

SUPPLEMENTARY TABLE 1. Alpha diversity measurements in gut microbiota within each group T1, T2, and T3 after 1-year of intervention and, as well as, across the three groups.

	Faith_pd <i>p-value</i>	Observed features <i>p-value</i>	Pielou-Evenness <i>p-value</i>
T1 (n = 99)	0.981	0.722	0.319
T2 (n = 99)	0.701	0.780	0.574
T3 (n = 99)	0.675	0.720	0.055
Across three groups	0.438	0.758	0.122

SUPPLEMENTARY TABLE 2. List of the predicted pathways between three groups.

BioCyc Pathway ID	Pathway
PWY-6562	norspermidine biosynthesis
BRANCHED-CHAIN-AA-SYN-PWY	superpathway of branched chain amino acid biosynthesis
ILEUSYN-PWY	L-isoleucine biosynthesis I (from threonine)
PWY-2942	L-lysine biosynthesis III
PWY-5101	L-isoleucine biosynthesis II
PWY-5103	L-isoleucine biosynthesis III
PWY-5104	L-isoleucine biosynthesis IV
PWY-6630	superpathway of L-tyrosine biosynthesis
VALSYN-PWY	L-valine biosynthesis
PWY-6628	superpathway of L-phenylalanine biosynthesis
PWY-5505	L-glutamate and L-glutamine biosynthesis
PWY0-1241	ADP-L-glycero-β;-D-manno-heptose biosynthesis
OANTIGEN-PWY	O-antigen building blocks biosynthesis (<i>E. coli</i>)
KDO-NAGLIPASYN-PWY	superpathway of (Kdo) ₂ -lipid A biosynthesis
PWY-5265	peptidoglycan biosynthesis II (staphylococci)
PWY-6891	thiazole component of thiamine diphosphate biosynthesis II
PWY-6895	superpathway of thiamine diphosphate biosynthesis II
PWY-7377	cob(II)yrinate <i>a,c</i> -diamide biosynthesis I (early cobalt insertion)
PYRIDNUCSAL-PWY	NAD salvage pathway I (PNC VI cycle)
LPSSYN-PWY	superpathway of lipopolysaccharide biosynthesis
P125-PWY	superpathway of (<i>R, R</i>)-butanediol biosynthesis
PWY-5910	superpathway of geranylgeranyldiphosphate biosynthesis I (via mevalonate)
PWY-5757	fosfomycin biosynthesis
PWY-922	mevalonate pathway I (eukaryotes and bacteria)
AEROBACTINSYN-PWY	aerobactin biosynthesis
ENTBACSYN-PWY	enterobactin biosynthesis
PWY-7431	aromatic biogenic amine degradation (bacteria)
CRNFORCAT-PWY	creatinine degradation I
ORNDEG-PWY	superpathway of ornithine degradation
PWY-5705	allantoin degradation to glyoxylate III
PWY-5499	vitamin B ₆ degradation

SUPPLEMENTARY TABLE 2. Continue.

PWY0-1533	methylphosphonate degradation I
GALACTARDEG-PWY	D-galactarate degradation I
GLUCARDEG-PWY	D-glucarate degradation I
GOLPDLAT-PWY	superpathway of glycerol degradation to 1,3-propanediol
AST-PWY	L-arginine degradation II (AST pathway)
ARGDEG-PWY	superpathway of L-arginine, putrescine, and 4-aminobutanoate degradation
ORNARGDEG-PWY	superpathway of L-arginine and L-ornithine degradation
BENZCOA-PWY	anaerobic aromatic compound degradation (<i>Thauera aromatica</i>)
GLUCARGALACTSUPER-PWY	superpathway of D-glucarate and D-galactarate degradation
PWY-6588	pyruvate fermentation to acetone
PWY-7111	pyruvate fermentation to isobutanol (engineered)
PWY-5100	pyruvate fermentation to acetate and lactate II
NONOXIPENT-PWY	pentose phosphate pathway (non-oxidative branch) I
PWY-7254	TCA cycle VII (acetate-producers)