

Supplementary Data

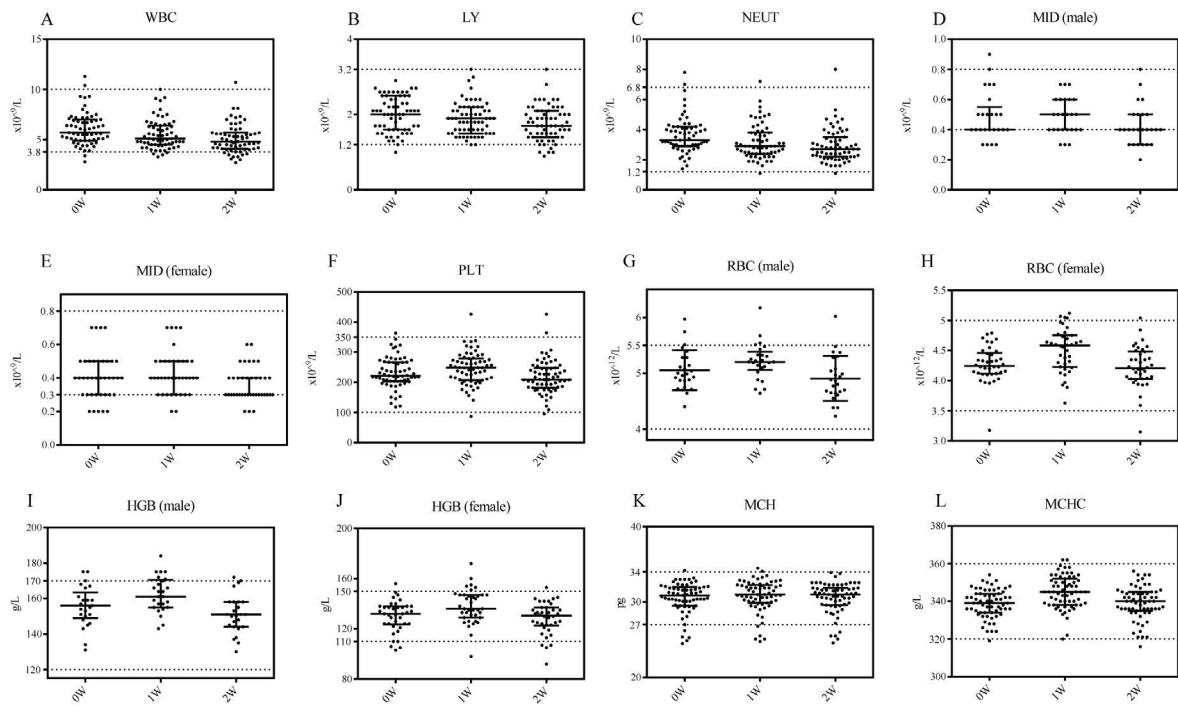


Figure S1. Cell and effect of one-week FF (n=63). A: White blood cell (WBC). B: Lymphocytes (LY). C: Neutrophilic granulocyte (NEUT). D and E: intermediate cell (MID). F: Platelet (PLT). G and H: Red blood cell (RBC). I and J: Hemoglobin (HGB). K: Mean corpuscular hemoglobin (MCH). L: Mean corpuscular hemoglobin concentration (MCHC).

