

Supplemental Table S1: Enzyme names for EC numbers

A table showing the respective Enzyme name for each EC number used in this manuscript.

EC NUMBERS	ENZYME NAMES
EC 1.4.1.13	Glutamate synthase [NADPH] small chain
EC 1.4.1.2	NAD-specific glutamate dehydrogenase
EC 2.6.1.1	Aspartate aminotransferase
EC 3.5.1.1	L-asparaginase
EC 6.3.1.2	Glutamine synthetase type I
EC 3.5.1.2	Glutaminase
EC 1.4.1.4	NADP-specific glutamate dehydrogenase
EC 2.6.1.16	Glucosamine--fructose-6-phosphate aminotransferase [isomerizing]
EC 2.4.2.14	Amidophosphoribosyltransferase
EC 1.4.3.16	L-aspartate oxidase
EC 6.3.1.1	Aspartate ammonia ligase
EC 6.3.5.4	Asparagine synthetase [glutamine-hydrolyzing]
EC 2.1.3.2	Aspartate carbamoyltransferase
EC 23.1.191	UDP-3-O-[3-hydroxymyristoyl] glucosamine N-acyltransferase
EC 2.5.1.55	2-Keto-3-deoxy-D-manno-octulosonate-8-phosphate synthase
EC 5.3.1.13	Arabinose 5-phosphate isomerase
EC 2.7.1.130	Tetraacyldisaccharide 4'-kinase
EC 23.1.129	Acyl-[acyl-carrier-protein]--UDP-N-acetylglucosamine O-acyltransferase
EC 2.499.12	3-deoxy-D-manno-octulosonic-acid transferase
EC 3.6.1.54	UDP-2,3-diacetylglucosamine hydrolase
EC 2.4.1.182	Lipid-A-disaccharide synthase
EC 2.7.7.23	N-acetylglucosamine-1-phosphate uridyltransferase

Supplemental Table S2: Normalized Metabolite Table for Identified Metabolites

A list of all the M/Z and retention time values for all identified metabolites after LC-MS analysis.

Metabolite name	Average Rt(min)	Average Mz	Average Control	Average 5 µg/kg BW TCDF	Average 24 µg/kg BW TCDF
2-Aminooctanoic acid	11.82	158.119	5.296 ± 1.682	13.355 ± 18.779	5.464 ± 1.308
2-Isopropylmalic acid	14.1	175.061	22.902 ± 9.518	14.191 ± 11.670	15.602 ± 9.596
2-Keto-D-gluconate	5.03	193.035	115.752 ± 93.995	58.629 ± 55.642	56.950 ± 36.132
2-Keto-isovalerate	13.28	115.04	3.857 ± 5.419	1.439 ± 0.569	2.060 ± 1.728
2,3-Dihydroxybenzoic acid	13.68	153.02	0.717 ± 0.225	0.729 ± 0.335	0.567 ± 0.171
3-Hydroxybutyric acid	3.83	103.04	0.447 ± 0.068	0.526 ± 0.078	0.494 ± 0.142
3-Methylphenylacetic acid	15.38	149.061	0.685 ± 0.210	1.192 ± 1.193	0.698 ± 0.125
3-Phospho-serine	8.55	184.002	0.847 ± 0.687	0.397 ± 0.330	0.372 ± 0.135
3-Phosphoglycerate	13.54	184.986	7.918 ± 6.002	3.306 ± 3.068	1.855 ± 0.774

3-S-Methylthiopropionate	12.26	119.017	3.279 ± 7.484	0.117 ± 0.272	0.729 ± 1.337
4-Aminobutyrate	3.76	102.056	23.115 ± 6.021	20.191 ± 11.987	25.644 ± 4.375
4-Hydroxyphenyllactate	11.23	181.051	0.506 ± 0.163	0.377 ± 0.131	0.329 ± 0.167
4-Phosphopantothenate	13.92	298.07	0.158 ± 0.149	0.079 ± 0.097	0.045 ± 0.031
4-Pyridoxic acid	14.17	182.046	93.972 ± 19.820	74.319 ± 40.942	75.610 ± 23.435
5-Methoxytryptophan	8.54	233.093	0.646 ± 0.187	0.594 ± 0.342	0.597 ± 0.129
6-Phospho-D-gluconate	13.35	275.018	0.289 ± 0.272	0.110 ± 0.141	0.028 ± 0.018
Acetoacetate	8.02	101.024	1.882 ± 0.621	2.035 ± 0.587	1.507 ± 0.343
Acetyl-aspartate	13.07	174.041	321.136 ± 132.666	176.155 ± 114.266	212.430 ± 79.121
Acetyl-glycine	7.6	116.035	39.345 ± 10.914	31.572 ± 22.901	42.923 ± 7.448
Acetyllysine	1.29	187.109	1.864 ± 0.696	1.365 ± 0.807	1.709 ± 0.673
Aconitate	13.98	173.009	2.831 ± 1.225	1.823 ± 1.034	1.575 ± 0.465
Adenosine	1.26	266.088	0.797 ± 0.220	0.612 ± 0.385	0.877 ± 0.441

