	8.1	5.9	2.3	2.6	1.8	1.1	0.8	0.55	0.3
PE 18:1-20:4	4.6	3.3	2.4	1.5	1	0.72	0.72	0.51	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PE 18:1-22:5	0.063	0.059	0.054	0.02	0.019	0.016	0.93	0.85	0.39	0.078
PE 18:1-22:6	0.11	0.11	0.078	0.034	0.035	0.024	1	0.74	0.76	<b>&lt;0.001</b>
PE 18:1e-20:3	0.38	0.41	0.48	0.12	0.13	0.14	1.1	1.3	0.33	<b>0.0081</b>
PE 18:1p-18:1/18:0p-18:2/18:0e-18:3	0.091	0.1	0.086	0.029	0.032	0.026	1.1	0.94	0.3	0.43
PE 18:1p-20:3/16:0p-22:4	0.15	0.18	0.2	0.048	0.055	0.061	1.2	1.3	0.11	<b>0.0092</b>
PE 18:2-18:2	5	4.1	3.2	1.6	1.3	0.96	0.81	0.63	<b>&lt;0.001</b>	<b>&lt;0.001</b>
PE 18:2-18:3	1.4	1	0.65	0.44	0.32	0.2	0.73	0.47	<b>0.025</b>	<b>&lt;0.001</b>
PE 19:0-18:2	0.046	0.036	0.02	0.015	0.011	0.0062	0.78	0.44	0.05	<b>&lt;0.001</b>
PE 19:0-20:4	0.13	0.12	0.076	0.042	0.038	0.023	0.91	0.58	0.32	<b>&lt;0.001</b>
PE 20:0-18:2	0.4	0.36	0.29	0.13	0.11	0.089	0.88	0.73	0.16	<b>0.0017</b>
PE 20:0e-18:1	0.017	0.017	0.012	0.0053	0.0055	0.0037	1	0.73	0.72	<b>0.0075</b>
PE 20:0e-20:4/18:0e-22:4	0.017	0.012	0.019	0.0053	0.0038	0.0056	0.72	1.1	0.32	0.84

PE 20:1-18:2	0.95	0.83	0.69	0.3	0.26	0.21	0.87	0.72	<b>0.029</b>	<b>&lt;0.001</b>
PE 22:1-20:4	0.12	0.14	0.11	0.037	0.044	0.034	1.2	0.98	<b>0.016</b>	0.72

The metabolite profiles of kidney tissues were measured by GC/MS- (A) and LC/MS- (B) based metabolomics approaches. The levels of each metabolite were normalized with the peak intensity of the internal standard; 2-isopropylmalic acid (for GC/MS) or PC 12:0-12:0 (for LC/MS), and the tissue weight. The fold-change values were calculated with the ratio of the treatment group to the non-treatment group. *P* values were calculated by the Welch's t-test. In the column of 'P value', the bold letters show  $P < 0.05$ .

**Abbreviations:** Non, non-treatment group; Low, low-dose group; High, high-dose group; LPC, lysophosphatidylcholine; PC, phosphatidylcholine; LPE, lysophosphatidylethanolamine; PE, phosphatidylethanolamine; FA, fatty acid; AC, acylcarnitine.