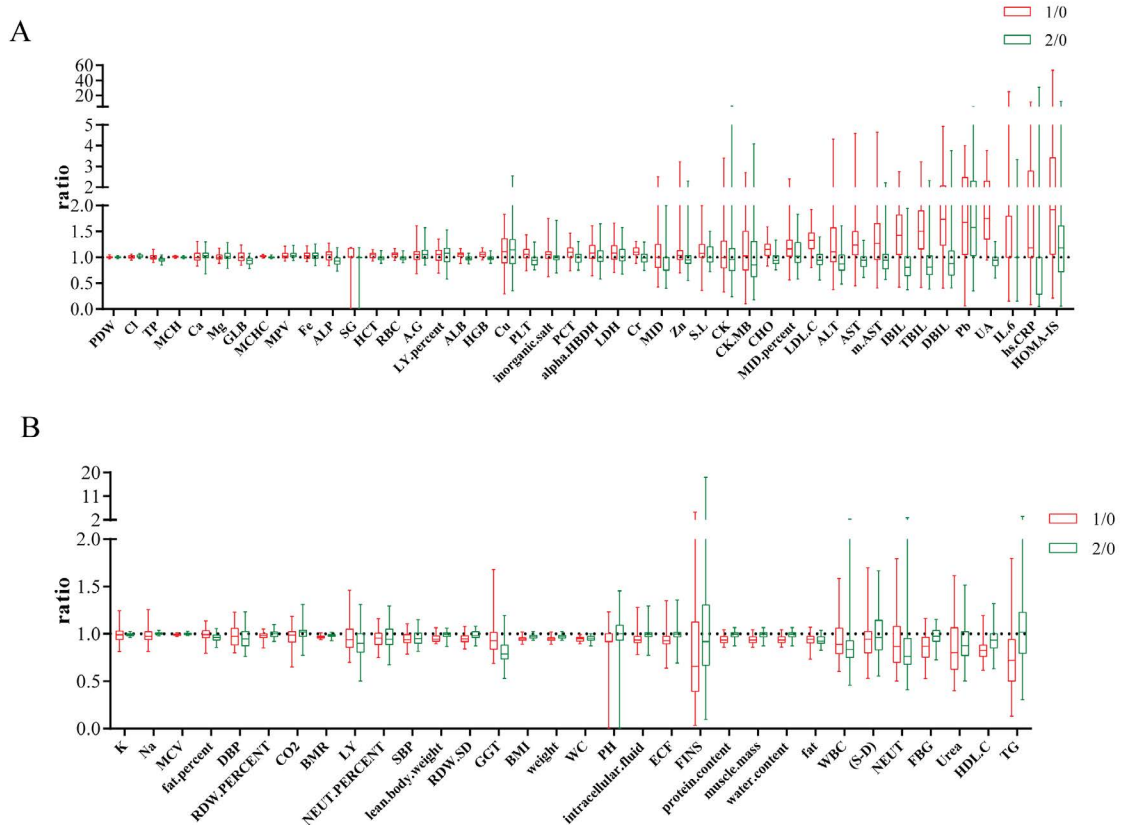


Figure S2. The ratios of indexes between 1W, 2W and base level. A: increased indexes. B: decreased indexes

Table S1. The principal material special prebiotics formula

Index		Content
The principal material	Carbohydrate	89.3 g/100g
	Protein	<0.5 g/100g
	Fat	1.3 g/100g
	Sodium	11 mg/100g
Energy		1134 KJ/100g

Table S2. Changes of security-relevant factors (N=63)