Alanine/Sacrosine	1.21	88.04	45.047 ± 10.018	47.198 ± 25.202	56.028 ± 9.824
Alpha-ketoglutarate	13.27	145.014	7.935 ± 5.502	3.667 ± 1.616	6.098 ± 3.352
Aminoadipic acid	3.52	160.062	3.703 ± 0.501	3.444 ± 1.837	3.399 ± 0.980
AMP	11.34	346.056	1.788 ± 2.188	4.689 ± 6.733	1.577 ± 1.365
Anthranilate	13.44	136.04	0.384 ± 0.088	0.373 ± 0.124	0.297 ± 0.038
Ascorbic acid	6.67	175.025	0.287 ± 0.043	0.207 ± 0.094	0.269 ± 0.138
Asp-Leu-His (DLH)	3.9	382.173	0.453 ± 0.231	0.398 ± 0.254	0.557 ± 0.265
Asp-Leu/Ile-Ser (DLS)	11.55	332.147	0.713 ± 0.201	0.640 ± 0.356	0.742 ± 0.356
Asparagine	1.19	131.046	2.460 ± 0.588	2.557 ± 1.408	7.028 ± 4.813
Aspartate	4.14	132.03	326.767 ± 86.610	392.581 ± 224.693	467.957 ± 139.292
ATP	15.34	505.989	0.014 ± 0.017	0.021 ± 0.021	0.007 ± 0.009
CDP	13.43	402.012	0.157 ± 0.060	0.086 ± 0.086	0.073 ± 0.040
Chlorpropamide	17.31	275.027	34.560 ± 14.897	30.449 ± 17.166	32.712 ± 6.858

Citraconic acid	13.36	129.02	0.801 ± 0.197	0.942 ± 0.256	0.654 ± 0.197
Citrate/isocitrate	13.43	191.02	3.388 ± 0.965	2.962 ± 1.610	3.096 ± 1.449
Citrulline	1.28	174.088	133.177 ± 31.274	67.795 ± 60.845	165.568 ± 53.929
CMP	8.63	322.045	2.191 ± 0.976	1.940 ± 1.258	2.337 ± 1.234
CTP	15.07	481.978	0.000 ± 0.000	0.001 ± 0.003	0.000 ± 0.000
Cystathionine	1.25	221.06	1.928 ± 0.635	1.989 ± 1.314	2.874 ± 1.541
Cytosine	1.14	110.036	0.150 ± 0.042	0.135 ± 0.066	0.118 ± 0.059
D-Sedoheptulose-1/7-phosphate	7.34	289.033	47.904 ± 56.461	23.269 ± 32.253	3.049 ± 2.178
dAMP	11.91	330.061	4.018 ± 4.731	14.481 ± 20.749	3.780 ± 5.176
dCMP	9.73	306.05	6.825 ± 6.288	20.055 ± 27.108	7.396 ± 9.132
Deoxyinosine	3.92	251.077	0.098 ± 0.120	0.016 ± 0.012	0.041 ± 0.041
Deoxyribose-phosphate	7.83	213.017	6.653 ± 6.693	17.120 ± 26.967	6.057 ± 6.843
dGDP	14.03	426.023	1.421 ± 0.515	1.223 ± 1.219	0.700 ± 0.367

Dihydrooorotate	7.2	157.026	1.972 ± 1.180	2.416 ± 3.589	3.095 ± 2.980
Dihydroxy-acetone-phosphate	9.34	168.991	3.810 ± 2.687	2.523 ± 2.831	0.955 ± 0.599
dTMP	11.48	321.05	18.883 ± 26.560	50.190 ± 84.280	13.184 ± 13.072
Erythrose-4-phosphate	7.14	199.002	0.442 ± 0.528	0.180 ± 0.241	0.037 ± 0.028
FMN	14.47	455.098	3.376 ± 0.941	1.736 ± 1.258	1.411 ± 0.682
Folate	14	440.133	0.364 ± 0.213	0.237 ± 0.158	0.209 ± 0.083
Fructose-1,6-bisphosphate	13.64	338.989	0.181 ± 0.157	0.046 ± 0.064	0.042 ± 0.047
Fructose-6-phosphate	8.07	259.023	4.912 ± 4.851	2.295 ± 2.640	1.020 ± 0.603
Fumarate	13.49	115.004	7.472 ± 2.418	13.075 ± 7.257	15.210 ± 4.500
GDP	13.72	442.018	0.363 ± 0.098	0.284 ± 0.230	0.177 ± 0.084
Glucarate	13.18	209.03	3.513 ± 2.313	2.726 ± 2.023	2.424 ± 0.735
Gluconate	5.06	195.051	16.803 ± 5.084	9.972 ± 6.002	10.334 ± 6.202
Glucono-_-lactone	7.01	177.041	10.201 ± 7.461	3.196 ± 1.677	5.644 ± 5.659

Glucose	1.27	179.056	267.777 ± 140.902	197.627 ± 200.602	250.676 ± 169.947
Glucose-1/6-phosphate	7.14	259.023	106.199 ± 130.633	46.810 ± 65.739	6.967 ± 5.981
Glutamate	3.78	146.046	3146.460 ± 710.167	2801.547 ± 1606.715	3394.040 ± 508.440
Glutamine	1.24	145.062	53.953 ± 11.545	59.000 ± 34.021	57.032 ± 22.312
Glutathione	7.89	306.077	0.246 ± 0.159	0.570 ± 0.617	0.232 ± 0.141
Glycine	1.19	74.024	15.340 ± 3.615	17.724 ± 10.538	21.709 ± 4.503
GMP	10.8	362.051	1.164 ± 0.551	0.948 ± 0.754	0.915 ± 0.516
GTP	15.17	521.984	0.000 ± 0.000	0.001 ± 0.003	0.000 ± 0.000
Guanine	3.47	150.042	0.437 ± 0.142	0.492 ± 0.284	0.481 ± 0.158
Histidine	1.13	154.062	3.653 ± 1.548	4.075 ± 2.385	4.625 ± 1.339
Hydroxyisocaproic acid	14.4	131.071	21.704 ± 13.429	19.808 ± 18.938	14.765 ± 10.673
Hydroxyphenylacetic acid	14.61	151.04	0.546 ± 0.116	0.529 ± 0.082	0.447 ± 0.081
Hydroxyproline/Aminolevulinate	1.23	130.051	3.416 ± 0.836	2.314 ± 1.386	1.305 ± 0.347

