

Supplementary

Table S1 List of metabolites significantly affected by treated with KO vs. CN

Compound	VIP	Fold change KO/CN	<i>p</i> -value
Nicotinuric acid	3.786	1.524	0.029
Prostaglandin G2	3.438	1.232	0.038
4-Acetamidobutanoic acid	2.607	4.499	0.004
Anandamide	2.584	2.307	0.036
Propylene glycol	2.530	1.488	0.021
D-arabino-Hex-3-ulose 6-phosphate	2.404	1.871	0.008
Ornithine	1.989	1.475	0.001
7-Dehydrocholesterol	1.972	3.344	0.000
Trehalose	1.879	0.715	0.001
Urocanic acid	1.843	1357	0.022
Calcidiol	1.832	4.581	0.003
Uric acid	1.816	2.530	0.027
Palmitaldehyde	1.770	1.349	0.042
3,5-Dihydroxybenzoic acid	1.718	0.240	0.000
L-Glutamic acid	1.712	1.432	0.023
Docosaehexaenoic acid	1.646	1.632	0.043
L-Serine	1.640	0.332	0.039
Thymine	1.558	6.079	0.001
Glycerolphosphorylethanolamine	1.539	2.251	0.001
Betaine	1.521	1.735	0.005
5-Hydroxyindoleacetaldehyde	1.511	9.522	0.015
Glycerol	2.304	1.086	0.204
Oleic acid	1.684	1.593	0.073
myo-Inositol	1.493	2.162	0.147
Creatinine	1.468	1.548	0.031
Gluconic acid	1.412	0.542	0.049
Pseudouridine 5'-phosphate	1.406	2.405	0.035
THF-L-glutamate	1.403	3.670	0.000
Citrulline	1.395	2.110	0.093
3-Keto-4-methylzymosterol	1.393	0.943	0.330
Beta-Tyrosine	1.375	1.496	0.007
Phosphoserine	1.365	1.759	0.035
Behenic acid	1.336	1.542	0.091
Episterol	1.334	0.823	0.196
7-Dehydrodesmosterol	1.328	0.722	0.069
L-Phenylalanine	1.306	3.623	0.001

Pantothenic acid	1.280	6.864	0.000
L-Proline	1.251	1.493	0.031
Acetyl phosphate	1.208	0.932	0.637
L-Alanine	1.184	0.852	0.249
NAD	1.166	1.748	0.085
L-Tyrosine	1.162	1.530	0.062
4-Imidazolone-5-propionic acid	1.155	1.541	0.028
<i>p</i> -Aminobenzoic acid	1.143	0.982	0.368
Eicosapentaenoic acid	1.139	1.688	0.033
Palmitic acid	1.137	1.245	0.178
L-Histidine	1.132	1.122	0.890
Formylmethanofuran	1.117	4.974	0.004
L-Threonine	1.108	5.740	0.000
Sphingosine	1.078	2.593	0.048
Xanthine	1.056	2.125	0.050
Pipecolic acid	1.056	1.066	0.319
D-Fructose	1.044	0.248	0.044
8(R)-HPETE	1.039	1.567	0.352

Table S2 List of metabolites significantly affected by treated with PC vs. CN

Compound	VIP	Fold change PC/CN	<i>p</i> -value
3-Keto-4-methylzosterol	4.246	1.164	0.014
5'-Deoxyadenosine	4.017	1.698	0.000
D-arabino-Hex-3-ulose 6-phosphate	3.469	2.197	0.004
D-Glucose	2.809	2.263	0.007
5'-Methylthioadenosine	2.797	1.676	0.005
L-Serine	2.781	0.072	0.001
7-Dehydrocholesterol	2.434	3.509	0.001
Phosphoserine	2.319	2.171	0.003
Galactosylsphingosine	2.201	107.3	0.000
D-Mannose	2.149	2.614	0.010
Stearic acid	2.092	0.787	0.034
UDP-glucose	1.991	2.598	0.002
myo-Inositol	1.970	3.243	0.013
SM(d18:1/18:0)	1.945	1.623	0.016
Beta-Tyrosine	1.933	1.720	0.015
Eicosapentaenoic acid	1.780	2.440	0.016
Calcidiol	1.736	3.348	0.010
Propylene glycol	1.547	1.329	0.026