Variable	0W		1W		1-0	P1	2W		2-0	P2
	Mean±SD	95% CI	Mean±SD	95% CI	Mean (95% CI)		Mean±SD	95% CI	Mean (95% CI)	
Plasma electrolytes and trace elements										
sodium (mmol/L)	140.56±1.37	(140.22-140.91)	139.38±1.99	(138.88-139.88)	-1.18 (-1.71 to -0.65)	<0.001	141.03±1.44	(140.67-141.49)	0.47 (0.08 to 0.85)	0.021
potassium (mmol/L)	4.41±0.28	(4.34-4.48)	4.37±0.27	(4.30-4.44)	-0.04 (-0.12 to 0.04)	0.256	4.33±0.30	(4.25-4.40)	-0.08 (-0.17 to 0.004)	0.013
chlorine (mmol/L)	100.25±1.56	(99.86-100.64)	100.53±3.07	(99.76-101.31)	0.29 (-0.45 to 1.03)	0.468	102.14±2.76	(101.45-102.84)	1.90 (1.36 to 2.43)	<0.001
calcium (mmol/L)	1.49±0.18	(1.44-1.53)	1.50±0.25	(1.44-1.56)	0.02 (-0.02 to 0.05)	0.934	1.54±0.20	(1.49-1.59)	0.06 (0.02 to 0.10)	0.001
magnesium (mmol/L)	1.48±0.14	(1.45-1.52)	1.49±0.15	(1.46-1.53)	0.01 (-0.009 to 0.04)	0.346	1.51±0.12	(1.48-1.54)	0.03 (-0.002 to 0.06)	0.038
iron (mmol/L)	8.51±0.84	(8.29-8.72)	8.75±0.91	(8.52-8.98)	0.24 (0.09 to 0.39)	0.004	8.72±0.80	(8.52-8.92)	0.21 (0.05 to 0.38)	0.012
zinc (µmol/L)	92.33±14.75	(88.61-96.04)	99.73±26.09	(93.16-106.30)	7.40 (0.49 to 14.32)	0.013	88.91±11.12	(86.11-91.71)	-3.41 (-7.47 to 0.64)	0.015
copper (µmol/L)	15.73±5.09	(14.45-17.01)	15.17±3.28	(14.35-16.00)	-0.56 (-2.24 to 1.12)	0.412	16.45±4.95	(15.20-17.70)	0.72 (-1.10 to 2.54)	0.106
lead (µg/L)	20.78±6.88	(19.04-22.51)	33.47±16.22	(29.39-37.56)	12.69 (8.13 to 17.26)	<0.001	34.01±17.15	(29.69-38.33)	13.23 (8.59 to 17.88)	<0.001
Blood routine examination										
white blood cell (x10 ⁹)	6.08±1.64	(5.66-6.49)	5.52±1.49	(5.14-5.90)	-0.56 (-0.89 to -0.22)	0.002	5.09±1.45	(4.73-5.46)	-0.99 (-1.37 to -0.60)	<0.001
lymphocyte (x10 ⁹)	2.01±0.47	(1.89-2.13)	1.90±0.44	(1.79-2.01)	-0.11 (-0.19 to -0.04)	0.003	1.76±0.46	(1.65-1.88)	-0.25 (-0.33 to -0.17)	<0.001
lymphocyte (%)	33.75±5.67	(32.32-35.17)	35.30±6.76	(33.59-37.00)	1.55 (0.33 to 2.78)	0.019	35.47±6.63	(33.80-37.14)	1.73 (0.14 to 3.31)	0.015
neutrophil (x10 ⁹)	3.63±1.21	(3.32-3.93)	3.17±1.16	(2.88-3.47)	-0.45 (-0.72 to -0.19)	0.001	2.94±1.13	(2.66-3.23)	-0.69 (-1.01 to -0.37)	<0.001
neutrophil (%)	58.90±6.08	(57.36-60.43)	56.08±7.45	(54.21-57.96)	-2.81 (-4.16 to -1.46)	<0.001	56.6±7.54	(54.70-58.50)	-2.30 (-3.99 to -0.60)	0.003