Ile-Asp-Ser (IDS)	8.22	332.147	0.845 ± 0.339	0.514 ± 0.291	0.686 ± 0.227
IMP	10.78	347.04	0.771 ± 0.375	0.378 ± 0.289	0.299 ± 0.255
Indole-3-carboxylic acid	14.27	160.041	1.273 ± 0.342	1.113 ± 0.592	1.216 ± 0.238
Inosine	3.69	267.072	1.855 ± 0.477	1.373 ± 1.498	1.150 ± 0.951
Ketoleucine	14.27	129.056	1.097 ± 0.242	1.931 ± 1.846	1.019 ± 0.165
Lactate	7.21	89.024	416.595 ± 202.422	391.389 ± 273.981	368.120 ± 147.177
Leu-Asp (LD)	8.51	245.114	1.135 ± 0.431	1.093 ± 0.582	0.963 ± 0.325
Leucine/Isoleucine	2.28	130.087	331.043 ± 99.910	447.247 ± 261.525	598.998 ± 134.451
Lysine	1.08	145.098	9.561 ± 3.006	9.644 ± 5.697	11.955 ± 3.318
Malate	12.83	133.014	515.653 ± 103.783	565.405 ± 316.000	559.104 ± 129.501
Maleic acid	12.64	115.004	18.422 ± 41.707	37.815 ± 57.219	29.445 ± 43.740
Methionine	1.84	148.044	42.949 ± 90.996	3.221 ± 7.768	22.233 ± 39.612
N-Acetyl-glucosamine-1/6-phosphate	7.46	300.049	26.028 ± 11.664	12.325 ± 14.698	4.364 ± 4.343

N-Acetyl-glutamate	13.54	188.057	8.202 ± 2.459	6.421 ± 4.439	7.113 ± 2.399
N-Acetyl-glutamine	7.27	187.073	18.189 ± 4.234	13.132 ± 7.308	16.463 ± 4.225
N-Acetyl-L-ornithine	1.39	173.093	4.468 ± 3.332	8.471 ± 7.777	7.353 ± 6.206
N-Carbamoyl-L-aspartate	12.62	175.036	69.745 ± 29.368	44.211 ± 46.345	56.354 ± 28.786
Nicotinate	11.18	122.025	990.397 ± 170.588	768.613 ± 416.849	770.809 ± 177.304
O-Acetyl-serine	1.29	146.046	0.381 ± 0.165	0.258 ± 0.123	0.371 ± 0.177
Ornithine	1.08	131.083	11.459 ± 16.599	6.796 ± 9.329	19.839 ± 21.226
Orotate	8.38	155.01	75.916 ± 39.050	48.434 ± 67.192	73.572 ± 71.077
Oxaloacetate	13.75	130.999	0.307 ± 0.163	0.315 ± 0.167	0.262 ± 0.043
p-Aminobenzoate	8.92	136.041	0.313 ± 0.092	0.275 ± 0.141	0.242 ± 0.080
Pantothenate	11.23	218.103	584.057 ± 268.080	580.465 ± 404.481	825.544 ± 109.319
Phenyllactic acid	14.9	165.056	39.075 ± 7.487	37.004 ± 23.077	31.149 ± 26.787
Phenylpyruvate	15.32	163.04	0.244 ± 0.158	0.148 ± 0.039	0.181 ± 0.112

Phosphoenolpyruvate	13.94	166.975	0.887 ± 0.709	0.357 ± 0.310	0.175 ± 0.093
Pipecolic Acid	1.35	128.072	3.557 ± 4.970	0.265 ± 0.116	6.537 ± 3.618
Prephenate	14.26	225.041	1.325 ± 0.621	1.225 ± 0.517	0.732 ± 0.170
Pro-Glu (PE)	4.39	243.099	0.942 ± 0.348	1.034 ± 0.568	1.102 ± 0.497
Proline	1.33	114.056	56.594 ± 21.315	63.786 ± 44.100	83.568 ± 20.203
Pyridoxamine	7.91	167.083	0.263 ± 0.064	0.237 ± 0.103	0.179 ± 0.056
Pyridoxine	1.8	168.067	0.327 ± 0.116	0.298 ± 0.137	0.461 ± 0.409
Pyroglutamic acid	7.31	128.035	387.699 ± 89.029	348.902 ± 184.583	396.602 ± 79.375
Pyruvate	8.64	87.009	8.318 ± 4.570	3.841 ± 1.969	6.021 ± 3.527
Quinolate	13.74	166.015	9.921 ± 2.104	7.942 ± 4.117	8.360 ± 0.613
Riboflavin	12.34	375.132	0.475 ± 0.127	0.512 ± 0.396	0.649 ± 0.169
Ribose	1.31	149.046	42.881 ± 10.735	33.906 ± 20.169	44.919 ± 23.419
Ribose-5-phosphate	7.31	229.012	4.023 ± 3.453	2.571 ± 2.316	0.950 ± 0.442

