

**Supplementary Table 2. Concentration of identified serum metabolites and comparison of non-progressor and progressor groups**

Metabolite	Control	Non-progressor group	Progressor group	p-value
3-Hydroxybutyrate (mM)	0.871 ± 0.392	4.574 ± 4.257	1.421 ± 0.874	0.11
3-Hydroxyisobutyrate (mM)	0.295 ± 0.135	0.427 ± 0.128	0.361 ± 0.067	0.22
Acetate (mM)	0.718 ± 0.336	1.755 ± 0.879	2.273 ± 0.775	0.17
Acetoacetate (mM)	0.342 ± 0.184	1.991 ± 1.532	0.988 ± 0.537	0.280
Acetone (mM)	0.920 ± 0.158	1.750 ± 1.243	0.983 ± 0.504	0.04*
Alanine (mM)	14.792 ± 4.248	11.435 ± 3.577	11.662 ± 3.622	0.97
Asparagine (mM)	2.397 ± 0.393	2.173 ± 0.419	2.097 ± 0.432	0.58
Betaine (mM)	1.074 ± 0.473	0.990 ± 0.267	1.560 ± 0.404	0.003*
Choline (mM)	0.308 ± 0.163	0.251 ± 0.107	0.283 ± 0.170	0.8
Citrate (mM)	3.204 ± 0.835	3.982 ± 0.679	4.429 ± 1.130	0.63
Creatine (mM)	1.465 ± 0.501	1.245 ± 0.634	1.007 ± 0.680	0.28
Creatine phosphate (mM)	0.314 ± 0.147	0.394 ± 0.104	0.358 ± 0.104	0.53
Creatinine (mM)	1.373 ± 0.403	1.789 ± 0.570	1.744 ± 0.654	0.91
Dimethyl sulfone (mM)	0.273 ± 0.096	0.402 ± 0.175	0.395 ± 0.215	0.91
Dimethylamine (mM)	0.089 ± 0.024	0.108 ± 0.048	0.194 ± 0.176	0.14
Formate (mM)	1.380 ± 0.356	1.219 ± 1.021	2.111 ± 0.665	0.04*
Glucose (mM)	55.938 ± 37.402	120.376 ± 28.503	100.007 ± 40.263	0.12
Glutamate (mM)	4.130 ± 1.240	2.849 ± 1.098	3.420 ± 1.631	0.58
Glutamine (mM)	13.596 ± 3.373	16.784 ± 1.535	17.223 ± 4.748	0.85
Glycerol (mM)	7.295 ± 4.336	5.313 ± 3.078	1.806 ± 1.111	0.001*
Glycine (mM)	12.119 ± 2.28	9.489 ± 1.466	7.535 ± 1.803	0.03*
Histidine (mM)	3.226 ± 0.458	2.949 ± 0.348	2.702 ± 0.773	0.35
Hypoxanthine (mM)	1.668 ± 0.603	0.680 ± 0.425	0.658 ± 0.383	>0.99
Inosine (mM)	0.508 ± 0.471	0.206 ± 0.118	0.131 ± 0.080	0.17
Isoleucine (mM)	3.265 ± 0.847	2.434 ± 0.722	1.769 ± 0.808	0.12
Lactate (mM)	242.549 ± 114.048	84.177 ± 24.592	92.550 ± 66.358	0.58
Leucine (mM)	4.177 ± 1.251	4.649 ± 0.522	4.750 ± 0.819	0.85
Lysine (mM)	3.000 ± 0.707	3.562 ± 0.609	3.418 ± 0.992	0.68
Methanol (mM)	2.043 ± 0.961	1.895 ± 0.535	1.802 ± 0.514	0.80
Methionine (mM)	0.980 ± 0.194	1.078 ± 0.258	1.091 ± 0.329	0.58
N,N-Dimethylglycine (mM)	0.116 ± 0.027	0.157 ± 0.040	0.208 ± 0.045	0.02*
Phenylalanine (mM)	2.142 ± 0.247	1.863 ± 0.228	2.097 ± 0.453	0.17
Proline (mM)	5.856 ± 1.597	4.211 ± 0.954	5.341 ± 1.407	0.09
Propylene glycol (mM)	0.170 ± 0.096	0.232 ± 0.086	0.262 ± 0.222	0.68
Pyruvate (mM)	8.433 ± 11.611	0.973 ± 0.671	1.171 ± 0.839	0.48
Serine (mM)	5.263 ± 0.679	3.964 ± 0.842	3.617 ± 0.665	0.53
Threonine (mM)	4.790 ± 0.721	5.096 ± 0.769	3.540 ± 1.275	0.003*
Trimethylamine N-oxide (mM)	0.343 ± 0.100	0.222 ± 0.063	0.211 ± 0.078	0.48
Tyrosine (mM)	2.239 ± 0.297	1.935 ± 0.369	2.038 ± 0.579	0.74
Urea (mM)	16.859 ± 6.007	21.158 ± 10.764	21.603 ± 8.807	0.91
Valine (mM)	9.280 ± 2.527	8.959 ± 1.556	7.234 ± 1.565	0.04*
Xanthine (mM)	0.340 ± 0.156	0.432 ± 0.103	0.424 ± 0.142	0.58
myo-Inositol (mM)	0.925 ± 0.167	0.859 ± 0.300	1.124 ± 0.600	0.48

Data are expressed as mean ± standard deviation.

The p-values were calculated using Mann-Whitney U test between progressor and non-progressor groups.

\*p < 0.05.