intermediate cell (x10 ⁹)	0.44±0.15	(0.40-0.48)	0.45±0.13	(0.42-0.48)	0.01 (-0.02 to 0.05)	0.333	0.39±0.12	(0.36-0.42)	-0.05 (-0.09 to -0.02)	0.006
intermediate cell (%)	7.36±1.44	(7.00-7.72)	8.62±1.76	(8.18-9.06)	1.26 (0.82 to 1.70)	<0.001	7.96±1.88	(7.48-8.43)	0.6 (0.13 to 1.07)	0.054
RDW-SD (fL)	46.78±2.54	(46.15-47.42)	44.39±2.80	(43.69-45.10)	-2.39 (-2.97 to -1.81)	<0.001	46.50±3.08	(45.72-47.27)	-0.29 (-0.80 to 0.23)	0.327
RDW (%)	13.49±0.92	(13.26-13.73)	13.21±1.02	(12.96-13.47)	-0.28 (-0.41 to -0.15)	<0.001	13.44±1.15	(13.15-13.73)	-0.06 (-0.19 to 0.07)	0.206
red blood cell (x10 ¹²)	4.58±0.50	(4.46-4.71)	4.79±0.49	(4.67-4.91)	0.21 (0.14 to 0.27)	<0.001	4.50±0.50	(4.37-4.62)	-0.09 (-0.13 to -0.04)	<0.001
hematocrit (%)	41.23±4.63	(40.07-42.40)	42.68±4.33	(41.59-43.77)	1.44 (0.90 to 1.99)	<0.001	40.46±4.31	(39.38-41.55)	-0.77 (-1.22 to -0.32)	0.001
mean corpuscular volume (fL)	90.16±5.04	(88.89-91.43)	89.34±4.87	(88.12-90.57)	-0.82 (-1.00 to -0.64)	<0.001	90.18±4.80	(88.98-91.39)	0.02 (-0.16 to 0.20)	0.883
platelet (x10 ⁹ /L)	231.67±51.74	(218.63-244.70)	245.52±55.04	(231.66-259.39)	13.86 (6.95 to 20.76)	<0.001	218.02±56.19	(203.86-232.17)	-13.65 (-20.67 to -6.63)	<0.001
platelet distribution width (%)	15.36±0.24	(15.30-15.42)	15.38±0.27	(15.31-15.44)	0.01 (-0.04 to 0.07)	0.757	15.42±0.24	(15.36-15.48)	0.06 (0.005 to 0.12)	0.048
mean platelet volume (fL)	8.34±0.77	(8.14-8.53)	8.53±0.72	(8.35-8.71)	0.19 (0.08 to 0.30)	0.002	8.71±0.81	(8.50-8.91)	0.37 (0.26 to 0.48)	<0.001
thrombocytocrit (%)	0.19±0.04	(0.18-0.20)	0.21±0.04	(0.20-0.22)	0.02 (0.01 to 0.02)	<0.001	0.19±0.04	(0.18-0.20)	-0.004 (-0.01 to 0.003)	0.293
hemoglobin (g/L)	140.08±17.37	(135.71-144.45)	147.62±17.14	(143.30-151.94)	7.54 (5.63 to 9.45)	<0.001	137.51±16.46	(133.36-141.65)	-2.57 (-4.12 to 1.02)	0.002
mean corpuscular hemoglobin (pg)	30.53±2.11	(30.00-31.06)	30.80±2.16	(30.25-31.34)	0.27 (0.17 to 0.37)	<0.001	30.55±2.09	(30.03-31.08)	0.02 (-0.09 to 0.13)	0.792
mean corpuscular hemoglobin concentration (g/L)	338.81±7.56	(336.91-340.71)	344.95±8.83	(342.73-347.18)	6.14 (4.86 to 7.42)	<0.001	338.94±8.82	(336.71-341.16)	0.13 (-1.06 to 1.32)	0.979