Ribulose-5-phosphate	7.77	229.012	7.602 ± 7.372	4.714 ± 5.985	1.484 ± 0.795
Ser-Asp (SD)	3.75	219.062	13.009 ± 1.916	13.488 ± 7.560	12.368 ± 3.926
Ser-Leu/Ile-Asp (SID)	10.66	332.147	1.082 ± 0.343	0.967 ± 0.529	1.141 ± 0.431
Serine	1.2	104.035	33.773 ± 7.937	42.058 ± 25.032	53.339 ± 13.062
sn-Glycerol-3-phosphate	7.47	171.007	64.652 ± 30.105	55.849 ± 72.702	25.354 ± 16.886
Succinate/Methylmalonic acid	12.02	117.019	1993.173 ± 496.461	1554.611 ± 795.600	1610.725 ± 257.754
Taurine	1.24	124.007	499.395 ± 210.699	447.431 ± 258.645	401.456 ± 181.408
Thiamine	1.14	263.097	0.645 ± 0.182	0.692 ± 0.480	0.818 ± 0.289
Threonine/Homoserine	1.25	118.051	60.195 ± 12.415	59.959 ± 32.215	85.893 ± 11.075
Trehalose-6-Phosphate	6.9	421.076	0.151 ± 0.148	0.106 ± 0.117	0.041 ± 0.043
Trehalose/Sucrose	1.31	341.109	9.632 ± 8.843	6.401 ± 8.652	6.939 ± 5.507
Tryptophan	7.86	203.083	105.141 ± 26.958	128.268 ± 73.362	167.803 ± 39.143
UDP	13.67	402.996	0.241 ± 0.084	0.167 ± 0.158	0.124 ± 0.078

UDP-D-glucose	13.27	565.048	0.153 ± 0.078	0.068 ± 0.055	0.057 ± 0.057
UDP-N-acetyl-glucosamine	13.3	606.075	0.121 ± 0.068	0.037 ± 0.030	0.051 ± 0.054
UMP	10.29	323.029	5.581 ± 2.050	4.229 ± 2.332	4.311 ± 2.162
Uracil	1.58	111.02	0.473 ± 0.154	0.480 ± 0.226	0.420 ± 0.198
Uracil	1.58	111.02	0.473 ± 0.154	0.480 ± 0.226	0.420 ± 0.198
Uric acid	6.32	167.021	13.572 ± 5.723	10.727 ± 10.272	16.075 ± 6.733
Uric acid	6.32	167.021	13.572 ± 5.723	10.727 ± 10.272	16.075 ± 6.733
Uridine	1.67	243.062	26.297 ± 28.620	21.886 ± 34.102	14.952 ± 12.536
Uridine	1.67	243.062	26.297 ± 28.620	21.886 ± 34.102	14.952 ± 12.536
Val-Asp (VD)	6.11	231.099	2.237 ± 0.443	1.538 ± 0.814	2.840 ± 1.152
Val-Asp (VD)	6.11	231.099	2.237 ± 0.443	1.538 ± 0.814	2.840 ± 1.152
Valine/5-Aminopentanoic acid	1.14	116.072	10.610 ± 2.374	9.065 ± 4.484	17.798 ± 13.838
Valine/5-Aminopentanoic acid	1.14	116.072	10.610 ± 2.374	9.065 ± 4.484	17.798 ± 13.838

Xanthine	2.51	151.026	30.000 ± 8.013	14.655 ± 9.706	21.140 ± 9.894
Xanthine	2.51	151.026	30.000 ± 8.013	14.655 ± 9.706	21.140 ± 9.894
Xanthosine	7.79	283.069	55.037 ± 12.349	30.417 ± 24.522	26.537 ± 15.379
Xanthosine	7.79	283.069	55.037 ± 12.349	30.417 ± 24.522	26.537 ± 15.379
Xanthosine-5-phosphate	12.9	363.035	0.733 ± 0.403	0.358 ± 0.311	0.271 ± 0.219
Xanthosine-5-phosphate	12.9	363.035	0.733 ± 0.403	0.358 ± 0.311	0.271 ± 0.219
Xanthurenic acid	13.91	204.03	1.406 ± 0.468	1.364 ± 0.887	1.977 ± 0.759
Xanthurenic acid	13.91	204.03	1.406 ± 0.468	1.364 ± 0.887	1.977 ± 0.759

Supplemental Table S3: Normalized Metabolite Table for Unidentified Metabolites

A list of all the M/Z and retention time values for the top 200 unidentified metabolites after LC-MS analysis.

Average Rt(min)	Average Mz	Average Control	Average 5 µg/kg TCDF	Average 24 µg/kg TCDF	Average Rt(min)
1.08	942.9412	0.249 ± 0.066	0.104 ± 0.123	0.102 ± 0.047	1.08
1.7	272.0461	0.144 ± 0.029	0.076 ± 0.045	0.072 ± 0.025	1.7
2.19	399.273	0.083 ± 0.023	0.061 ± 0.041	0.027 ± 0.022	2.19
2.28	129.8757	0.248 ± 0.130	0.354 ± 0.233	0.498 ± 0.058	2.28
2.28	430.2238	0.143 ± 0.050	0.227 ± 0.154	0.352 ± 0.109	2.28
2.28	261.182	6.738 ± 3.223	12.363 ± 8.777	19.464 ± 6.641	2.28
2.45	263.1861	0.139 ± 0.088	0.231 ± 0.229	0.383 ± 0.058	2.45
2.45	449.143	0.313 ± 0.116	0.163 ± 0.173	0.084 ± 0.070	2.45
2.46	261.182	22.499 ± 9.914	35.772 ± 23.733	51.273 ± 13.297	2.46
2.46	261.139	0.057 ± 0.063	0.169 ± 0.155	0.205 ± 0.061	2.46
2.47	160.0979	0.352 ± 0.154	0.490 ± 0.305	0.802 ± 0.204	2.47
2.5	218.0403	0.563 ± 0.111	0.849 ± 0.559	0.967 ± 0.205	2.5
2.51	359.1252	1.620 ± 0.695	2.412 ± 1.559	3.069 ± 0.509	2.51
2.54	247.0935	0.297 ± 0.078	0.138 ± 0.081	0.090 ± 0.049	2.54
3.31	389.2048	0.112 ± 0.022	0.191 ± 0.135	0.237 ± 0.049	3.31
3.48	193.0368	0.025 ± 0.018	0.060 ± 0.021	0.067 ± 0.016	3.48
3.98	446.2258	0.126 ± 0.048	0.263 ± 0.193	0.258 ± 0.049	3.98
4	405.1995	0.209 ± 0.031	0.111 ± 0.072	0.099 ± 0.057	4
4.04	415.1088	0.054 ± 0.012	0.075 ± 0.048	0.092 ± 0.018	4.04