Glycerolphosphorylethanolamine	1.525	2.056	0.016
Nicotinuric acid	3.002	1.383	0.250
L-Histidine	2.993	40.24	0.138
10-Formyltetrahydrofolate	2.222	2.857	0.199
Beta-Cortol	1.626	1.358	0.292
Behenic acid	1.617	1.588	0.119
Episterol	1.494	0.793	0.355
Maltose 6'-phosphate	1.402	3.658	0.017
Pyroglutamic acid	1.357	1.284	0.059
L-Glutamic acid	1.336	2.406	0.005
Docosahexaenoic acid	1.300	1.675	0.052
NAD	1.278	1.684	0.124
<i>p</i> -Aminobenzoic acid	1.274	1.015	0.379
Palmitic acid	1.217	1.315	0.048
γ -Amino- γ -cyanobutanoate	1.209	2.495	0.013
Phosphorylcholine	1.200	2.035	0.090
ADP-glucose	1.199	5.593	0.044
3,5-Dihydroxybenzoic acid	1.192	0.341	0.001
Purine	1.179	1.993	0.193
Oleic acid	1.158	1.308	0.315
Pipecolic acid	1.122	0.928	0.040
L-Tyrosine	1.120	1.509	0.259
Creatinine	1.116	1.597	0.070
Ornithine	1.105	1.398	0.108
Adenosine monophosphate	1.093	1.594	0.371
Alpha-D-Glucose	1.085	1.544	0.142
GDP	1.072	20.73	0.024
L-Alanine	1.059	0.796	0.196
L-Carnitine	1.059	1.686	0.082
19(S)-HETE	1.048	39.60	0.067
Pregnenolone sulfate	1.027	1.876	0.261
Formylmethanofuran	1.015	4.403	0.087

Table S3 List of metabolites significantly affected by treated with PC+KO vs. PC

Compound	VIP	Fold change KO+PC/PC	<i>p</i> -value
Prostaglandin G2	6.737	1.393	0.003
3-Keto-4-methylzymosterol	4.996	0.848	0.006
7-Dehydrodesmosterol	3.952	0.101	0.000
L-Threonine	3.077	0.387	0.016

5-Aminoimidazole ribonucleotide	3.034	0.116	0.008
Phosphoserine	2.272	0.496	0.014
UDP-glucose	1.829	0.521	0.007
Calcidiol	1.829	0.358	0.007
Maltose 6'-phosphate	1.744	0.196	0.002
D-Fructose	1.740	0.082	0.043
19(S)-HETE	1.732	2.823	0.013
Acetylphosphate	2.623	0.898	0.380
D-Glucose	2.497	0.589	0.062
10-Formyltetrahydrofolate	2.180	0.421	0.254
L-Tyrosine	1.953	0.804	0.439
D-Mannose	1.899	0.574	0.053
D-arabino-Hex-3-ulose 6-phosphate	1.878	0.736	0.212
5'-Methylthioadenosine	1.876	1.300	0.216
Palmitic acid	1.730	1.353	0.057
Glycerol	1.628	0.953	0.423
Eicosapentaenoic acid	1.586	0.560	0.161
L-Tryptophan	1.566	0.418	0.067
Adenine	1.538	1.385	0.064
Stearic acid	1.524	1.146	0.075
Pyroglutamic acid	1.524	0.782	0.088
Uric acid	1.507	0.426	0.101
Anandamide	1.501	1.498	0.382
Oleic acid	1.487	1.333	0.347
4-Acetamidobutanoic acid	1.445	0.313	0.137
7-Dehydrocholesterol	1.393	1.337	0.096
AMP	1.368	0.584	0.337
L-Isoleucine	1.343	1.375	0.083
Docosahexaenoic acid	1.340	0.657	0.167
L-Glutamic acid	1.326	0.437	0.021
Galactosylsphingosine	1.282	0.498	0.108
Behenic acid	1.275	0.793	0.166
Alpha-N-Phenylacetyl-L-glutamine	1.273	0.421	0.014
L-Lysine	1.216	0.304	0.003
<i>p</i> -Aminobenzoic acid	1.195	0.984	0.512
D-Maltose	1.179	1.504	0.220
Palmitaldehyde	1.159	1.140	0.261
Octadecanamide	1.159	1.241	0.244
L-Serine	1.139	5.148	0.221
Hypoxanthine	1.136	0.815	0.039
8(R)-HPETE	1.133	1.420	0.490
Pseudouridine 5'-phosphate	1.122	0.464	0.257
Nicotinuric acid	1.082	0.895	0.738
myo-Inositol	1.071	0.689	0.411

γ -Amino- γ -cyanobutanoate	1.038	0.478	0.089
Palmitoleic acid	1.014	1.166	0.119
Alpha-D-Glucose	1.008	1.325	0.273

Figure S1. The composition of krill oil (A) and polar compounds (B)