hepatic parameters										
aspartate transaminase (U/L)	24.43±11.80	(21.46-27.40)	34.36±26.62	(27.65-41.06)	9.93 (4.54 to 15.32)	<0.001	22.31±9.90	(19.82-24.81)	-2.11 (-3.64 to -0.59)	0.004
glutamic-pyruvic transaminase (U/L)	31.15±24.46	(24.99-37.31)	42.77±44.18	(31.64-53.90)	11.62 (4.49 to 18.75)	0.002	27.83±23.09	(22.01-33.64)	-3.32 (-5.26 to -1.39)	0.001
S/T	0.95±0.33	(0.87-1.03)	1.03±0.39	(0.94-1.13)	0.08 (0.01 to 0.15)	0.002	1±0.36	(0.91-1.09)	0.05 (0.004 to 0.09)	0.047
glutamyltranspeptidase (U/L)	41.45±55.43	(27.49-55.41)	38.07±49.88	(25.50-50.63)	-3.38 (-6.18 to -0.59)	<0.001	32.24±45.67	(20.74-43.75)	-9.21 (-12.71 to -5.70)	<0.001
alkaline phosphatase (U/L)	70.42±16.26	(66.32-74.51)	72.55±18.18	(67.97-77.13)	2.13 (0.50 to 3.77)	0.019	65.88±17.66	(61.44-70.33)	-4.53 (-6.37 to -2.70)	<0.001
total bilirubin (µmol/L)	14.4±6.70	(12.71-16.09)	21.30±10.97	(18.53-24.06)	6.90 (4.98 to 8.81)	<0.001	11.61±4.70	(10.43-12.79)	-2.79 (-3.95 to -1.63)	<0.001
direct bilirubin (µmol/L)	4.56±2.33	(3.97-5.15)	7.18±3.39	(6.32-8.03)	2.62 (2.02 to 3.21)	<0.001	3.90±1.78	(3.45-4.35)	-0.66 (-1.04 to -0.28)	0.001
indirect bilirubin (µmol/L)	9.84±4.46	(8.72-10.96)	14.12±7.67	(12.19-16.05)	4.28 (2.92 to 5.63)	<0.001	7.71±3.01	(6.95-8.47)	-2.13 (-2.94 to -1.32)	<0.001
total protein (g/L)	76.27±3.81	(75.31-77.23)	76.47±4.54	(75.33-77.62)	0.21 (-0.82 to 1.24)	0.994	72.84±3.91	(71.85-73.82)	-3.43 (-4.17 to -2.69)	<0.001
albumin (g/L)	45.79±2.57	(45.15-46.44)	48.22±3.30	(47.39-49.05)	2.42 (1.80 to 3.05)	<0.001	44.62±2.71	(43.94-45.31)	-1.17 (-1.69 to -0.65)	<0.001
globulin (g/L)	30.47±3.29	(29.65-31.30)	30.95±4.38	(29.85-32.06)	0.48 (-0.27 to 1.23)	0.379	28.21±3.48	(27.34-29.08)	-2.26 (-2.81 to -1.72)	<0.001
A/G	1.52±0.24	(1.46-1.58)	1.58±0.27	(1.52-1.65)	0.06 (0.02 to 0.11)	0.004	1.61±0.25	(1.55-1.67)	0.09 (0.05 to 0.13)	<0.001
myocardial enzymes										
alpha-hydroxybutyric dehydrogenase (U/L)	137.16±20.95	(131.88-142.43)	148.13±24.18	(142.04-154.22)	10.97 (4.12 to 17.82)	0.001	139.65±26.41	(133.00-146.30)	2.49 (-4.57 to 9.56)	0.674
creatinine Kinase (U/L)	122.39±73.29	(103.93-140.85)	127.27±79.38	(107.28-147.27)	4.88 (-12.26 to 22.03)	0.784	121.27±97.75	(96.65-145.88)	-1.13 (-23.77 to 21.52)	0.244
creatinine Kinase Isoenzyme MB (U/L)	8.15±4.24	(7.08-9.22)	7.80±3.55	(6.90-8.69)	-0.35 (-1.67 to 0.97)	0.747	7.35±4.28	(6.27-8.43)	-0.80 (-2.21 to 0.61)	0.216
lactate dehydrogenase (U/L)	187.43±31.99	(179.37-195.48)	202.37±38.56	(192.65-212.08)	14.94 (4.89 to 24.99)	0.005	190.67±33.50	(182.23-199.10)	3.24 (-5.47 to 11.94)	0.589
aspartate transaminase (U/L)	24.43±11.80	(21.46-27.40)	34.36±26.62	(27.65-41.06)	9.93 (4.54 to 15.32)	<0.001	22.31±9.90	(19.82-24.81)	-2.11 (-3.64 to -0.59)	0.004
mitochondrial aspartate aminotransferase (U/L)	6.79±3.21	(5.98-7.60)	9.86±7.87	(7.87-11.84)	3.06 (1.43 to 4.70)	<0.001	6.28±2.84	(5.57-7.00)	-0.51 (-0.97 to -0.04)	0.015
renal function parameters										
serum creatinine (µmol/L)	57.77±11.67	(54.84-60.71)	63.50±13.35	(60.14-66.86)	5.73 (4.44 to 7.01)	<0.001	57.51±13.01	(54.23-60.79)	-0.26 (-1.80 to 1.27)	0.551
serum urea (mmol/L)	4.77±1.04	(4.51-5.03)	3.91±1.19	(3.61-4.21)	-0.86 (-1.19 to -0.53)	<0.001	4.29±1.14	(4.00-4.58)	-0.48 (-0.74 to -0.22)	<0.001
uric acid (µmol/L)	371.44±110.51	(343.61-399.27)	656.3±219.92	(600.91-711.69)	284.86 (236.90 to 332.82)	<0.001	343.51±108.92	(316.07-370.94)	-27.94 (-40.53 to -15.35)	<0.001