4.19	167.0462	0.050 ± 0.035	0.212 ± 0.110	0.340 ± 0.151	4.19
4.8	224.0349	0.018 ± 0.007	0.086 ± 0.048	0.127 ± 0.020	4.8
4.94	583.1288	0.096 ± 0.016	0.051 ± 0.028	0.042 ± 0.024	4.94
5.17	300.1201	0.219 ± 0.054	0.279 ± 0.211	0.470 ± 0.050	5.17
5.19	329.151	23.313 ± 11.468	39.268 ± 27.299	59.007 ± 13.389	5.19
5.19	202.0455	0.278 ± 0.073	0.439 ± 0.277	0.610 ± 0.149	5.19
5.19	200.0484	0.833 ± 0.213	1.308 ± 0.888	1.820 ± 0.456	5.19
5.19	214.0722	0.821 ± 0.305	1.174 ± 0.735	1.673 ± 0.339	5.19
5.19	180.0666	0.953 ± 0.336	1.333 ± 0.833	1.817 ± 0.352	5.19
5.2	163.7721	0.421 ± 0.193	0.573 ± 0.347	0.859 ± 0.087	5.2
5.2	260.0597	0.682 ± 0.136	0.902 ± 0.532	1.152 ± 0.220	5.2
6.12	203.9364	0.055 ± 0.011	0.034 ± 0.030	0.027 ± 0.011	6.12
6.23	149.0456	2.369 ± 0.534	1.805 ± 1.059	1.250 ± 0.367	6.23
6.64	334.1261	0.748 ± 0.119	0.982 ± 0.529	1.151 ± 0.183	6.64
6.84	137.9867	0.957 ± 0.093	0.519 ± 0.289	0.558 ± 0.146	6.84
6.9	382.9906	0.006 ± 0.003	0.015 ± 0.013	0.027 ± 0.011	6.9
6.91	285.0134	0.104 ± 0.023	0.151 ± 0.102	0.267 ± 0.086	6.91
6.92	125.0357	0.246 ± 0.091	0.399 ± 0.220	0.706 ± 0.201	6.92
7	358.0121	0.088 ± 0.030	0.038 ± 0.015	0.026 ± 0.010	7
7.07	148.8638	0.032 ± 0.007	0.039 ± 0.023	0.050 ± 0.008	7.07
7.14	260.0347	4.535 ± 0.758	2.478 ± 1.399	2.138 ± 0.695	7.14
7.15	180.007	0.260 ± 0.093	0.702 ± 0.569	1.238 ± 0.458	7.15
7.15	200.0146	0.065 ± 0.023	0.146 ± 0.093	0.241 ± 0.081	7.15
7.15	182.0041	0.081 ± 0.027	0.204 ± 0.166	0.408 ± 0.167	7.15
7.16	144.0302	3.364 ± 1.024	7.641 ± 5.667	13.703 ± 5.042	7.16

7.17	100.0405	0.896 ± 0.209	1.916 ± 1.207	3.342 ± 1.239	7.17
7.5	222.9992	0.562 ± 0.073	0.462 ± 0.245	0.382 ± 0.063	7.5
7.5	283.0236	0.364 ± 0.042	0.271 ± 0.152	0.241 ± 0.056	7.5
7.55	309.0498	0.242 ± 0.045	0.143 ± 0.089	0.086 ± 0.035	7.55
7.55	336.0262	0.126 ± 0.056	0.048 ± 0.059	0.011 ± 0.015	7.55
7.59	297.0496	0.239 ± 0.041	0.128 ± 0.070	0.105 ± 0.039	7.59
7.61	249.0188	0.381 ± 0.161	1.127 ± 0.603	1.744 ± 0.568	7.61
7.64	391.0655	0.140 ± 0.034	0.068 ± 0.045	0.048 ± 0.027	7.64
7.64	272.0544	0.485 ± 0.123	0.250 ± 0.150	0.197 ± 0.074	7.64
7.64	283.034	0.451 ± 0.149	0.241 ± 0.170	0.142 ± 0.063	7.64
7.64	355.0554	0.194 ± 0.051	0.127 ± 0.071	0.099 ± 0.022	7.64
7.64	412.0421	1.052 ± 0.583	0.296 ± 0.376	0.066 ± 0.060	7.64
7.65	224.9824	0.392 ± 0.116	0.174 ± 0.147	0.074 ± 0.042	7.65
7.65	372.0706	0.232 ± 0.046	0.125 ± 0.082	0.084 ± 0.039	7.65
7.65	271.0592	0.641 ± 0.170	0.274 ± 0.146	0.245 ± 0.059	7.65
7.65	333.0598	0.316 ± 0.082	0.207 ± 0.205	0.110 ± 0.053	7.65
7.65	315.0491	0.636 ± 0.153	0.379 ± 0.232	0.284 ± 0.098	7.65
7.65	328.0807	0.147 ± 0.040	0.099 ± 0.053	0.067 ± 0.014	7.65
7.65	326.0651	0.854 ± 0.223	0.491 ± 0.299	0.372 ± 0.169	7.65
7.66	320.9551	0.267 ± 0.039	0.103 ± 0.115	0.042 ± 0.042	7.66
7.66	190.9518	2.902 ± 0.616	1.319 ± 1.135	0.745 ± 0.388	7.66
7.66	271.023	0.259 ± 0.054	0.143 ± 0.090	0.102 ± 0.028	7.66
7.66	317.0649	0.180 ± 0.035	0.115 ± 0.087	0.064 ± 0.028	7.66
7.66	112.9896	0.906 ± 0.125	0.744 ± 0.246	0.428 ± 0.138	7.66
7.66	222.978	24.886 ± 7.096	11.044 ± 9.897	5.718 ± 2.921	7.66

