

Supplementary Table 1. Effective test for SCFA, BCFA and ammonia with *p*-value after significant ANOVA. The BCFA test was performed on mM/gram protein basis data.

Effect	<i>p</i> -value			
	Total SCFAs	Acetate	Propionate	Butyrate
Fiber Source (S)	1.0000	1.0000	1.0000	1.0000
Fiber Inclusion (I)	< 0.0001 *	< 0.0001 *	< 0.0001 *	< 0.0001 *
S x I	< 0.0001 *	< 0.0001 *	< 0.0001 *	< 0.0001 *
Fermentation Time (T)	< 0.0001 *	< 0.0001 *	< 0.0001 *	< 0.0001 *
S x T	1.0000	1.0000	1.0000	1.0000
I x T	0.0001	0.0005 *	< 0.0001 *	< 0.0001 *
S x I x T	< 0.0001 *	< 0.0001 *	< 0.0001 *	< 0.0001 *
Effect	<i>p</i> -value			
	Total BCFAs	Isobutyrate	Isovalerate	Ammonia
Fiber Source (S)	1.0000	1.0000	1.0000	1.0000
Fiber Inclusion (I)	< 0.0001 *	0.0234 *	< 0.0001 *	< 0.0001 *
S x I	< 0.0001 *	< 0.0001 *	< 0.0001 *	< 0.0001 *
Fermentation Time (T)	0.0028 *	0.1844	0.0002 *	< 0.0001 *
S x T	1.0000	1.0000	1.0000	1.0000
I x T	0.0035 *	< 0.0001 *	0.0147 *	< 0.0001 *
S x I x T	< 0.0001 *	< 0.0001 *	< 0.0001 *	0.6316

Supplementary Table 2. PERMENOVA test revealing beta-diversity statistics

Pairs of protein levels	Df	SumsOfSqs	F.Model	R2	p.value	p.adjusted	sig
0 vs 100	1	1.07028526	15.7826056	0.30478585	1e-04	0.001	**
0 vs 25	1	0.46381923	6.00515102	0.12509389	4e-04	0.004	*
0 vs 50	1	0.60246979	8.18657927	0.15993605	3e-04	0.003	*
0 vs 75	1	0.92742404	14.0558445	0.25074717	1e-04	0.001	**
100 vs 25	1	0.80382521	11.9574804	0.42770236	2e-04	0.002	*
100 vs 50	1	0.5297897	9.04168406	0.34720044	2e-04	0.002	*
100 vs 75	1	0.25698266	6.82051422	0.29887645	1e-04	0.001	**
25 vs 50	1	0.09093938	1.16281862	0.0481243	0.3136	1	
25 vs 75	1	0.35418494	5.54404745	0.20127933	1e-04	0.001	**
50 vs 75	1	0.12099498	2.09869667	0.08361775	0.0604	0.604	
Pairs of fibers	Df	SumsOfSqs	F.Model	R2	p.value	p.adjusted	sig
FOS vs WBPS	1	0.79410579	19.9391527	0.47543051	1e-04	0.0015	*
FOS vs Pec	1	1.18921028	28.4970746	0.5643312	1e-04	0.0015	*
FOS vs EM	1	0.52756886	14.6962438	0.38985963	1e-04	0.0015	*
WBPS vs Pec	1	1.04686598	23.5353759	0.51685915	1e-04	0.0015	*
WBPS vs EM	1	0.56728935	14.7239904	0.3903084	1e-04	0.0015	*
Pec vs EM	1	0.43880317	10.8749417	0.32103204	1e-04	0.0015	*