Table S3: Change of the faeces microbiome during the one-week FF

phylum	0W(%)	1W(%)	2W(%)	P(0/1)	P(0/2)
Bacteroidetes	52.74±16.45	50.94±14.61	51.98±18.30	0.586	0.658
Firmicutes	35.05±12.92	30.64±13.52	36.36±14.12	0.039	0.868
Proteobacteria	9.86±9.04	12.69±12.17	8.30±7.43	0.219	0.145
Actinobacteria	1.25±1.76	2.69±3.80	1.41±1.58	0.046	0.626
Fusobacteria	0.77±2.24	1.92±6.58	1.32±4.59	0.28	0.845
Verrucomicrobiae	0.10±0.49	0.66±1.89	0.30±1.37	0.01	0.1
other(unclass+(<0.1%))	0.22±0.33	0.64±1.76	0.34±0.89		

phylum	Class	0W(%)	1W(%)	2W(%)	P(0/1)	P(0/2)
Bacteroidetes	Bacteroidia	52.72±16.46	50.98±14.81	51.96±18.30	0.596	0.912
	Clostridia	25.05±12.17	20.54±11.39	25.77±10.59	0.027	0.54
Firmicutes	Negativicutes	9.00±9.91	7.46±8.63	8.77±6.68	0.214	0.789
	Erysipelotrichia	0.61±0.66	0.98±2.27	0.88±1.34	0.468	0.33
	Bacilli	0.28±0.34	1.39±3.25	0.78±1.92	0.418	0.362
	Gammaproteobacteria	6.36±9.27	9.53±12.80	4.98±6.06	0.264	0.22
Proteobacteria	Betaproteobacteria	3.07±2.44	2.64±3.11	2.75±3.75	0.276	0.084
	Deltaproteobacteria	0.38±0.63	0.48±0.61	0.53±0.13	0.153	0.27

Actinobacteria	Actinobacteria	1.09±1.62	2.44±3.79	1.14±1.39	0.054	0.753
	Coriobacteriia	0.17±0.18	0.25±0.46	0.27±0.36	0.541	0.309
Fusobacteria	Fusobacteriia	0.77±2.24	1.92±6.58	1.32±4.59	0.28	0.838
Verrucomicrobiae	Verrucomicrobiae	0.10±0.49	0.66±1.89	0.30±1.37	0.016	0.113
other(unclass+(<0.1%))		0.40±0.40	0.78±1.84	0.56±1.01		