7.66	110.9853	103.123 ± 15.801	64.273 ± 40.237	47.154 ± 16.060	7.66
7.66	148.959	0.489 ± 0.064	0.328 ± 0.212	0.259 ± 0.072	7.66
7.66	361.0547	0.290 ± 0.048	0.205 ± 0.119	0.150 ± 0.044	7.66
7.66	312.0494	0.243 ± 0.042	0.143 ± 0.082	0.126 ± 0.042	7.66
7.66	208.9623	3.531 ± 0.881	1.918 ± 1.368	1.395 ± 0.632	7.66
7.66	386.0862	0.079 ± 0.021	0.041 ± 0.026	0.028 ± 0.016	7.66
7.66	286.0337	0.357 ± 0.070	0.234 ± 0.139	0.183 ± 0.076	7.66
7.67	384.0819	0.147 ± 0.022	0.102 ± 0.073	0.067 ± 0.018	7.67
7.67	356.9529	0.854 ± 0.177	0.443 ± 0.451	0.213 ± 0.155	7.67
7.67	411.0815	0.165 ± 0.030	0.087 ± 0.056	0.068 ± 0.020	7.67
7.67	415.113	0.088 ± 0.018	0.074 ± 0.051	0.033 ± 0.011	7.67
7.67	222.9441	0.162 ± 0.053	0.065 ± 0.072	0.021 ± 0.023	7.67
7.67	430.076	0.903 ± 0.187	0.522 ± 0.323	0.365 ± 0.123	7.67
7.67	244.9599	3.314 ± 0.579	1.991 ± 1.475	1.288 ± 0.622	7.67
7.67	468.9453	0.236 ± 0.090	0.083 ± 0.095	0.021 ± 0.027	7.67
7.67	480.0916	0.056 ± 0.009	0.039 ± 0.040	0.022 ± 0.012	7.67
7.67	372.9178	0.121 ± 0.031	0.069 ± 0.067	0.026 ± 0.031	7.67
7.67	154.9924	4.060 ± 0.643	2.624 ± 1.477	2.075 ± 0.724	7.67
7.67	136.9817	0.258 ± 0.046	0.174 ± 0.107	0.132 ± 0.043	7.67
7.67	334.9709	1.505 ± 0.662	0.533 ± 0.616	0.181 ± 0.125	7.67
7.67	212.9338	0.189 ± 0.031	0.119 ± 0.087	0.081 ± 0.046	7.67
7.67	153.996	0.956 ± 0.165	0.623 ± 0.379	0.491 ± 0.178	7.67
7.67	454.9299	0.049 ± 0.022	0.020 ± 0.042	0.007 ± 0.011	7.67
7.67	313.0447	3.489 ± 1.074	1.824 ± 1.153	1.460 ± 0.469	7.67
7.67	260.9338	0.055 ± 0.023	0.018 ± 0.022	0.015 ± 0.005	7.67

7.68	146.962	1.541 ± 0.217	1.010 ± 0.616	0.756 ± 0.217	7.68
7.68	369.071	0.566 ± 0.128	0.345 ± 0.231	0.206 ± 0.067	7.68
7.68	316.0806	1.008 ± 0.235	0.491 ± 0.372	0.342 ± 0.135	7.68
7.68	401.1335	1.842 ± 0.325	1.109 ± 0.693	0.891 ± 0.271	7.68
7.68	511.1451	0.077 ± 0.020	0.034 ± 0.026	0.029 ± 0.012	7.68
7.68	330.06	0.622 ± 0.151	0.358 ± 0.223	0.260 ± 0.092	7.68
7.69	314.065	0.279 ± 0.086	0.156 ± 0.105	0.108 ± 0.026	7.69
7.69	245.0433	1.802 ± 0.698	1.201 ± 1.915	0.511 ± 0.175	7.69
7.7	324.0494	0.127 ± 0.016	0.091 ± 0.062	0.063 ± 0.024	7.7
7.7	339.0603	0.723 ± 0.186	0.442 ± 0.314	0.329 ± 0.085	7.7
7.72	247.0309	0.056 ± 0.023	0.414 ± 0.217	0.573 ± 0.124	7.72
7.72	245.0351	1.628 ± 0.741	10.011 ± 5.152	12.961 ± 3.063	7.72
7.72	356.0394	0.434 ± 0.094	0.245 ± 0.172	0.218 ± 0.039	7.72
7.76	395.0614	0.517 ± 0.231	0.168 ± 0.163	0.107 ± 0.066	7.76
7.8	585.1805	0.083 ± 0.018	0.028 ± 0.032	0.021 ± 0.022	7.8
7.8	283.1186	0.313 ± 0.057	0.127 ± 0.101	0.128 ± 0.066	7.8
7.8	319.0453	1.029 ± 0.242	0.553 ± 0.383	0.424 ± 0.227	7.8
7.82	222.0355	0.542 ± 0.109	0.345 ± 0.192	0.330 ± 0.063	7.82
7.83	450.0941	1.253 ± 0.300	0.756 ± 0.583	0.441 ± 0.339	7.83
8.05	182.0936	0.152 ± 0.020	0.254 ± 0.145	0.245 ± 0.028	8.05
8.32	144.0303	1.619 ± 0.438	1.830 ± 1.267	3.495 ± 0.787	8.32
8.41	241.9985	0.017 ± 0.007	0.038 ± 0.033	0.064 ± 0.020	8.41
8.41	99.0089	0.714 ± 0.210	1.406 ± 0.727	1.514 ± 0.341	8.41
8.56	168.0304	3.185 ± 0.609	1.891 ± 1.351	1.376 ± 0.749	8.56
8.7	303.0331	0.495 ± 0.099	0.353 ± 0.319	0.254 ± 0.092	8.7