phylum	Class	family	0W(%)	1W(%)	2W(%)	P(0/1)	P(0/2)	
Bacteroidetes	Bacteroidia	Bacteroidaceae	28.05±20.19	35.63±17.08	31.55±20.4	0.016	0.024	
		Porphyromonadaceae	1.29±2.18	2.6±3.09	1.27±1.24	0.004	0.258	
		Prevotellaceae	21.92±28.97	9.61±20.67	17.26±25.33	<0.001	0.239	
		Rikenellaceae	1±1.26	2.58±5.17	1.18±1.49	0.029	0.741	
Firmicutes	Clostridia	Christensenellaceae	0.13±0.49	0.11±0.25	0.07±0.12	0.923	0.905	
		Clostridiaceae	0.32±0.99	0.05±0.13	0.37±0.79	0.001	0.14	
		Defluviitaleaceae	0.23±0.32	0.13±0.15	0.18±0.27	0.068	0.432	
		Lachnospiraceae	14.73±8.85	9.9±7.06	15.43±8.01	0.003	0.338	
		Peptostreptococcaceae	0.79±2.45	0.16±0.29	0.78±3.09	0.009	0.925	
		Ruminococcaceae	8.58±6.4	9.4±7.43	8.66±5.49	0.539	1	
		Acidaminococcaceae	2.93±2.89	4.31±6.16	3.63±5	0.443	0.66	
	Negativicutes	Veillonellaceae	6.06±10.45	3.15±7.28	5.13±6.87	0.016	0.649	
		Erysipelotrichia	Erysipelotrichaceae	0.61±0.66	0.98±2.27	0.88±1.34	0.468	0.33
	Bacilli	Lactobacillaceae	0.06±0.17	0.04±0.21	0.15±0.74	0.098	0.443	
		Streptococcaceae	0.14±0.24	1.29±3.2	0.51±1.64	0.139	0.144	
	Proteobacteria	Gammaproteobacteria	Enterobacteriaceae	6.11±9.26	9.43±12.79	4.76±5.94	0.209	0.338
			Pasteurellaceae	0.21±0.58	0.05±0.078	0.17±0.58	0.239	0.955
Betaproteobacteria		Alcaligenaceae	3.04±2.44	2.6±3.12	2.71±3.75	0.258	0.078	
Deltaproteobacteria	Desulfovibrionaceae	0.38±0.63	0.48±0.61	0.53±0.93	0.153	0.27		
Actinobacteria	Actinobacteria	Bifidobacteriaceae	1.08±1.62	2.43±3.79	1.12±1.38	0.056	0.753	
		Coriobacteriaceae	0.17±0.18	0.25±0.46	0.27±0.36	0.541	0.309	
Fusobacteria	Fusobacteriia	Fusobacteriaceae	0.76±2.22	1.91±6.58	1.3±4.54	0.357	0.909	
Verrucomicrobiae	Verrucomicrobiae	Verrucomicrobiaceae	0.1±0.49	0.66±1.89	0.3±1.37	0.016	0.113	
other(unclass+(<0.1%))			1.31±2.24	2.23±4.44	1.78±2.53			