8.96	178.0259	0.544 ± 0.127	0.299 ± 0.167	0.273 ± 0.082	8.96
9.05	342.1674	1.138 ± 0.214	1.591 ± 1.023	1.927 ± 0.383	9.05
9.14	584.1319	0.062 ± 0.025	0.041 ± 0.027	0.014 ± 0.010	9.14
9.3	323.1617	0.049 ± 0.017	0.075 ± 0.060	0.229 ± 0.058	9.3
9.34	221.0239	1.969 ± 0.167	1.307 ± 0.688	1.134 ± 0.285	9.34
9.34	629.1952	0.015 ± 0.004	0.018 ± 0.012	0.006 ± 0.003	9.34
9.52	260.0235	0.090 ± 0.029	0.221 ± 0.114	0.246 ± 0.072	9.52
9.52	173.0027	0.181 ± 0.010	0.144 ± 0.034	0.119 ± 0.032	9.52
9.67	341.0759	1.605 ± 0.648	0.669 ± 0.798	0.187 ± 0.151	9.67
9.93	421.0757	0.046 ± 0.017	0.029 ± 0.033	0.009 ± 0.008	9.93
10.06	246.0191	0.200 ± 0.024	0.120 ± 0.070	0.113 ± 0.042	10.06
10.19	294.0597	0.198 ± 0.040	0.107 ± 0.065	0.106 ± 0.033	10.19
10.2	153.7422	0.162 ± 0.031	0.099 ± 0.067	0.092 ± 0.016	10.2
10.28	289.0943	0.238 ± 0.032	0.154 ± 0.083	0.144 ± 0.046	10.28
10.4	311.1729	0.193 ± 0.047	0.150 ± 0.048	0.091 ± 0.032	10.4
10.47	157.9918	0.293 ± 0.064	0.171 ± 0.072	0.136 ± 0.049	10.47
10.61	386.067	0.035 ± 0.003	0.022 ± 0.012	0.023 ± 0.006	10.61
10.8	263.0676	0.421 ± 0.177	1.107 ± 0.713	1.236 ± 0.406	10.8
10.89	174.0773	0.480 ± 0.080	0.220 ± 0.081	0.183 ± 0.058	10.89
11.05	196.1093	0.207 ± 0.085	0.690 ± 0.364	0.654 ± 0.182	11.05
11.24	325.0809	0.831 ± 0.370	0.298 ± 0.337	0.122 ± 0.111	11.24
11.25	276.0622	0.183 ± 0.032	0.202 ± 0.136	0.296 ± 0.043	11.25
11.26	344.1331	0.096 ± 0.020	0.114 ± 0.090	0.192 ± 0.039	11.26
11.26	300.1067	4.210 ± 1.322	4.942 ± 3.490	7.041 ± 1.014	11.26
11.27	451.2302	0.048 ± 0.027	0.123 ± 0.092	0.149 ± 0.033	11.27

11.27	328.1382	0.263 ± 0.064	0.286 ± 0.198	0.446 ± 0.074	11.27
11.29	302.136	3.465 ± 0.373	4.261 ± 2.470	4.804 ± 0.697	11.29
11.37	351.1566	0.424 ± 0.089	0.245 ± 0.246	0.201 ± 0.067	11.37
11.4	199.0015	0.433 ± 0.163	0.157 ± 0.085	0.099 ± 0.069	11.4
11.61	616.2953	0.168 ± 0.072	0.104 ± 0.077	0.031 ± 0.020	11.61
11.9	263.0345	0.257 ± 0.095	0.828 ± 0.467	1.241 ± 0.375	11.9
11.96	184.9872	0.318 ± 0.064	0.131 ± 0.099	0.115 ± 0.035	11.96
12.29	432.1377	0.447 ± 0.116	0.419 ± 0.303	0.242 ± 0.018	12.29
12.46	258.9919	0.163 ± 0.048	0.050 ± 0.027	0.056 ± 0.026	12.46
12.5	457.1206	0.229 ± 0.072	0.200 ± 0.110	0.094 ± 0.034	12.5
13.01	377.0883	0.297 ± 0.059	0.257 ± 0.138	0.152 ± 0.061	13.01
13.02	256.0036	2.271 ± 0.390	1.031 ± 0.650	0.818 ± 0.255	13.02
13.04	249.0552	0.502 ± 0.171	1.189 ± 0.601	1.251 ± 0.161	13.04
13.23	355.028	0.215 ± 0.031	0.124 ± 0.075	0.117 ± 0.045	13.23
13.46	300.9809	0.165 ± 0.109	0.498 ± 0.279	0.665 ± 0.220	13.46
13.46	222.0538	0.251 ± 0.124	0.064 ± 0.093	0.014 ± 0.013	13.46
13.76	250.9982	0.539 ± 0.040	0.294 ± 0.204	0.351 ± 0.100	13.76
14.08	263.0424	0.876 ± 0.105	0.532 ± 0.316	0.493 ± 0.198	14.08
14.1	222.008	2.180 ± 0.646	4.001 ± 2.043	4.733 ± 0.669	14.1
14.1	433.2442	0.071 ± 0.019	0.042 ± 0.039	0.023 ± 0.020	14.1
14.12	289.998	0.029 ± 0.009	0.037 ± 0.024	0.059 ± 0.013	14.12
14.14	292.0831	0.933 ± 0.228	1.512 ± 0.766	1.608 ± 0.310	14.14
14.37	434.092	0.010 ± 0.009	0.078 ± 0.044	0.154 ± 0.063	14.37
14.37	263.0709	0.656 ± 0.261	1.084 ± 0.542	1.146 ± 0.120	14.37
14.61	689.3745	0.233 ± 0.065	0.148 ± 0.168	0.043 ± 0.085	14.61