phylum	Class	family	genus	0W(%)	1W(%)	2W(%)	P(0/1)	P(0/2)	
Bacteroidetes	Bacteroidia	Bacteroidaceae	Bacteroides	28.05±20.19	35.63±17.08	31.55±20.4	0.016	0.024	
		Parabacteroides	0.9±2.14	1.3±1.74	0.56±0.5	0.007	0.73		
		Prevotellaceae	Prevotella	21.38±29.19	9.22±20.73	16.6±25.46	<0.001	0.46	
		Paraprevotella	0.54±1.24	0.39±1.2	0.66±2.23	0.191	0.445		
Firmicutes	Clostridia	Rikenellaceae	Alistipes	1±1.26	2.58±5.17	1.18±1.49	0.029	0.741	
			Clostridiaceae	Faecalibacterium	4.65±4.91	3.78±3.45	5.05±3.78	0.372	0.671
				Ruminococcus	1.09±1.25	0.17±0.37	1.02±1.6	<0.001	0.682
				Subdoligranulum	0.84±1.08	3.21±5.05	0.85±0.84	0.015	0.215
		Clostridium_sensu_stricto_1	0.31±0.96	0.05±0.12	0.35±0.77	0.001	0.256		
		Defluviitaleaceae	Bilophila	0.3±0.46	0.45±0.56	0.51±0.92	0.024	0.103	
			Lachnospiraceae	Blautia	1.98±1.93	1.71±1.96	2.08±2.24	0.558	0.753
				Pseudobutyrvibrio	1.87±2.04	0.37±0.72	1.78±1.82	<0.001	0.925
				Lachnospira	1.55±2.08	1.09±1.48	2.12±3.41	0.286	0.132
				Roseburia	1.11±1.81	0.77±1.71	1.33±1.08	0.032	0.136
	Anaerostipes	0.86±1.8	0.54±0.7	0.48±0.93	0.521	0.802			
	Coprococcus	0.28±0.28	0.16±0.22	0.38±0.49	0.003	0.561			
	Oscillibacter	0.25±0.49	0.44±1.26	0.14±0.22	0.888	0.492			
	Negativicutes	Acidaminococcaceae	Phascolarctobacterium	2.74±2.85	4.23±6.14	3.59±5	0.336	0.451	
			Acidaminococcus	0.18±0.78	0.06±0.28	0.03±0.18	0.465	0.463	
		Veillonellaceae	Dialister	2.58±6.62	0.44±1.11	1.94±3.91	0.006	0.379	
			Megamonas	1.64±3.43	0.32±0.89	1.76±3.84	0.032	0.964	
			Megasphaera	1.15±3.38	0.94±2.81	1.02±3.05	0.974	0.4	
			Veillonella	0.08±0.18	1.34±5.82	0.21±0.55	0.038	0.385	
Mitsuokella			0.47±1.94	0.04±0.2	0.1±0.32	0.248	0.386		
Bacilli	Streptococcaceae	Streptococcus	0.11±0.23	1.24±3.2	0.44±1.58	0.105	0.198		

Proteobacteria	Gammaproteobacteria	Enterobacteriaceae	Escherichia-Shigella	4.03±8.02	4.81±8.47	2.56±3.54	0.295	0.718
		Pasteurellaceae	Haemophilus	0.2±0.56	0.05±0.07	0.15±0.54	0.271	1
	Betaproteobacteria	Sutterellaceae	Parasutterella	1.68±2.33	1.89±3.29	1.99±3.84	0.922	0.46
			Sutterella	1.36±1.92	0.71±1.1	0.72±0.97	0.048	0.027
Actinobacteria	Actinobacteria	Bifidobacteriaceae	Bifidobacterium	1.07±1.62	2.42±3.78	1.11±1.38	0.056	0.753
		Coriobacteriaceae	Collinsella	0.14±0.16	0.22±0.45	0.22±0.32	0.612	0.357
Fusobacteria	Fusobacteriia	Fusobacteriaceae	Fusobacterium	0.66±2.14	1.47±5.71	1.29±4.52	0.178	0.866
			Cetobacterium	0.11±0.67	0.43±2.69	0.002±0.009	0.753	0.859
Verrucomicrobiae	Verrucomicrobiae	Verrucomicrobiaceae	Akkermansia	0.1±0.49	0.66±1.89	0.3±1.37	0.016	0.113
			Incertae_Sedis	4.81±4.37	4.56±3.77	4.86±4.5	0.967	0.85
			Dorea	0.37±0.48	0.19±0.18	0.42±0.6	0.002	0.768
			Barnesiella	0.16±0.33	0.69±1.93	0.32±0.58	0.024	0.079
other(unclass+(<0.1%))				9.44±6.24	11.43±10.46	10.35±5.91		