14.73	816.2764	0.277 ± 0.056	0.202 ± 0.212	0.083 ± 0.064	14.73
14.77	648.2936	0.081 ± 0.029	0.059 ± 0.050	0.020 ± 0.010	14.77
14.79	211.0614	1.443 ± 0.215	0.802 ± 0.398	0.647 ± 0.317	14.79
14.85	407.1328	2.067 ± 0.438	1.663 ± 1.567	0.784 ± 0.559	14.85
14.86	815.2733	0.814 ± 0.159	0.646 ± 0.631	0.260 ± 0.190	14.86
14.87	387.1094	0.491 ± 0.268	0.277 ± 0.212	1.387 ± 0.448	14.87
14.99	467.0661	0.067 ± 0.031	0.039 ± 0.022	0.173 ± 0.055	14.99
15.07	331.083	1.297 ± 0.244	0.836 ± 0.449	0.689 ± 0.230	15.07
15.07	607.1677	0.250 ± 0.135	0.027 ± 0.038	0.013 ± 0.015	15.07
15.15	524.9996	0.008 ± 0.011	0.091 ± 0.062	0.075 ± 0.036	15.15
15.22	297.1712	0.542 ± 0.131	0.231 ± 0.159	0.140 ± 0.036	15.22
15.45	380.9382	0.003 ± 0.005	0.028 ± 0.023	0.045 ± 0.014	15.45
15.51	359.0815	0.994 ± 0.132	0.564 ± 0.313	0.489 ± 0.178	15.51
16.13	285.0408	0.573 ± 0.336	0.815 ± 0.418	1.525 ± 0.401	16.13
16.58	588.7601	0.451 ± 0.139	0.335 ± 0.278	0.103 ± 0.095	16.58
16.6	365.1611	0.404 ± 0.099	0.234 ± 0.125	0.204 ± 0.045	16.6
16.64	589.7625	0.076 ± 0.029	0.056 ± 0.052	0.010 ± 0.009	16.64
17.26	379.1766	1.869 ± 0.420	1.155 ± 0.615	1.036 ± 0.181	17.26
17.28	293.1397	0.165 ± 0.061	0.373 ± 0.088	0.333 ± 0.067	17.28
17.38	299.1504	0.082 ± 0.042	0.216 ± 0.063	0.348 ± 0.089	17.38
17.38	365.1609	0.197 ± 0.038	0.094 ± 0.051	0.085 ± 0.021	17.38
17.4	303.1453	0.360 ± 0.170	0.067 ± 0.034	0.055 ± 0.027	17.4
17.74	321.0522	0.002 ± 0.005	0.072 ± 0.045	0.129 ± 0.022	17.74
17.82	349.1662	1.105 ± 0.223	0.890 ± 0.828	0.464 ± 0.246	17.82
18.64	345.1381	0.274 ± 0.064	0.384 ± 0.219	0.542 ± 0.119	18.64

19.13	335.187	1.411 ± 0.391	1.761 ± 0.708	2.644 ± 0.584	19.13
19.14	390.1266	0.000 ± 0.000	0.404 ± 0.296	0.435 ± 0.130	19.14
19.14	194.5594	0.006 ± 0.009	0.166 ± 0.108	0.160 ± 0.072	19.14
19.15	391.1108	0.004 ± 0.009	0.266 ± 0.240	0.252 ± 0.123	19.15
19.37	447.2394	0.329 ± 0.039	0.221 ± 0.122	0.178 ± 0.068	19.37
19.52	331.1323	0.183 ± 0.042	0.072 ± 0.061	0.061 ± 0.043	19.52

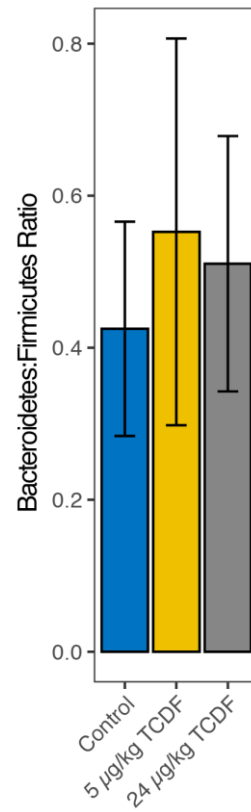
Supplemental Table S4: Primer Sequences for qPCR Analysis of Tight Junction Proteins

Gene	FP	RP	Gene Name
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<i>mOcln</i>	CGG CCG CCA AGG TTC GCT TA	CCT GGG GGC GAC GTC CAT TT	Occludin
<i>mTjp1 (Zo-1)</i>	CTT TCG CCT GAA ACA ACC CC	CTG TAC ACC TTT GCT GGG TCT	Zonula occludens 1
<i>mTjp2 (Zo-2)</i>	TCG TCG GGT GAC CCT AAA AC	ACA GTT GGC TCC AAC AAG GT	Zonula occludens 2
<i>mGapdh</i>	CCT CGT CCC GTA GAC AAA ATG	TGA AGG GGT CGT TGA TGG C	Glyceraldehyde 3- phosphate dehydrogenase

Supplemental Figure S1: Bacteroidetes to Firmicutes ratio

A bar chart representing the Bacteroidetes to Firmicutes ratio between control and 5 µg/kg BW TCDF exposure and control and 24 µg/kg BW TCDF exposure.



Supplemental Figure S2: Top 50 significant KEGG enzymes and COGs after 24 µg/kg BW

TCDF exposure TCDF exposure

A heat map of the Z-scores of the top 50 significantly different enzymes after 24 µg/kg BW TCDF exposure.

